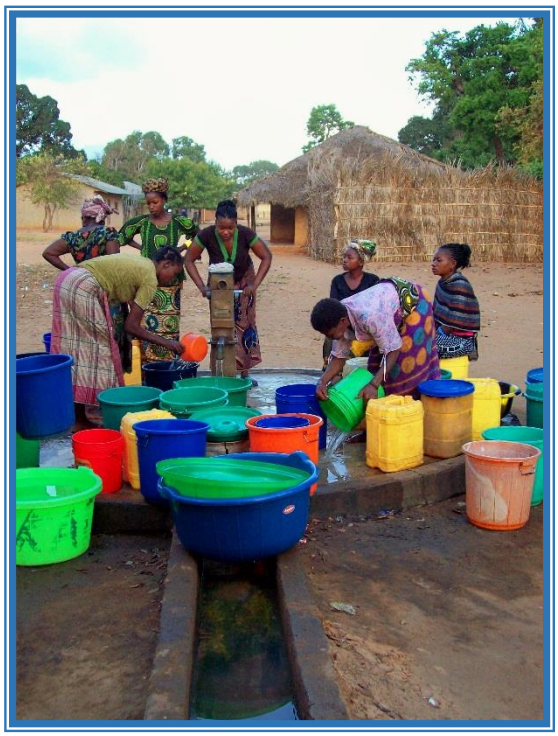
inter aide

Lancement et suivi de programmes concrets de développement

FINAL EVALUATION OF INTER AIDE PROGRAMME

IMPROVEMENT OF HYGIENE AND SANITATION CONDITIONS, ACCESS TO DRINKING WATER AND WATER-POINT MAINTENANCE SERVICES FOR RURAL COMMUNITIES IN MOZAMBIQUE

Districts of Memba, Nacala-a-Velha, Monapo, Mossuril and Nacarôa



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FINAL REPORT

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I. Brief presentation of the project

I.1. Objectives and strategy of the project

The overall objective of the project is to improve the living conditions of vulnerable rural populations in Mozambique.

The project has two specific objectives, namely:

- Improve hygiene practices and access to drinking water and sanitation in Memba District, through hygiene sensitization, construction of protected water-points and family latrines.
- Ensure sustainability of rural water equipment in Memba, Nacala-a-Velha, Monapo, Mossuril and Nacarôa Districts, by strengthening capacities of local actors and scaling up water-point maintenance services.

The improvement of hygiene practices was promoted by awareness raising on hygiene, sanitation and water use of rural families and training and supporting them to build latrines, while construction and rehabilitation of water points contributed to increase the access to drinking water for rural communities in Memba district, answering the villagers' requests.

The maintenance services implemented relie on area mechanics and spare-parts retailers, linked with water committees of rural communities in the districts of Memba, Nacala-a-Velha, Monapo, Mossuril and Nacarôa. These independent operators usually come from rural communities, but have developed a complementary economic activity (local grocery, workshop or services).

The intervention consisted in strengthening water committees' management and maintenance capacities, while identifying and capacitating hand pump technicians and local shops' owners and sellers in order to establish a maintenance network in support to water committees. The availability of spare parts in those local shops is insured through connection with Nampula suppliers.

Inter Aide established a partnership with a local cooperative, namely OSUWELA to implement the water-point maintenance component of the project.

District Administrations (SDPI) are involved in the project for the selection of priority areas; to ensure that constructions and activities follow national standards and policies; and to monitor the maintenance services.

I.2. The project intervention logic

Two distinct intervention logics can be identified on the base of distinct baseline situations and implementation modalities, each one aiming to reach one of the two specific objectives established. As explained above, more than half of the population did not have access to safe water and sanitation in Memba district, due to lack of infrastructures, while in the other districts the matter of concern for now is more the maintenance of existing water points. Inter Aide take care of hygiene and sanitation improvement related activities, as well as water points construction in Memba district, while its partner OSUWELA is in charge of strengthening water points maintenance in Memba, Nacala-a-Velha, Monapo, Mossuril and Nacarôa districts.

The diagrams below illustrate the intervention logics.

Figure 1 : : Intervention logic that aims to improve hygiene practices and access to drinking water and sanitation in Memba district

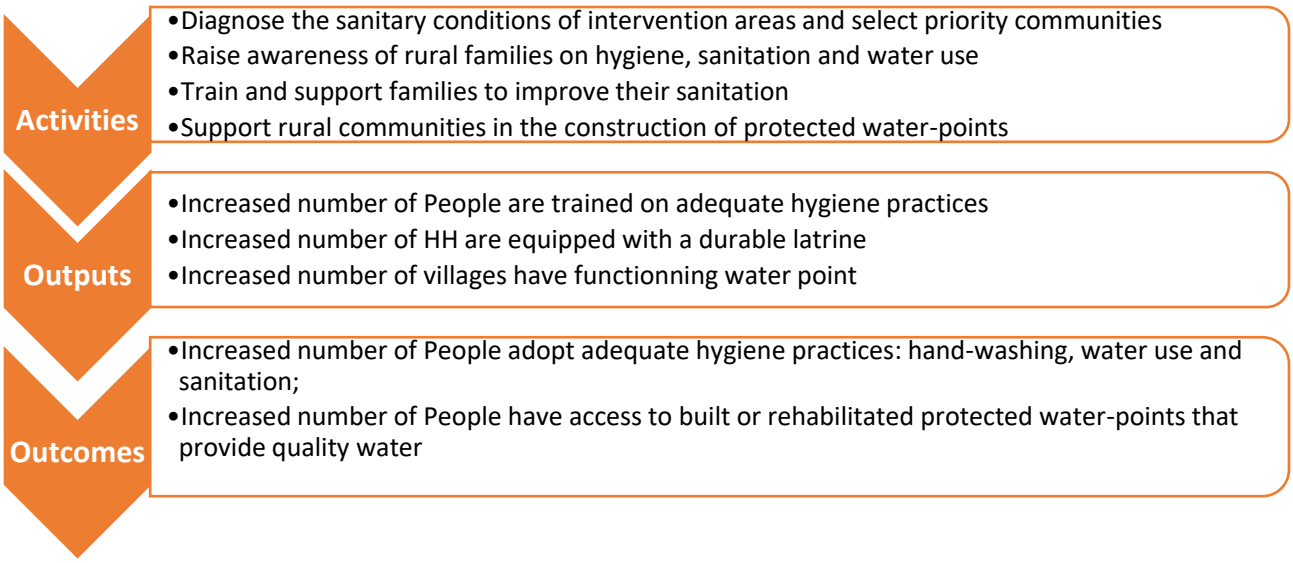
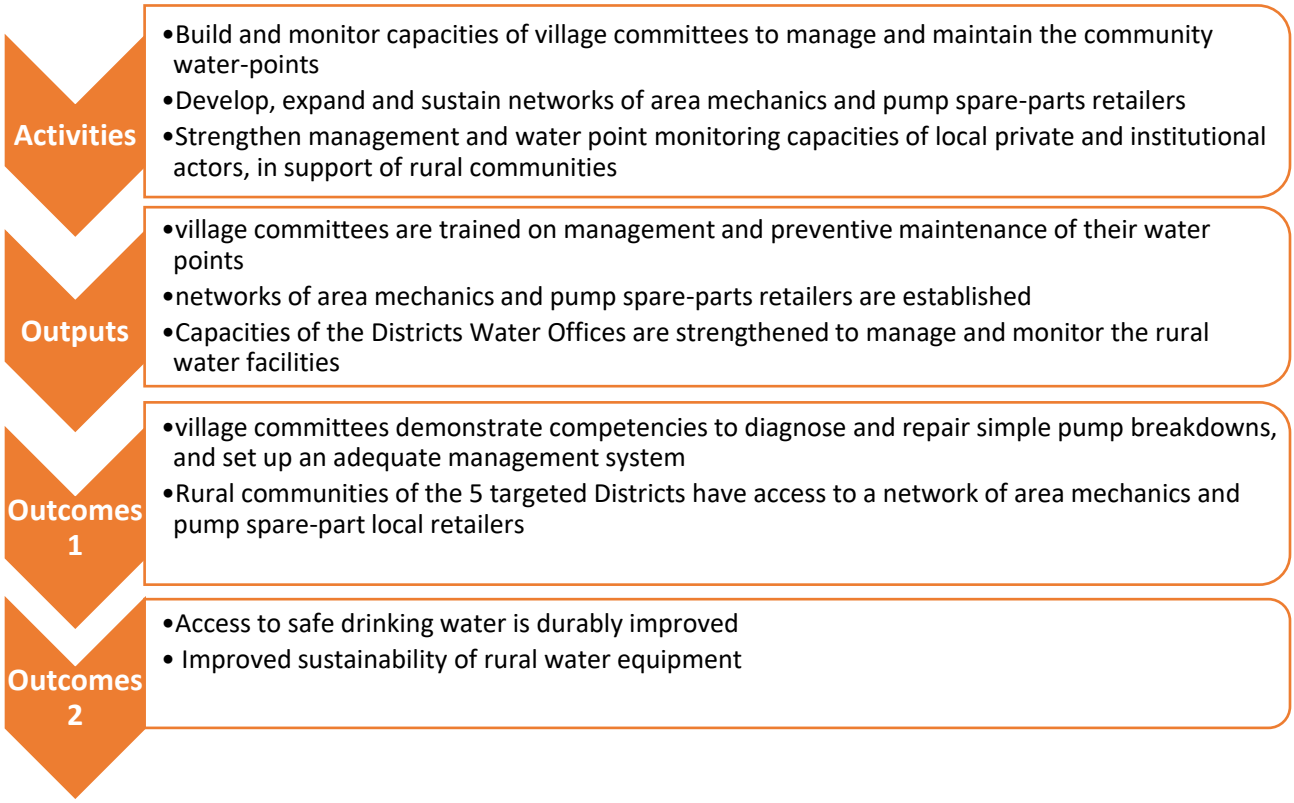


Figure 2 : Intervention logic that aims to ensure sustainability of rural water equipment in Memba, Nacala-a-Velha, monapo, Mossuril and nacarôa districts



II. Expectations expressed in the ToR

Beside the accountability and transparency commitments of Inter Aide with the donor, it is expected that the evaluation will help Inter Aide and OSUWELA to objectively assess their innovative maintenance's methodology and approach. An external point of view and concrete recommendations will help to enhance the methodologies and approaches.

The evaluation must assess to which extent the results were achieved (improvement of basic needs of the beneficiaries), as well as the effectivity of the solutions proposed to insure the sustainability and reproducibility of the intervention.

Therefore, the results of the program, its implementation strategies and modus operandi must be evaluated according to the OECD criteria of Relevance, Effectiveness, Efficiency, Impact, Sustainability.

The terms of reference list specific issues and questions on which the evaluation must focus, covering five themes, namely Hygiene, Sanitation, Access to Water, Maintenance and Monitoring and Evaluation. This last one must be treated for each theme.

It is expected that all answers to the evaluation questions are associated with recommendations.

III. Evaluation questions

In order to allow a more targeted information collection, deeper analysis and more useful report, evaluation questions were selected according to their evaluability and usefulness of their answer, in agreement with Inter Aide. They are listed below with their respective OECD criteria.

1. To what extent the adoption of adequate hygiene practices is effective and durable and the good diffusion of the messages will continue beyond the intervention? (Effectiveness, Sustainability, Impact)
2. Was the training to build latrine and conditions imposed made by the project effective? what are the explanations why some household didn't adopt the approach? How could it be possible to overcome it? (Effectiveness, Efficiency, Impact, Relevance)
3. To what extent the approach used to train and support families to improve their sanitation has an effect on the sustainability of sanitation? Are the Conditions imposed to the communities sufficient enough for construction of long-lasting latrines (Sustainability)?
4. To what extent the strategy adopted to improve sanitation was appropriate for the more vulnerable? (Relevance)
5. Did the technical options choose for water points constructions result in water supply services reliable, acceptable, affordable and available? (Relevance, Effectiveness, Impact)
6. Are the hand pump technicians trained by the project providing satisfactory reparation service at the water points? (Sustainability, Effectiveness, Impact)
7. Is the service provided by the hand pump technicians trained by the project sustainable? (Sustainability)
8. Is the provision of the main spare parts insured by the retailers' network? (Sustainability, Effectiveness, Impact)
9. To what extent is the retailers' network provision of the main spare parts sustainable? (Sustainability)

10. Does the monitoring done by OSUWELA about pump technicians, shops, water committees allow the detection of failure and on time interventions to remedy? (Sustainability Effectiveness Impact)
11. To what extent capacitated district water technicians and local institutions linked with maintenance networks provide support? (Sustainability)
12. Does the M&E system of the project allow the team to follow the progress (qualitative and quantitative) in outputs, outcomes and impacts and was used for improvement when needed? (Efficiency)

IV. Evaluation methodology

IV.1. Evaluation matrix

Judgement criteria were assigned to each evaluation question, establishing how the merit or success will be appreciated. Then the data that will help to appreciate the merit or success (indicators) were determined, as well as their respective targets.

An evaluation matrix listing the evaluation questions and respective judgement criteria, indicators, targets and source of information was elaborated to guide the evaluation process (see annex 2).

IV.2. Data sources and tools

In order to answer the evaluation questions, data were looked for in the Project quantitative data and surveys, treated and analyzed, allowing a preliminary answer to evaluation questions and determination of remaining hypotheses and issues to be tested in the field.

In the field, evidences on which to base the answers to the evaluation questions related to hygiene promotion, sanitation, water-point construction and maintenance were collected among a sample of households in a sample of targeted villages in Memba district, as well as through interviews of community leaders and hygiene committees. Data related with maintenance were collected from water committees, hand pump technicians and retailers in the districts of Memba, Nacala a Velha and Monapo. Project manager and Osuwela team were also interviewed. Table 1 synthetize the data collection strategy.

Table 1 : source of information and tools of field data collection

Districts	Source of information	Tools	
		Semi-structure interviews guideline	**Observation checklist**
Memba	Households	■	■
	Vulnerable families	■	■
	Community leaders	■	
	Hygiene committees	■	
	Water committees	■	
	Water-points		■
All districts	Hand pump technicians	■	
	Retailers	■	
	Water committees	■	

Project team	Inter Aide management team		
	OSUWELA management team		
	OSUWELA supervisors		
	OSUWELA hand pump technicians' trainers		

IV.3. Sample

Evidences were collected from 28 households, 5 water committees, 5 hygiene committees and 4 community leaders in the district of Memba; 4 water committees, 3 hand pump technicians, 3 retailers and 1 mechanic – retailer in the district of Nacala a Velha, 1 hand pump technician and 2 retailers in the district of Monapo.

The sample of villages in Memba district includes 3 villages with high rate of improved latrines coverage and 2 villages with low rate of improve latrines coverage. In the 5 villages, all the project components were implemented. In each village, 5 to 10 households were selected randomly, except vulnerable families that were indicated by the community leaders.

Table 2 : Sample for field data collection

District	Adm Post	HH	water comm	hyg comm.	Com Leaders	Hand pump techn.	Retailers	Hand pump techn retailer
Nacala a Velha	Barragem		1			2	1	1
	N. Velha		3			1	2	
Monapo	Itoculo					1	2	
Memba	Sede	21	3	3	3	4	1	
	Mazua	7	2	2	1			
Total		**28**	**9**	**5**	**4**	**8**	**6**	**1**

IV.4. Data treatment and analysis

For each component of the project, data were collected, as far as possible, from different sources or type of sources to crosscheck the information collected. In some cases, the information was collected from one type of source, but repeatedly (ex: households). (see annex 3 for more details). The confirmed data were treated and analyzed resulting in valid findings, on which to base the conclusion, using judgement criteria.

V. Constraints

Due to the visit of the President of the Republic in Memba, that was not possible to interview SDPI director or technician.

Heavy rains made impossible to conduct households' interviews in one village in Mazua Administrative Post.

VI. Findings

VI.1. Hygiene promotion

Hygiene promotion was undertaken in 23 villages in Memba district between 2017 and 2018 with the participation of 3529 adults and 660 children.

The strategy adopted by the project consisted in the following main steps:

- Initial sanitary survey among a representative number of households (at least 30% of Households)
- Hygiene sensitization using PHAST approach (Participatory Hygiene and Sanitation Transformation) aiming at increasing the participants' awareness on the links between their health, the environment and their daily practices and behaviors.
- Community action plan at the end of the hygiene sensitization with commitments to improve their practices and behaviors
- Election of hygiene committee
- Capacitation of hygiene committees' members

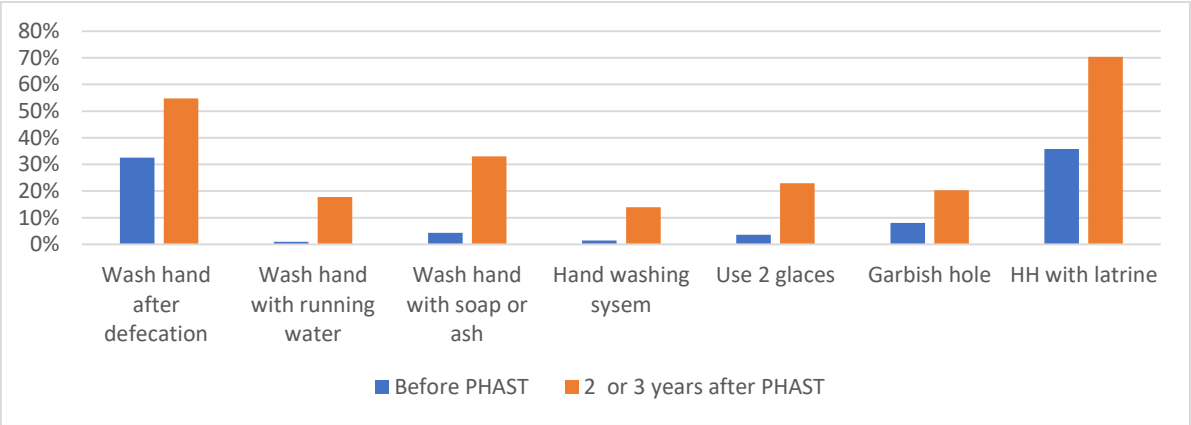
VI.1.1. The population understood the importance of hygiene

Inducing changes in behavior is not an easy task and its success relies on the benefit people find in it. This is a process beginning by the conviction that hygiene practices reduce the risk of waterborne diseases and it can take time between the conviction that it would be a good thing to change behavior and the actual change. Reason why, it is necessary to assess if the beneficiaries actually understood the contamination process and ways to prevent it, which is the triggering element of the PHAST approach.

Data collected in the field among 28 households in 4 villages evidenced that most of them assisted to the hygiene sensibilization sessions (78% of HH), remember some of the hygiene messages (61% could remember at least 3 messages) and 54% understood the link between hygiene and good health. The messages most mentioned are latrine use (64 % of HH) and washing hands with soap or ash (64 % of HH). The fact that even the persons who were not present at the PHAST sessions being able to cite some messages shows the impact of the hygiene sensitization undertook by the project.

This understanding of importance of hygiene induced durable changes in hygiene behavior as shown in the post-PHAST surveys made by the project among 18 villages in 2017 and 2018. 2 or 3 years after hygiene sensitization, there is still a significant improvement in hygiene practices adoption compared to baseline situation. Figure 3 below illustrates key hygiene practices improvement.

Figure 3 : improvement of hygiene practices (project database PAST survey)



The PHAST surveys made by the project indicate that 70% HH have latrine (against 36% before the intervention); 55% wash hands after defecation (against 33% before intervention) and 33% wash hands with soap or ash (against 4% before intervention).

Data were collected in the field to assess whether the latrines are used and clean and the hand washing system functional, in use and near the latrine. 100% of inspected latrines were used and 96% clean (without visible excrements). But the hand washing systems (existing or the one they had before) were most of the time hanged to the dishes dryer, some to the roof of the house or in the bathroom. Only one house had a hand washing system functional, in use and near the latrine.

VI.1.2. Some practices raise more difficulties than others

What figure 3 also shows is that the improvement is higher for latrine adoption (increase of 35%), followed by washing hands with soap or ash (increase of 29%), while it is lower for hand washing system (increase of 13%).

Hygiene committees Interviews confirm that latrine is the practice easier to adopt and 96% of the inspected households had latrine. The practices more difficult to adopt, according to the hygiene committees, is the hand washing system, which is often taken by the kids to play, attacked by the termites or destroyed by the rains, as well as the dishes dryer, which also don't last long. In addition, building wood is difficult to find in Memba district and this is not a durable material. That was confirmed by the households. Only 14% still had hand washing systems.

The project proposed various hand washing system models, including the Tippy Tap system. The one observed in the field consists in a hanged perforated recipient.

VI.1.3 After intervention, hygiene committees as possible advisors rather than in charge of inspections

The hygiene committees met were involved in data collection and monitoring related to the different project activities: hygiene, sanitation and water point construction. They are trained and developed competencies on hygiene and sanitation related issues, but did not developed activities on their own as the project activities succeeded in their villages.

According to project team, they usually don't continue monitoring and advices at households' level after the end of the project interventions.

Therefore, their role can be considered as referent persons in the communities for issues related to hygiene and sanitation, which is also important.

VI.2. Sanitation

Few months after hygiene promotion, the project help the villages to access improved sanitation. The households are asked to dig a 2m depth pit, build a superstructure and provide sand and stones for the construction of the slab. Then the project provides building material (cement, tools, etc.) and hire trained local builders to make the slab. Since 2017, the conditions imposed to the households are stricter regarding the quality of the superstructure: it must have a roof and solid walls.

Between mid-2016 and 2018, 21 villages were reached and 2822 improved latrines were built.

VI.2.1. High proportion of trained households have improved latrine

According to the project database related to latrine activity[1], 3765 families were trained in latrine construction between mid-2016 and 2018 and 2822 families actually built improved latrine, meaning that 75% of trained families succeeded to comply with the conditions imposed by the project.

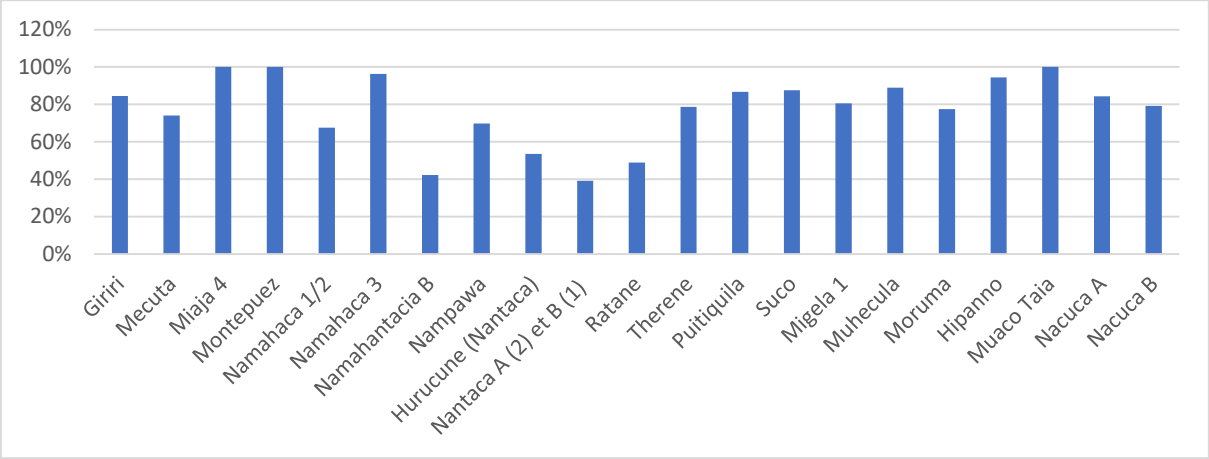
The support of the project in improving sanitation contributes to a significant improvement of latrines coverage (traditional and improved). After the intervention, an average of 90%, of households have a latrine (baseline 57%) (latrine databse).

The latrine constitutes an improvement of sanitation if it is used, cleaned and if the hole is covered to prevent insects to enter. All the latrine inspected were in use; 96% clean and 72% had the hole covered.

VI.2.2. Discrepancy among villages

However, the figures are variable among villages, as illustrated in figure 4 below. In 3 villages, less than half of the families succeeded to build improved latrine.

Figure 4 : % trained HH that built improved latrine per village (project database)



The sample of visited villages included 2 with low rate of latrines (Namahantacia B and Ratane) and 3 with high rate of improved latrines (Miaja 4; Muaco Taia and Suco). Their respective characteristics were compared. It has been noticed that the villages with low rate of improved latrines have a lower social cohesion, with some residents involved in gold business and able to cover their house with zinc roof. Ratane has inhabitants who were not born in the village (teachers'

[1] The figures here are different from the one presented in the former paragraph related to hygiene as the villages were the PHAST surveys were done are different from the villages were latrine activities took place between mid 2016 and 2018. In this part related to latrine the database mentioned is the latrine activity database

families). In both villages the behavior of the community leaders demonstrated low interest in latrine and hygiene issues. They didn't stay during the field visit, while in the other villages the leaders were present all the time, even during the household's inspection. In Namahantacia B, the leader was not even able to provide the number of houses and in Ratane, he was always consulting his mobile phone while present. The time elapsed between PHAST session and latrine activity doesn't seem to affect the effectiveness. Only 4 months after hygiene sensitization, the latrine activity began in Namahantacia B, which has the lower rate of households with improved latrines. Table 3 lists the criteria used to compare the villages.

Table 3 : characteristics of villages with high and low rate of improved latrines (field data)

Villages	Muaca Taia	Namahantacia b	Miaja 4	Ratane
Distance from main road	?	Cross the village	200m	20 m
Concrete houses	none	rare	none	none
Zinc roofs	rare	around 1 each 10 houses	rare	rare
None basic items sold	No	no	no	yes
Gold extraction / business	No	yes	no	yes
leader motivated by hygiene / latrine activities	Yes	no	yes	no
Foreign settlement	No	no	no	yes
Time between PHAST and latrine activities (database)	5 months	4 months	3 months	10 months
Rate of improved latrine (latrine database)	100%	42%	100%	49%

VI.2.3. Difficulties of some HH

According to the hygiene committees, the main difficulty to comply with the conditions imposed by the project to get a concrete slab is to make gravels from rocks. That requires strength and prevents some households to obtain project aid for improved latrine. Among the households inspected, 3 had no improved latrines and 2 no latrine at all. Those two lasts include a vulnerable family with no support and a family with not enough space to make latrine. The 3 families with traditional latrines include one vulnerable not aware about the latrine activity and one where the husband was not present during the latrine activity. The wife could not make the gravels.

3 out of 5 hygiene committees helped old and deficient households without support to comply with the conditions imposed by the project. Among the vulnerable families inspected 67% succeed to have an improved latrine. But the superstructures were not solid and none resisted to heavy rains, while in the other households 36% superstructures resisted.

VI.2.4. Importance given to sanitation by households

The sustainability of sanitation relies on the importance given to sanitation by households. The fact that 47% of household built strong superstructures for their latrine is an indicator, as well as the 14% households that repaired their latrine or brought the concrete slab with them when changing home. The photo shows a repaired latrine fixed with a rope to prevent the slab to fall inside the hole.

A real enthusiasm for improved latrine was noticed in the field. Hygiene committees and all households expressed their preference for improved latrine for being more resistant to termites (57% HH); cleaner (43%); easy to repair if it falls in the hole (29%) and because it is difficult to find wood to build traditional latrines (14%).

VI.5. Strength of superstructure variable

The households are asked to build a solid superstructure, as one of the conditions imposed to get an improved latrine. This is a new approach implemented by Inter Aide with the objective to better protect the latrine, hence increasing the sustainability of sanitation. All the visited villages were villages where strong superstructure was required.

It has been observed in the field that 65% households still had a superstructure in place, among which 47% in good state and 18% damaged. 35% had no superstructure at all, it was destroyed by the rain.

From this observation it can be deduced that only 47% of superstructures were actually strong and resisted to the rain with no damage. All were made of the same building material than the main house (earth bricks) and well protected with a roof. The 18% households with damaged superstructures, they were made of a fragile wooden frame coated with earth (24% of superstructures); straw (18% of superstructures) or earth blocs not well protected (12%).

One has to keep in mind that buildings in local material are not durable, sooner or later they must be rebuilt, whatever their quality. The question is whether once collapsed the superstructure will be rebuilt. In the field 35% had their superstructure destroyed by the rain and had not rebuild the superstructure and the latrine had no privacy at all, which might prevent some households' members to use the latrine.

VI.3. Water-points construction

Water-points constructed or rehabilitated by the project include wells and boreholes. The first ones are 5 to 6 m depth and are made by builders hired by the project. They are strengthened by 1.2 m concrete nozzles. The second can reach a depth of 30 to 60 meters and are object of tenders to select a specialized company. The project staffs supervise the constructions and sectorial district authorities are also involved.

During the project, 27 water points were finalized, among which 3 protected wells and 24 boreholes, all equipped with Afridev pumps.

VI.3.1. Professionalism of water points construction

Water points are built by qualified persons, either selected drilling companies for the boreholes or experienced project builders for the wells.

The works are supervised by project supervisors specifically capacitated for that purpose.

All the infrastructures seen in the field looked solid.

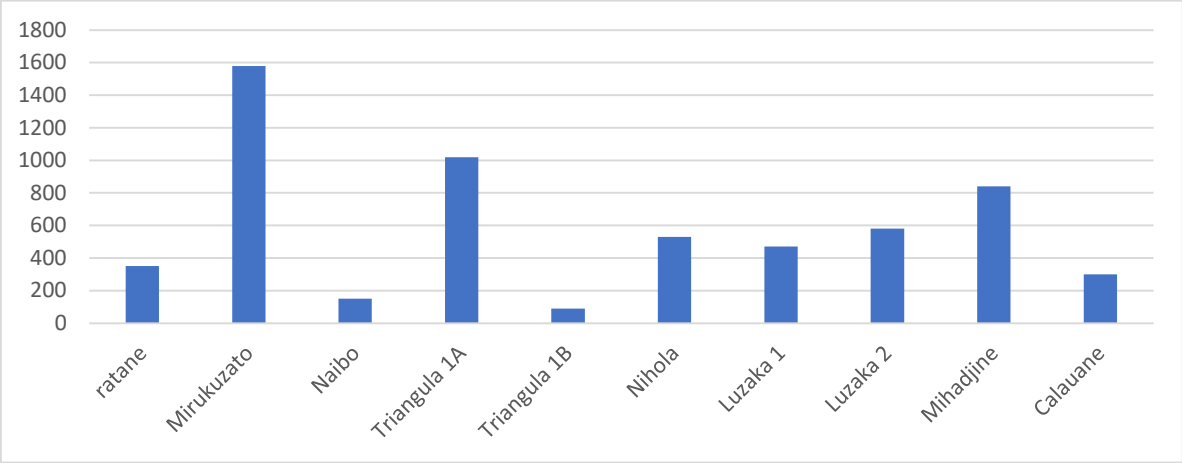
VI.3.2. Protected water points are nearer that unprotected water sources

Project staff is present when the drilling company undertake geophysical studies, ensuring that the water-point location is approved by future users. Protected water point has more chance to be used if its location is appropriate for the users and is productive, however the constraints of geology and level of the water table, as well as the access for a drilling truck, do not always permit to drill as close as desire.

Inter Aide conducted a survey in 10 villages in March 2018 to measure the distance between the households and the protected and unprotected water-point. The protected water points are at an average distance of 590 meters while the unprotected water sources are at 1440 meters.

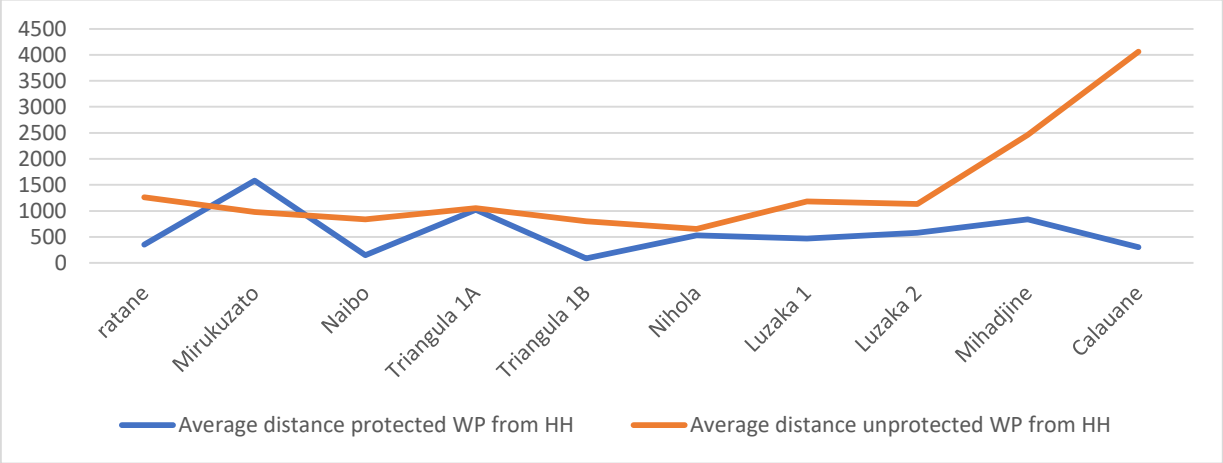
In Memba district the settlements are scattered, which makes difficult to have water points near all users' residences.

Figure 5 : Average distance between HH and protected water source (project survey)



In 6/10 of the villages, the protected water point is around two times less far than the unprotected water source and in two other villages (Triangula A and Nihola) both sources are almost at the same distance. Only in one village (Mirukuzato) the unprotected water source (river) is at 980 meters from the habitations, while the protected water-point is at 1580 meters. As a result, during the rainy season the inhabitants don't use the protected water-point.

Figure 6 : Average distance between HH and water-points (project survey)



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VI.3.3. Quality water supply service and satisfaction of the users

All inspected water-points had catchment protection, the surroundings were clean and no latrine was present at less than 50m.

According to the project database, the average water flow is 2495 l/h and none of the water-point has a flow inferior to 900l/h, considered the minimum acceptable.

Since 2016 Inter Aide is analyzing the water bacteriologic quality using the method “Kit del Agua”. And last campaign samples were send to a laboratory in Nampula for more specific analysis (Iron, manganese, nitrates etc.) The water-points finalized in 2017 and 2018 were analyzed and none were contaminated, although 3 water points have problem of turbidity.

100% of water points are functioning, according to the project database (Vlom test). In the field in Memba district 3/5 inspected water points were working properly, 1/5 had deficiency and ¼ was not functioning.

The frequency of breakdowns is less than 1 per year, according to the project database: among 14 pumps installed in 2017 and 2018, 10 never suffered breakdowns and 4 had one breakdown since their installation. (see table 4).

Table 4 : occurrence of breakdowns (Database - Vlom test)

villages	Year of water point installation	occurrence of breakdowns
Nakuxa	2018	0
Miaja 4	2018	1
Natepo Sede	2018	1
Nathuto	2018	0
Migela 2	2018	1
Montepuez	2017/2018	0
Therene	2017/2018	0
Nihola	2017/2018	0
M.Valdemar	2017/2018	1
Vida Nova	2017/2018	0
Nametil	2017/2018	0
Namahantacia B	2018	0
Micula	2018	0
Mitempe	2016	0

The satisfaction of the users is reflected by the proportion using the protected water points. 90% of the households use the protected sources according to the project database (post-PHAST survey). The reason why a small proportion of households don't use the water point is not known. We can possibly assume that the question of distance compare to local source might be an explanation but it has not been confirmed.

Table 5 : households using the protected water points (database – post-PHAST survey)

Village	% HH using unprotected water point	% HH using protected water point	Pump installation date
Mukiza B	0%	100%	2016
Muntepuez	6%	94%	Feb. 2018
Therene	21%	79%	May 2018
Napai 1 e 2	13%	88%	2015
Average	**10%**	**90%**	

VI.4. Maintenance component

Inter Aide is supporting a local cooperative OSUWELA in charge of training and reactivating water committees and establishing and training spare parts retailers and hand pump technicians, in coordination with district sectorial authority and private partners. OSUWELA is working in the districts of Nacala-a-Velha, Monapo, Mossuril and Memba (Nacaroa has not been covered yet).

VI.4.1. Important network of hand pump technicians

29 hand pump technicians are part of the network established by OSUWELA, among which 5 are new, having joined end of 2018, all in Monapo district, and 10 are both mechanics and spare parts retailers in Mossuril district. Only one hand pump technician abandoned in 2017.

The exact number of water points per water committees covered by this network of hand pump technicians is not known. The district water institutions (SDPI) has some figures, which include all type of pumps, not only Afridev, and a census of Afridev pumps is being made by OSUWELA but not completed at the time of the evaluation. So far, the available data are the one presented in table 6.

Based on the data provided by SDPI, there is an average of 50 pumps by hand pump technician, with a variation among districts. (see table 6).

Table 6 : hand pump technicians and water pumps by district (database)

District	Nb of water pumps identified and visited by OSUWELA	Nb of water pumps from SDPI data	Nb of hand pump technicians	Average nb of water pump / mechanic (SDPI data)
Monapo	257	530	8	66
Mossuril	156	324	10	32
Memba	159	406	7	58
Nacala a Velha	175	242	4	48
Total	**747**	**1502**	**29**	**50**

The project' team identified mechanics in many locations to make sure most water committees have one nearby. The map in annex 4 evidences that they are distributed in each district with no more than 30 km among them, insuring the existence of repair service close to most of the water points. 75% of interviewed hand pump technicians work within a maximum of 10 km from their home. The 5 interviewed water committees knowing the residence of the mechanics confirmed that it was close.

To reach the villages, the hand pump technicians either walk, either rent a motorbike paid by the water committees. All received bicycles from Osuwela, but only one said using it.

VI.4.2. A network of competent hand pump technicians

All mechanics are trained by Osuwela in common session when integrating the maintenance network. The interviewed hand pump technicians are experienced: 4 learned when they were mechanics in water committees, 2 were mechanics for Inter Aide, 1 was trained as regional mechanics. Only one needed assistance while repairing a hand pump.

Among the 3/8 interviewed water committees that called hand pump technician, two were satisfied by the service and use to call always the same mechanic. The third one had to call another hand pump technician (a former mechanic now retailer in the maintenance network), as the one they had called didn't succeed to fix the pump.

VI.4.3. All water committees are not aware of hand pump technicians

The team and OSUWELA are informing water committees by radio about the existence of repair services, providing hand pump technicians' names and residences. In addition, when a new pump is officially inaugurated the water committee is informed about this service and provided with related written information.

Among the 8 water committees met in the field[2] in the districts of Memba and Nacala a Velha, 6 were aware (75%). This is in Memba district that 2/5 didn't know any hand pump technicians, one never had pump breakdown, the other one was still in the one-year guarantee period. In fact, both had the information registered in their paper, but didn't remember having it.

None of the water committees aware were informed by radio. Most of the time this is through others water committees that they heard about the existence of hand pump technicians. In one case, the mechanic came in the village to present himself. Only 25% of water committees had the phone number of the hand pump technician and 63% knew where he leaves. However, it seems that generally the hand pump technician is contacted in person, not by phone.

VI.4.4. Difficulty to pay for repairs services

Some mechanics ask prohibitive prices, reaching 1600 meticais (22 Euros), almost half of the minimum monthly salary. The cost of repairs is very variable among the mechanics, some have prices ranging between 50 and 700 meticais (0.70 and 10 Euros), while others ask between 100 and 1600 meticais (1.4 and 22 Euros). The variation of cost repairs is a matter of concern as it generates inequality in the access of this service among the water committees. Considering that they have to afford transport cost, they tend to call the nearest mechanic, probably ignoring the prices practiced by the others.

OSUWELA collected the amount of money detained by 52 water committees from water fees collection. The figures in table 7 show that 46% have less than 500 meticais (7 Euros), with 25% having no funds at all.

Table 7 : amount of money detained by water committees (database)

Amount (meticais)	0	<500	500 - 1000	1000 – 2000	2000 - 3000	3000 - 4000	4000 - 5000	5000 - 6000	8000-10000
% Water committees	25%	21%	17%	17%	13%	6%	2%	4%	4%

Among the 8 committees visited, as referred above 6 knew a hand pump technician and 3 already called one to repair their pump. The 3 interviewed water committees that used mechanics services said having money to pay. However only 38% interviewed mechanics said being paid. The others had to accept differed payment and it happened to 3 of them not receiving any money at all.

Another matter of concern is the lack of transparency regarding the mechanics fees. 2/8 of the interviewed mechanics never mention their fee in the quotes they make for the water committees. Among the quotes made by the others, some had no fee indicated. Not having the fee indicated in the quote might negatively affect the confidence of the users and their willingness to pay.

From the data collected in the field, the 2018 hand pump technician's annual income is estimated to range between 4000 and 10'000 meticais (140 Euros) per mechanic. 50% said to be satisfied. All have other sources of income, such as motorbike repairs, building or agriculture.

[2] One of the water committee visited had its pump out of order for 3 years, therefore it is not included in the analysis

VI.4.5. High hand pump technician demand

In Memba district, the targeted villages for the water point construction component have new pumps and benefit from one-year guarantee, during which they are technically assisted by Inter Aide. This is an opportunity for on-the-job training that strengthens their capacity to repair pump. According to the results of Vlom tests made among 14 water points, and field data, only 1/16 water committee called a hand pump technician, while 6/16 already had pump breakdowns (see table 8). Two of the 5 water committees met in Memba district had a pump which were still under guarantee; one never had breakdown; the two others had a pump that needed repairs at the time of the evaluation (one pump not functioning, the other with deficiency) but the water committees planned to use their own mechanics to fix them.

Among the water committees not targeted by water point construction activities, the pumps are older (one inspected in the field was 20 years old) and the demand higher. According to the project database (Vlom test) and the field data 73% of the water committees already called a hand pump technician (see table 8). The visited water committees called them many times, one with a 20 years old pump had its pump repaired 3 times by a hand pump technician, one with a 10 years old pump, 7 times and one with a 5 years pump, 4 times. The database doesn't indicate how many times the mechanic was called, neither when.

Table 8 : demand of hand pump technicians by water committees (database – Vlom test and field data)

District	villages	Date of pump instalation	If already called network hand pump technician	if already had breakdown	if pump functionning
Memba not covered by water point construction	Mutele Mazua		1	1	no data
	Fungo		1	1	no data
	Muanona		1	1	no data
N. Velha	Napeho	1999	1	1	1
	mualona	2008	1	1	1
	natepo	2013	1	1	1
	Armazem		0	no data	no data
	Nacapa 2	2010	1	1	no data
	Inthuthune	2014	1	1	no data
	Nihequehi	2018	1	1	no data
	Inthuthuni	2014	0	no data	no data
% villages not covered by water point construction			**73%**		

Therefore this high ratio of committees calling technicians confirms the relevance of such network. Might be interesting in the future to compare if the ratio remains the same when the pumps guarantee will expire.

VI.4.6. Rate of activity variable among hand pump technicians but low

All hand pump technicians said to be available every day of the week and every month of the year. However, Osuwela database evidences a variation of activity rate according to the period of the year. In January /February only 35% of the mechanics work, 55% in March/April, while in September / October they are 90% (see table 9).

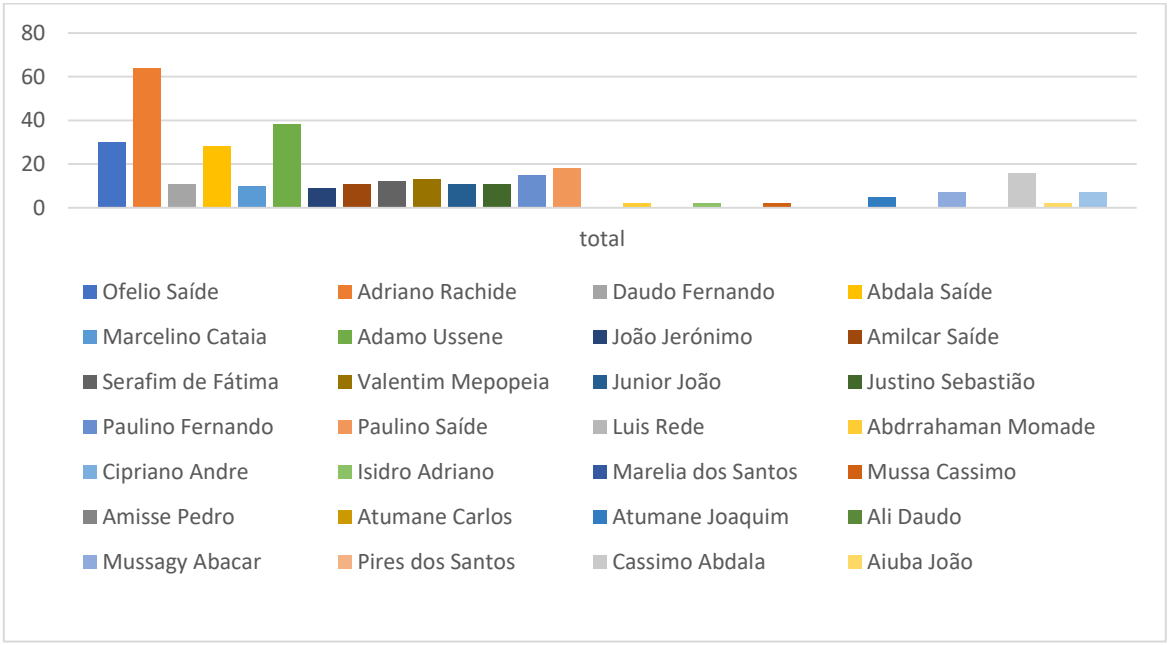
Table 9 : % of hand pump technician active along the year 2018 (database)

2018	Jan/feb	Mar./Apr	May/June	Jul./Ag.	Sept./Oct.	Nov./Dec.
Ratio of mechanics that made repairs	35%	55%	75%	75%	90%	85%

That can be explained by a lower demand during the rainy season due to hunger gap and availability of alternative water sources, sometimes not protected. That was the case of one visited village, which pump broke down in January, but the committee had not collected enough money at the time of the evaluation (beginning of May). The population was using unprotected traditional wells.

The activity rate of the hand pump technicians is generally quite low. So far, the maximum repairs performed by hand pump technician per year are 64 and only one did it in 2018. Most of them make 20 to 30 repairs per year, four did not make any repairs and four less than 10 per year.

Figure 7 : Number of repairs performed by hand pump technicians in 2018 (database)



In table 10 below only the hand pump technicians recorded in the database since 2017 and 2018 and with repairs activity recorded are listed.

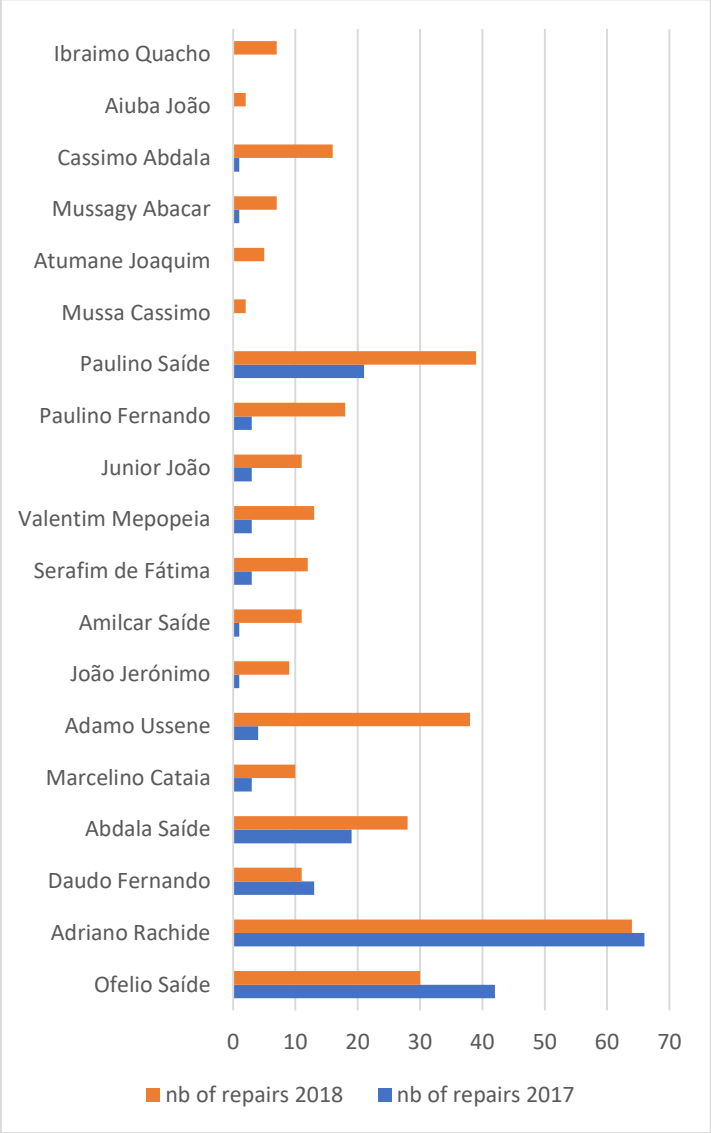
Table 10 : number of interventions (repairs and diagnostics) made by each hand pump technician in 2018 (Osuwela database)

Name of hand pump technician	Districts	nb of pumps in the district (SDPI)	Total repairs made in 2018
Ofelio Saíde	Nacala a Velha	242	30
Adriano Rachide			64
Daudo Fernando			11
Abdala Saíde			28
Marcelino Cataia			10
Adamo Ussene	Memba	406	38
João Jerónimo			9
Amilcar Saíde			11
Serafim de Fátima			12
Valentim Mepopeia			13
Junior João			11
Paulino Fernando	Monapo	530	18
Paulino Saíde			39
Mussa Cassimo	Mossuril	324	2
Atumane Joaquim			5
Mussagy Abacar			7
Cassimo Abdala			16
Aiuba João			2
Ibraimo Quacho			7

The low rate of activity of the hand pump technicians was confirmed in the field, with activity rates ranging from 4 to 38 repairs in 2018, according to the records of the interviewed hand pump technicians.

However, the comparison between 2017 and 2018 figures indicates an increase of activities of all the mechanics of the network. In 2017 the hand pump technicians made a total of 192 repairs and in 2018, 324 (see figure 8).

Figure 8 : Number of repairs made by the hand pump technicians per year (only those in the network since 2017 with repairs recorded in the database



VI.4.7. Good geographical repartition of spare parts retailers

28 retailers belong to the maintenance network: 6 in Nacala a Velha (including 1 retailer / mechanic); 5 in Memba ; 7 in Monapo (including 2 retailers / mechanics) and 10 in Mossuril who are all retailers / mechanics.

The map locating the spare parts retailers evidence that they are well distributed within each district (see annex 4).

VI.4.8. The water committees know the spare parts retailers

The project informs the water committees about the spare part retailers through radio emissions, sign boards located along the roads and during the official inauguration of the water-point.

According to the Vlom test results, all the water committees know spare part shops. In the field 75% of the interviewed water committees knew retailers, one thanks to the signboard, others because it is nearby. In all cases the shops were near.

VI.4.9. The water committees can afford the spare parts

The prices of spare parts are regulated by a table of prices that the shops and mechanics have. When the hand pump technician is called by the water committee, he makes a diagnostic and lists the required spare parts with their respective prices on a quote form.

The committees might have the spare parts or some of them and might have the money available or need to collect it among the users. In one village visited the water committee was collecting the money for 4 months to pay the spare parts, which cost was estimated at 3000 meticais (42 Euros). At the time of the evaluation they succeeded to get around 2000 meticais (28 Euros). The hunger gap period and existence of alternative water source (traditional wells) are factors that explain the difficulty to collect funds.

4/8 interviewed water committees already bought spare parts and all said having the money to pay them. That was confirmed by the retailers. However, it already happened to 3/5 retailers to accept to make credit and none had payment issue.

VI.4.10. High demand of spare parts

According to the project database (Volm test) in the villages that have a pump for 5 to 20 years, all bought spare parts (see table 12).

All the interviewed committees were satisfied by the retailers' services, although one did not find the spare part it needed (an expensive one).

Table 11 : villages that bought spare parts (database - Vlom test and field data)

	villages	if already bought spare parts	Date of pump installation
Memba not covered by project water point construction	Mutele Mazua	1	
	Fungo	1	
	Muanona	1	
N. Velha	Napeho	1	1999
	mualona	1	2008
	natepo	1	2013
	Armazem	1	
	Nacapa 2	1	2010
	Inthuthune	1	2014
	Nihequehi	1	2018
	Inthuthuni	1	2014
%		**100%**	

VI.4.11. Retailers rely on Osuwela to renew their stock

All interviewed retailers belonging to the maintenance network rely on Osuwela to renew their spare parts stock and none knew suppliers. One expressed his wish to be aware of suppliers.

Osuwela has a warehouse in each district (Memba, Nacala a Velha, Monapo, Mossuril, Nacarôa) where spare parts bought in Nampula (nearest supplier of the province) are stocked to supply the retailers. This system was implemented in an attempt to overcome the landlock situation of the targeted districts, considering the distance of Nampula. But in reality, some districts are not so distant from Nampula, there is a good road linking Nampula to Monapo and Nacala a Velha. One retailer established in Monapo renew his stock directly in Nampula. He was part of the network in 2017, but renounced because his request to Osuwela to be supported to diversify his products was rejected.

The retailers buy the spare parts at Osuwela warehouses. Osuwela accepts sometimes to make credit to some retailers or refuse, based of the estimated capacity to reimburse. One of the interviewed retailers can't renew his spare parts stock because of lack of funds and Osuwela refuses to let him take items at credit. As a result, no more client is going to his shop, knowing many items are missing. Another interviewed retailer could get items with credit.

VI.4.12. Informal and fragile businesses…

All the retailers belonging to the network have very small shops, similar to informal shops, none of them are registered as sellers, and most of them are illiterate. They are located in villages where there are very few shops if ever. Two formals retailers which were part of the network and have much larger shop renounced and other formal shops were not interested.

All interviewed retailers excepted one sell only spare parts. Only 3/5 could show registered sells, as Osuwela is regularly taking the forms where the sales are recorded. Two sold an average of 5 items per month, the benefit by spare parts is around 10 meticais (0.14 Euros), which makes a profit of around 50 meticais (0.7 Euros) per month.

They have other sources of income, some are also builders, backers or sanitation artisan, and all practice agriculture. 60% said to be satisfied because they help the water committees, the others complained that the sales are too low.

The support provided by Osuwela consists in trainings to know the spare parts, receiving a stock of items and filling the monitoring forms. Then Osuwela intervention is focused on monitoring the retailers stocks and selling them spare parts. Most of the retailers being illiterate; twice a month Osuwela supervisor must help them to fill the monitoring form.

The retailers are familiar with the spare parts and have the most sold items, except the one who is unable to renew his stock because of lack of funds. All said it happened not to have a spare part, usually the expensive one. When required they order to Osuwela on demand.

VI.4.13.... competed by Osuwela

Osuwela beside being the supplier of the retailers, sells spare parts directly to water committees and hand pump technicians. That was the case of one interviewed water committee and four hand pump technicians. Two interviewed hand pump technicians, who are not mechanics-retailers, take spare parts at credit at Osuwela warehouse when they go to villages to fix a pump. Sometimes Osuwela even bring the items to them in the villages.

By those practices Osuwela fragilizes the retailers, while it is supposed to support them.

VI.5. Osuwela monitoring system

VI.5.1. The monitoring of the maintenance network provides incomplete data

The database related to **hand pump technicians** provides data on:

- Number of quotes done
- Number of repairs done (big, small)

It does not provide data on:

- In which villages the repairs were done (data collected but not digitalized)

The monitoring of hand pump technicians uses three different data collection tools: (i) a note book with forms for quote and invoice used each time the mechanic intervenes in a village; (ii) a form for monthly report of number of quotes and repairs done in the month and (iii) other form for monthly report with indication of the date, localization of intervention and type of intervention.

The database related to **retailers** provide data on:

- spare parts sold
- spare parts bought
- spare parts in stock

It does not provide data on:

- Villages that bought the spare parts (data collected but not digitalized)

The monitoring of retailers uses two different data collection tools, both for monthly report, (i) one listing the spare parts to indicate which and how many were sold, bought and in stock and (ii) one with indication of the date, the community and the spare parts sold.

The database related to **water committee's** maintenance capacity provides data on:

- Whether they already open the pump
- If they use to call a mechanic not part of the committee
- If they know spare part retailers
- If they already bought spare part
- If they have a spare parts stock
- Capacity to disassemble and assemble the pump and name the spare parts

It doesn't provide data on:

- Which maintenance network's hand pump technicians they know
- Which maintenance network's hand pump technicians fixed their pump
- Which maintenance network's hand pump technicians did not succeed to fix their pump
- Which network retailer they know
- Which network retailer did not succeed to provide spare parts
- To which network retailers they bought spare parts

There are 6 different data collection tools for water committees: (i) one related to management and organizational indicators; (ii) one for pumps and water committees; (iii) one related to water committees revitalization; (iv) one water committees trainings; (v) one for assessment in maintenance capacity and (vi) one to record Vlom test results.

VI.5.2. The relevance of water committees' management evaluation criteria is questionable

Beside assessing the capacity of the water committees for pump maintenance, their management and organizational capacities are also assessed through 21 indicators, among which the number of members, the relationship among members and between members and community, opening hours of the pump; fees collected; money available; etc.

Based on the data collected both in maintenance and management/organizational capacities, a score is attributed to each water committee.

While this score is supposed to measure the performance of water committees, the analysis of score obtained and pump functionality evidences a lack of correlation. In Nacala a Velha the water committees have rather low positive results (20% obtained positive results), while 96% of their water points are functioning. The same can be observed in Monapo with 16% positive results and 100% functioning water points. One inspected village (Suco) had a good score (26.5) and its pump was not functioning for 4 months due to the difficulty to collect the funds.

That raises the issue of the relevance of the criteria used to assess the water committees management and organization capacity and also the capacitation made, as they instruct the water committees to be in conformity with the assessment criteria (12 members, recording fees collected and money spent, etc.).

VI.5.3. Lack of data analysis

The data collected by Osuwela are partially digitalized and listed in Osuwela report without treatment and analysis. There is no concern in detecting maintenance network failures and remedy.

Among interviewed hand pump technicians and retailers some faced problems but few reported them to Osuwela, not considering that its role is to support them. For the few that reported issues, Osuwela was unable to resolve them.

VI.6. Project M&E system

VI.6.1. Project outputs and outcomes are monitored

Most of the logical framework 's indicators are monitored. That includes the monitoring of outputs (number of people trained; water points built and improved latrine built); outcomes (hygiene practices adopted; households equipped with latrine or collection and management of water fees by the water committees).

As mentioned above, one indicator related to the impact of the establishment of the maintenance network is not monitored, namely the access of rural communities of the 5 targeted Districts to a network of area mechanics and pump spare-part local retailers.

Data related to the functionality of water points are collected, but without information regarding the service provided by the maintenance network at those water points. Therefore, it cannot be considered as an impact indicator of the establishment of the maintenance network.

Six different sets of data related to water points construction are produced, with different data (water analysis; bacteriologic analysis; pumping test; water point construction; water points users). For the village committees they are 4, for the hygiene, two and sanitation just one. A synthetic table lists all the interventions done in each village.

The project also conducted the following surveys:

- Sanitary surveys before and few years after PHAST sessions, aiming to assess the evolution of hygiene practices and sanitation (done among 11 villages in 2017; 15 villages in 2018)
- Assessment of knowledge and capacities of village committees, aiming to assess water points management capacities (done among 47 committees) and technical capacities (done among 55 committees)
- Water point distance surveys among 10 villages

VII. Conclusions

The conclusions present the answer to the evaluation question based on the findings and assessed against the targets specified in the evaluation matrix (see annex 2) *(which are not necessary the indicators of the project)*. Color codes (traffic light) were adopted to better visualize the project performance.

The conclusions are presented by component and recommendations are proposed in the next paragraph to help Inter Aide to improve some aspects of its approach.

VII.1. Hygiene

Project main indicators:
➢ 7 500 adults, with a majority of women, are trained on adequate hygiene practices
➢ 2 500 children and pupils from primary schools are made aware of hygiene issues
➢ 75% of the trained people have adequate hygiene practices: hand-washing, water use and sanitation

Evaluation question	Targets established for the evaluation	Findings
To what extent the adoption of adequate hygiene practices is effective and durable and the good diffusion of the messages will continue beyond the intervention?	at least 70 % HH able to remember at least 3 key messages and knowing that they contribute to reduce water borne disease prevalence	61% HH could remember at least 3 messages and 54% understood the link between hygiene and good health (field data)
	At least 75% of beneficiaries having good hygiene practices hand-washing and sanitation	70% HH have latrine (traditional and improved) (PHAST survey[3]); latrine used 100%, clean latrine 96% clean (without visible excrements) (field data)
		55% wash hands after defecation 33% wash hands with soap or ash (database)
		14% HH with hand washing system, 11% in use and 7% in use and near the latrine (field data)
	All communities have local actor /hygiene committees demonstrating an understanding of waterborne diseases transmission, collecting hygiene related data at HH level at least once a month and providing advices	All communities have local actor /hygiene committees demonstrating an understanding of waterborne diseases transmission, but they are not collecting hygiene related data and advices at HH level

The importance of hygiene is understood by the target population and there are evidences of behavior changes, with significant improvement in hygiene practices adoption compared to baseline situation, as mentioned in the findings. 70% HH have latrine (traditional and improved) (against

[3] PHAST survey was made in different villages that the one where latrine activity took place and include villages where latrine activity was not yet implemented

36% before the intervention); 55% wash hands after defecation (against 33% before intervention); 33% wash hands with soap or ash (against 4% before intervention).

However, the habit of washing hands at critical times, with soap or ash is not enough spread, the hand washing system is rarely placed near the latrine and is not durable. The lack of wood and rapid deterioration demotivates households.

The hygiene committees' members understood the importance of hygiene and sanitation but don't play a role in hygiene and sanitation promotion once on their own. But it was noticed in the field that even the persons who were not present at the hygiene sensitization were able to remember messages, evidencing a secondary diffusion of knowledge beyond project intervention.

VII.2. Sanitation

Project main indicators:
➢ 4 500 durable family latrines are built (for 22500 people)
➢ At least 85% of households are equipped with a latrine in targeted villages.

Evaluation question	Target established for evaluation	Findings
Was the training to build latrine and conditions imposed made by the project effective?	At least 70% of HH trained have improved latrine	75 % of trained HH on latrines construction have an improved latrine (database)
	At least 85% HH with latrine, use it, maintain it clean, cover the hole	90% HH with latrine, 100% of the latrine in use; 96% clean; 72% with hole covered (field data)
what are the explanations why some household didn't adopt the approach? How could it be possible to overcome it?		Less than 50% trained HH with improved latrine in villages with low social cohesion (field data)
		Women alone can't break rock to make gravels and are not helped (field data)
		Some HH have not enough space and not helped (field data)
To what extent the approach used to train and support families to improve their sanitation has an effect on the sustainability of sanitation? Are the Conditions imposed to the communities sufficient enough for construction of long-lasting latrines?	At least 70 % of HH maintain slab and superstructure in good state and make reparation when needed	62% slab functional (easy to use without constraint), among which 14% were repaired (after the slab collapsed in the hole) (field data)
		65% latrine with superstructure, among which 47% in good state (field data)
To what extent the strategy adopted to improve sanitation was appropriate for the more vulnerable?	at least 90% of vulnerable families succeeded to satisfy the conditions imposed	67% old and deficient households succeed to have an improved latrine (field data)
	In each community there is an effective and adequate support in place	3/5 hygiene committees help old and deficient households (field data)
		But weak superstructure in HH helped by hygiene committees (field data)
		Women alone are not supported (field data)

A high proportion of trained households succeeded to get improved latrines and use them, excepted in few villages, where the social cohesion is lower. Among the conditions imposed by the project, the more difficult one is to break rocks to make gravels, which prevent women alone, persons with deficiency or aged to comply with the conditions. In some villages the hygiene committees help old people and deficient, but the quality of superstructures made are weak. No

support is provided to women alone. Lack of space is another constraint that prevent to build a latrine.

The condition imposed by the project to build a strong superstructure aims to better protect the latrine, hence increase the sustainability of sanitation. But less than half of the superstructures observed in the field are really strong and resisted to the rain with no damage. 35% had their superstructure destroyed by the rain and had not rebuild the superstructure, therefore the latrine had no privacy at all, which might prevent some households' members to use the latrine. However, it has to be noted that heavy rains occurred before the time of the evaluation.

The sustainability of sanitation relies also on the importance given to sanitation, evidenced by 47% households that made a strong superstructure and 14% that repaired their slab after it has fallen in the hole.

VII.3. Water-points construction

Project main indicators:
➢ 45 protected water-points are built or rehabilitated, supplying 13 500 people
➢ Water quality of 90% of protected water points built is correct (turbidity / conductivity / coliform rate)
➢ The access to a protected water-point has increased by at least 10% in Memba District

Evaluation question	Target established for evaluation	Findings
Did the technical options chosen for water points constructions result in water supply services reliable, acceptable, affordable and available?	At least 90% of water points' sitting selected on the base of a combination of technical criteria and beneficiary's consultation	All water points sitting selected on the base of a combination of technical criteria and beneficiary's consultation (field data)
	All water points constructed and supervised by professionals	Selected drilling companies make boreholes, competent builders make the wells and constructions supervised by competent supervisors (field data)
	all water points look solid	all water points look solid (observation)
	At least 90% of water points are functioning	100% pumps functioning (Inter Aide database) – 3 inspected water-points were functioning, one with deficiency and 1 not functioning for 4 months
	less than two breakdowns per year at all water points	less than 2 breakdowns per year (field data and database)
	The average distance between users' residences and protected water points doesn't exceed 200m	average distance of 590 meters (project survey)
	Water point is at least 2 time less far than unprotected water source	Water point is at more than 2 time less far than unprotected water source (project survey)
	all water points have water pressure of more than 900l/h (0.9 m3/h)	average water flow is 2495 l/h and none of the water-point has a flow inferior to 900l/h (database)
	water quality of 90% of protected water points built is correct (turbidity / coliform rate)	100% with correct coliform rate, 87% with correct turbidity (database)
	all water points have catchment protection and no latrine or excrement at less than 50m	All inspected water-points had catchment protection, the surroundings were clean and there was no latrine at less than 50m (field data)
	At least 90% of HH are using the water point and 80% are satisfied	90% of HH are using the water point (database), hygiene committees and interviewed HH are satisfied (field data)

The water point construction component of the project contributed to provide a service reliable, acceptable, affordable and available.

VII.4. Maintenance network – Hand pump technicians

Project main indicators

- 45 village committees of Memba District are trained on management and preventive maintenance of their water points. Training sessions and monitoring are also organised in the 4 other Districts
- 80% of committees succeed to the technical and organisational assessment tests carried 6 months after the initial trainings. They are able to diagnose and repair simple pump breakdowns, and set up an adequate management system
- Rural communities of the 5 targeted Districts have access to a network of area mechanics and pump spare-part local retailers: 400 000 potentials water-point users
- 80% of partners area mechanics and retailers are officially recognized by District Water Offices

Evaluation question	Target established for evaluation	Findings
Are the hand pump technicians trained by the project providing satisfactory reparation service at the water points?	At least 80% of water committees aware	75% water committees aware (field data)
	At least 80% of water committees have the phone number/ know where the mechanics are	25% water committees have the hand pump technicians' phone number; 63% know where he leaves (field data)
	Distance between communities and mechanics allow round trip within the day	75% of interviewed hand pump technician work within a maximum of 10 km from their home (field data)
	At least 80% of water committees with money available to pay services of mechanics	only 29% water committees have more than 2000 meticais (28 Euros) and 25% have no money interviewed hand pump technicians mentioned difficulty to be paid (field data)
		Lack of transparence of cost of services / from simple to double according to hand pump technicians / some cost are prohibitive (field data)
	At least 80% of water committees use the services of hand pump technicians trained by the project and are satisfied	73% water committees already called the hand pump technician (database)and 66% of them satisfied (field data)
	All hand pump technicians trained and technically supervised by the project	All trained by Osuwela and few need assistance (field data)
	At least 80% of hand pump technicians can make an average of 2 repairs per week and work 11 month per year	All interviewed hand pump technicians said to be available all days of the week and every month of the year (field data)

Is the service provided by the hand pump technicians trained by the project sustainable?	At least 80% of hand pump technician declare satisfactory income by services provided to the water committees,	50% declared satisfactory incomes, estimated incomes quite low (max 10'000 meticas per year) but other sources of income (field data)
	At least 100 paid services provided by year by hand pump technicians	Average of 20 to 30 repairs per year (database and field data)
	At least 70% of hand pump technicians with own transport	Rent motorbike paid by water committee or walk to nearby villages (field data)

The project contributed to the establishment of proximity services of competent hand pump technicians and the demand is high (73% of water committees already called a hand pump technician). Some water committees have difficulty to pay for repair services which can be due to high cost but also lack of transparency which might discourage users to contribute. Furthermore, there is an inequality in the access of repairs services among the water committees, as the cost of the repairs can varies from simple to double according to the mechanic.

The number of hand pumps technicians seems to be excessive, resulting in low rate of activities, although increasing, and low estimated income.

VII.5. Maintenance network – Retailers

Same project indicators than previous chapter

Evaluation questions	Target established for evaluation	Findings
Is the provision of the main spare parts insured by the retailers' network?	At least 80% of the water committees know where the retailers are	100% water committees know where the retailers are (field data))
	Distance between communities and retailers allow round trip within 48h	All water committees met that used retailers' services said it was nearby (field data)
	At least 80% of water committees with money available to pay spare parts	All water committees said having the money to pay the spare parts, confirmed by retailers (field data)
	At least 80% of water committees use retailers' network and are satisfied by the service	100% of water committees already bought spare parts (database)and all interviewed one were satisfied
	All retailers know which spare parts are more requested and never failed to provide the requested products	All retailers know the more requested spare parts and 80% of interviewed retailers had them (field data)
To what extent Is the retailers' network provision of the main spare parts sustainable?	All retailers know suppliers	None knows suppliers (field data)
	At least 70% of retailers have their own supply system from places where there are suppliers	None have their own supply system from places where the suppliers are (field data)
	At least 50% of retailers that renew spare parts without the support of the project	None of the retailers renew spare parts without the help of the project (field data)
	At least 90% of retailers are satisfied by the spare parts business	60% of retailers said to be satisfied (field data)
	All retailers make at least 5000 met benefit per month	Average income of 50 meticais per month (field data)
		Retailers competed by osuwela (field data)

Thanks to the project the water committees have an easy access to affordable spare parts with regulated prices and the demand is high.

If the present system is effective in providing affordable and accessible spare parts to water committees, it is not sustainable for various reasons:

- The retailers that sell only spare parts are economically very fragile and expose to high risk of bankrupt
- They are too small to afford trip to Nampula to renew their stock

- Osuwela doesn't detect their constraints, neither act to strengthen them in terms of business sustainability
- Osuwela is competing with the retailers by selling directly spare parts to water committees and hand pump technicians
- The local formal traders are not encouraged to be part of the supply chain. The regulated prices and Osuwela (ONG) role in supply chain might be among the cause of this disinterest.

VII.6. Osuwela monitoring

Evaluation question	Target established for evaluation	Findings
Does the monitoring done by OSUWELA about pump technicians, shops, water committees allow the detection of failure and on time interventions to remedy?	Indicators provide at least data on retailers and mechanics; distances; which mechanic provided service to which community and when; which community bought spare parts to which shop	Indicators provide data on retailers and mechanics; No data on: distances; which mechanic provided service to which community; which community bought spare parts to which shop
	Monitoring tools are simple	Yes, for retailers and mechanics but too many and complex for water committees
	Data collected at each occurrence by retailers, mechanics and communities, each month by OSUWELA	Data collected at each occurrence by mechanics and each month by OSUWELA from mechanics Osuwela must fill the forms of retailers twice a month, community don't collect data, this is Osuwela that makes evaluations
	One person / week / district for OSUWELA, among routine tasks for the others	One supervisor per district
	Data collected treated every month to detect failures	Data are just partially digitalized and not analyzed
	OSUWELA team confirms that interventions took place on the base of information of monitoring system	Nothing done to detect failure and remedy
	water committees, retailers and mechanics confirm that problems raised are solved	Problems not always reported to Osuwela and Osuwela unable to solve those reported
	OSUWELA has at least one person in each district for the monitoring and one person qualified in hand pump repairs. Financial mechanism allows to cover the costs	Osuwela has required resources

The monitoring undertaken by OSUWELA lacks of efficiency, especially with regard to the water committees. Lot of data are collected which relevance is questionable as they don't really reflect the capacity of water committees to maintain water supply service. Furthermore, data are missing to measure to what extent they benefit from the hand pump technicians and retailers, part of the maintenance network. Therefore, it is impossible to know if the water point functionality is an effect of the maintenance network or is due to other factors.

The data collected are neither treated, neither analyzed, they are not used to detect failure in the maintenance network and remedy.

VII.7. Project M&E system

Evaluation question	Target established for evaluation	Findings
Does the M&E system of the project allow the team to follow the progress (qualitative and quantitative) of out puts, outcomes and impact and is used for improvement when needed?	Capacity of the indicators to measure outputs, outcomes	Rich database with indicators measuring outputs and outcomes
	Capacity of the M&E system to measure the impact	Lack of impact indicators of maintenance component (access to the services by the villages, impact on water-point functionality)
	The data and surveys produced help the team to assess its performance	Confirmed by the team
	project team confirm that they have no difficulty to find data in the data base	
	project team confirms that way the data are presented evidence the progress of activities, outputs and outcomes toward target and that maps evidence their geographical localizations	

The project M&E system allow measuring the progress (qualitative and quantitative) in outputs and outcomes of the hygiene, sanitation and water point construction components, although some indicators related to the quality of sanitation are missing, such as the use and maintenance state of the latrine.

Regarding the maintenance component data are missing to assess the impact on access to the services by the villages, as well as the impact on water-point functionality.

VIII. Recommendations

The recommendations are presented by priority.

VIII.1. Spare parts supply chain

Raise interest of formal shops to supply spare parts in the target districts

The project should adopt a strategy aiming to progressively transfer the supply chain to local formal traders. The strategy could be implemented first in high demand districts (ex: Monapo) and consist in:

- Identifying formal traders that use Nampula suppliers.
- Selecting interested traders through individual meetings to present the potential market (number of water committees in the district, retailers' network, spare part demand); the spare part suppliers in Nampula and get their feedback regarding their interest in being part of the supply chain
- Propose to the selected traders a stock of spare parts at credit, so they can assess concretely the benefit they can get
- Jointly monitor the sales and assess their interest to continue on their own.

Those traders would be the local suppliers to a network of retailers nearer of water committees.

Review the strategy for retailers' spare parts network

In addition of main suppliers that bring spare parts in the districts, there is a need of a network of retailers easily accessible by water committees. Two options are possible:

1. Maintain the present small retailers established in villages near the water committees, which will require specific activities to strengthen them (see below)
2. Use medium size retailers well established, but further to the water committees

Option 2 suppose the existence of medium size retailers distributed in at least three or four different locations within a district.

The strategy to adopt for the establishment of the network of retailers could be as follow:

- Identify and map existing well established medium size retailers in each district
- Assess the potential sustainability of the small retailers already belonging to the maintenance network base on criteria such as the estimated level of income of the surrounding area, the years of experience in commercial activities before including the maintenance network, their performance since they are in the network (ability to renew their stock without asking credit, etc.)
- On the base of the findings, determine the more appropriate option. Where the small retailers are potentially sustainable, they should be maintained and strengthen and it is better not to add medium size retailers. Where the small size retailers are weak and it exists enough medium size retailers, it is better to substitute the small by the medium, after confirming their interest. Where there are only small retailers, maintain and strengthen them.

Review Osuwela role regarding retailers' network

The role of Osuwela in strengthening the maintenance network is not very effective and it cannot be considered as a sustainable spare parts supplier, as it is not a trader.

Once the strategy regarding the retailers' network determined, Osuwela could play a role in establishing new retailers in the network. However, its intervention must be framed either by clear terms of reference establishing the objectives, expected results and respective indicators, either by precise deliverables.

Strengthen the small retailers

Should the maintenance network include small retailers, there is a necessity to strengthen them by helping them to diversify the items sold, that should not be limited to hand pump spare parts, but also include basic products. As far as possible they should be located in area where some households have wealth (lot of cashew nuts trees, gold extraction, salary, etc.).

The support to diversify their items could be done by punctual cash transfers that would allow them to purchase new products to sell. In parallel, they should be capacitated in business management and links with the spare part supplier should be established to allow them to renew their spare parts stock on their own. Those activities could be implemented by a local NGO.

Community saving groups could be formed in villages where retailers are, that they could join to increase their business. A partnership with Ophavela; an experienced local NGO on that matter, could be established for that purpose.

VIII.2. Hand pump repair services

The cost of repair services should be regulated

Repairs services cost should be regulated by prices table, in agreement with SDPI, insuring transparency, equity of access and confidence of the users.

The process of determining the cost of different kinds of repairs should be undertaken in a workshop with hand pump technicians and SDPI.

The transport costs should also be regulated. A price per kilometer could be established, from 5 km above, based on the cost of rented motorbike for example or the cost of fuel. Under 5 km no transport cost should be refunded. The cost should be the same whatever the transport means actually used.

The prices table should include a warning advising the water committees to check that the hand technician fee and transport cost is actually indicated in their quotes and the monitoring of the hand pump technician should check that they systematically indicate their fee cost in the quotes.

The prices table should be distributed to the water committees. As the team doesn't reach all of them the forms could be made available at the spare parts shops for example.

Prices regulation will avoid the application of excessive costs by some hand pump technicians. Added to higher transparency that might reduce payment difficulties, as the users would be more willing and able to pay.

Some mechanics might not appreciate this measure, but as they are too many, that won't have negative incidence if some resign.

Raise awareness of water committees on quality and cost of repairs services

As there are hundreds of water committees in each district, it is impossible to work with all of them. A sample of around 20 villages distributed within each district should be selected for awareness raising and monitoring purposes. It exists lot of exchanges among villages and it can be expected that the outcomes of interventions reach other villages.

The water committees awareness raising could include the following:

- Content of the quote made by the hand pump technicians, specifically the line related to the hand pump technician fee. They should be instructed to check that the fee and transport costs are indicated in the quote.
- Costs of repairs and transport.
- Specific prejudicial repair practices, in order to allow them to detect hand pump technicians with low competencies. They should be instructed to prevent the hand pump to implement those practices and inform the project technician.

Encourage the hand pump technicians to present themselves in the villages

The project could encourage the hand pump technicians to present themselves in the villages to be better known. However, it should be clear that it should be at their own cost as an investment in publicity to increase their business. They should be advised to do so rather at the end of the rainy season, when the village have money available.

Revise Osuwela role regarding repair services

The hand pump technicians don't really need systematic supervision by Osuwela. As mentioned above, the water committees will be instructed to inform Inter Aide in case of bad practice. Only those mechanics would need some capacity building, which could be done by Inter Aide technician.

Osuwela could be involved in the water committees awareness raising. But the sample of water committees should be established by Inter Aide.

VIII.3. Maintenance monitoring

Develop and collect maintenance network result and functioning indicators

The maintenance system monitoring should provide data on the knowledge the water committees have of the maintenance network, their use and satisfaction of the maintenance network, as well as the services provided by each hand pump technician and retailers.

One notebook filled at each occurrence and kept by each stakeholder should be preferred to various single forms collected monthly. Like that each of them detain evidences of their use or contribution to the maintenance network. The one for the retailers should be adapted for illiterates. Those note book must be filled by each stakeholder at each occurrence.

The notebook already used by the hand pump technician is adequate and could be maintained.

The other notebooks must be very easy to fill, with only relevant data, to be filled at each occurrence. the one for water committee could just indicates the date the pump broke down and the date it was repaired. That will allow knowing the time it took to fix the pump and hence the performance of the water committee in water supply service. The notebook for retailers could just indicate the name of the village that bought spare parts and the date, allowing to know how many villages are using its service.

The supervisors would use data collection tool to transcribe the data recorded in the notebooks.

Data to collect from the retailers: villages that bought spare parts and date

Data to collect from hand pump technicians: villages where they made repairs, big or small repair and date

Data to collect from water committees: date of pump break down; date the hand pump is repaired.

Those data would be digitalized and treated in order to provide the following information:

Use of network by water committees:

- Nb of villages that buy spare parts to network retailers

- Nb of villages that use hand pump technicians

Retailers performance:

- Nb of villages buying spare parts at each retailer

Hand pump technicians performance

- Nb of villages where each hand pump technician made repairs

Water committees performance:

- Duration of hand pump breakdowns

The hand pump technicians, retailers and water committees should be aware that the objective of the data is to detect their good or weak performance in order to form groups for exchange of experiences among them.

In complement, for deeper analysis, water committees maintenance capacity indicators (Vlom test) can be collected with lower frequency. The data collected during the Vlom test should be completed with the following ones:

- If they know hand pump technician (even without having called any) and his name
- The name of the hand pump technician that repaired they pump
- If he provided a good service
- The name of the spare parts retailer they know
- The name of spare parts retailer where they bought spare parts
- If it had the spare part or had to order it

Osuwela could be in charge of the maintenance network monitoring with the above-mentioned tools that should be elaborated by Inter Aide. Osuwela could capacitate the water committees and retailers in the way to fill the monitoring notebook (it will be the same for the hand pump technician, so no need of capacitation) and collect the data twice a month among the small retailers and once a month among the medium size retailers, the water committees and mechanics with the data collection forms.

Inter Aide could provide Osuwela with Excel tables formatted for efficient data digitalization and treatment.

Organize exchange of experience between stakeholders, as a way of overcoming constraints

The data collected will allow assessing the rate of activity and geographical coverage of hand pump technicians; the sales frequency of the retailers; the frequency of breakdowns and the water committee capacity to repair the pump in a short time, hence detecting the weaker and the stronger.

Exchange of experience among each category of stakeholders could be organized, aiming to help the weaker to benefit from the strongest who will share their experience. That should be organized by the project but the role of the project should be limited to facilitation of communication among them. The groups should not exceed 10 to 15 persons from the same category (hand pump technicians only, water committees only or retailers only), half weak and half strong. It is important that they feel free to speak, therefore it is advisable not to invite SDPI at those meetings.

The capacitation of the water committee by the project should be limited to the one benefiting from a new pump, assuming that the others were already capacitated at the time they received their pump. The exchange of experience will be the opportunity for those with difficulties to strengthen their capacity from explanations shared by other water committees regarding the way they succeed to have good performance.

VIII.4. Hygiene

Propose more durable models for hand washing system

The target population is willing to adopt good hygiene practices but face difficulties due to the rapid deterioration of hand washing systems, the tendency of children to take them to play, added to the difficulty to find material (building wood).

The strategy for the hand washing system could be similar to the one used for latrine. The project could propose the help to construct a durable support in cement for Tippy Tap system, against the following condition: that they provide a 20-liter jerrican and a resistant stick. That could be implemented at the same time than the latrine activity.

Reduce the length of hygiene committee training

Presently the health committees' members receive a training in 7 sessions, which is justified by the monitoring and advices they are supposed to implement after the end of the project. However, experience shows that hygiene committees are not very active once on their own.

The training of hygiene committee is still relevant as it let knowledge related to hygiene and sanitation in the communities but the capacitation could be reduced to no more than 3 or 4 sessions, focusing on hygiene practices and advices they could provide.

VIII.5. Sanitation

Better inspection of the quality of superstructure

The households are required to build strong superstructures as one of the conditions to access improved latrine, but it has been noticed that this is not always the case.

The project team should be capacitated in evaluating building quality criteria.

Identify households with constraints

Some households can face specific constraints which are not detected by the hygiene committees, such as reduced space to make latrine; not being the owner of the house; having too sandy soil or high-water table, that prevent them of building latrine.

The project could ask the hygiene committees to identify households with constraints (not limited to old and deficient households as they are doing presently) and find appropriate solutions for those residents.

Partnership with INAS to target vulnerable families for improved latrines access

This is difficult for the project to directly support vulnerable families, as that could have incidence on the effectiveness of the approach. Although some hygiene committees help those families to comply with the conditions imposed by the project, the quality of their contribution is not satisfactory.

The project could partnership with INAS so that institution could provide a specific support to vulnerable families. INAS is an institution supporting specifically vulnerable families, therefore working with that institution would allow an intervention targeting vulnerable families without demotivating the others. The maximum number of families that can be assisted by village should be determined (ex:10 to 15).

The vulnerable families could receive funds from INAS (National Institute for Social Actions) to pay workers to build their latrines with strong superstructures.

INAS role would be to:

- identify the beneficiaries (old and deficient people, women alone)

- determine their needs which could be limited to make gravels or include all the conditions imposed
- establish agreement for payment to allow them to pay workers, against determined outputs with specification regarding quality.

Encourage latrine privacy

The households make superstructures as asked to get an improved latrine, but they are made of local material, hence sooner or later deteriorate and the latrines are without privacy in the middle of the village. The condition of building a strong superstructure by the project will only increase the time it takes to collapse. All building made of local material require important maintenance to resist the heavy rains and it is probable that the households effort are focused on the maintenance of the house rather than the latrine.

Privacy is a minimum condition to encourage the use of latrine by all households' members. It is important to insist on the necessity to have at least a fence with straw when the superstructure collapse.

VIII.6. Project M&E system

Adopt indicators on the quality of sanitation

For the pre and post PHAST surveys, the following indicators could be added:

- If the slab is in good state (easy to use)
- If the latrine is used
- If it is clean (without visible excrement)
- If all households' members are using it
- If the superstructure provides privacy
- If there is a hand washing system functioning, with water and soap or ash near the latrine

Anexe1 ToR

Annex 2 Evaluation matrix

	n.	Evaluation questions	OECD criteria	Judgment criteria	indicators	target	Source of information
Hygiene promotion	**1**	To what extent the adoption of adequate hygiene practices is effective and durable and the good diffusion of the messages will continue beyond the intervention?	Effectiveness Sustainability Impact	Beneficiaries' remembering of key messages and their link with good health few years after intervention	Ratio of beneficiaries able to remember key messages related to hygiene and knowing that they contribute to reduce water borne disease prevalence	at least 70 % able to remember at least 3 key messages and knowing that they contribute to reduce water borne disease prevalence	HH
				Adoption by beneficiaries of adequate hygiene practice few years after intervention	Ratio of beneficiaries conserving water to drink in safe place, using it with 2 glaces, with functional and in use hand washing system with running water , soap or ashes near the latrine	At least 70% conserving water to drink in safe place, using it with 2 glaces, with functional and ii use hand washing system with running water , soap or ashes near the latrine	database, HH , observation
				Competency and commitment of local actors	Ratio of community with local actor /hygiene committees demontrating an undertanding of waterborne diseases transmission, collecting hygiene related data at HH level at least once a month and providing advices	All communities have local actor /hygiene committees demontrating an undertanding of waterborne diseases transmission, collecting hygiene related data at HH level at least once a month and providing advices	hygiene committees, HH
Sanitation	**2**	Was the training to build latrine and conditions imposed made by the project effective? what are the explanations why some household didn't adopt the approach? How could it be possible to overcome it?	Effectiveness Effeciency Impact	Ratio of households trained in latrine construction that actually built an improved latrine	% of trained HH that have improved latrine	At least 70% of households are equipped with an improved latrine in targeted villages	Database
				Ratio of households with improved sanitation and hygiene	% HH with latrine, use it, maintain it clean, cover the hole and with functional hand washing system near the latrine with running water, saop or ash	at least 85% HH with latrine, use it, maintain it clean, cover the hole and with functional hand washing system near the latrine with running water, saop or ash	Database, HH

	n.	Evaluation questions	OECD criteria	Judgment criteria	indicators	target	Source of information
Sanitation	**3**	To what extent the approach used to train and support families to improve their sanitation has an effect on the sustainability of sanitation ? Are the Conditions imposed to the communities sufficient enough for construction of long lasting latrines ?	Sustainability Impact	Importance given to sanitation by HH	Ratio of HH that maintain latrine and superstructure in good state and make reparation when needed	At least 80 % of HH maintain latrine and superstructure in good state and make reparation when needed	HH
	4	To what extent the strategy adopted to improve sanitation was appropriate for the more vulnerable?	Relevance	Capacity of the more vulnerable families to satisfy the conditions imposed	Ratio of vulnerable famillies that succeeded to satisfy the conditions imposed	at least 90% of vulnerable famillies succeeded to satisfy the conditions imposed	Vulnerable families
					Ratio of communities with support system to help vulnerable families	In each community there is a effective and adequate support in place	Hygiene committees, leaders
Water point construction	**5**	Did the technical options choosen for water points constructions result in water supply services reliable, acceptable, affordable and available?	Relevance Effectiveness Impact	Criteria used to choose the localization of the water points	Ratio of water points which sitting selected on the base of a combination of technical criteria and beneficiaries consultation	At least 90% of water points' sitting selected on the base of a combination of technical criteria and beneficiaries consultation	Community leaders, project staff
				professionalism of design and construction phase	Ratio of water points constructed and supervised by professionals	All water points constructed and supervised by professionals	Progress reports, interviews project staff
					water points look solid	all water points look solid	Observation
					Ratio of functional water points	At least 90% of water points are functionning	observation
				Quality of the water supply service	Average distance between users' residences and protected water points compared to unprotected water sources	The average distance between users' residences and protected water points doesn't exceed 200m and is at least 1.5 time less far than unprotected water source	Project surveys
					Frequency of breakdowns	There is less than two breakdowns	water committees

							per year at all water points	and HH

	n.	Evaluation questions	OECD criteria	Judgment criteria	indicators	target	Source of information
Water point construction		Did the technical options choosen for water points constructions result in water supply services reliable, acceptable, affordable and available? (cont.)		Quality of the water supply service	Pressure of water flow	all water points have water pressure of more than 900l/h (0.9 m3/h)	database
					water quality	water quality of 90% of protected water points built is correct (turbidity / coliform rate)	database and analysis reports
					Protection of water source	all water points have catchment protection	Field observation
						There is no latrine at less than 50m	Field observation
					Ratio of population using the water point and satisfied by the service	At least 90% of HH are using the water point and 80% are satisfied	water committeees and HH interviews
Maintenance	**6**	Are the hand pump technicians trained by the project providing satisfactory reparation service at the water points?	Sustainability Effectiveness Impact	Awareness of the water committees about the existence of the hand pump technicians	Ratio of water committees aware	At least 80% of water committees aware	interview of water committees, OSUWELA team
				capacity of water committees to mobilize them quickly	Ratio of water committees that have the phone number / know where the mechanics are	At least 80% of water committees have the phone number/ know where the mechanics are	interview of water committees
					Ratio of communities with a mechanics close enough	Distance between communities and mechanics allow round trip within the day	maps, interview of water comittees,mechanics and OSUWELA team
				Capacity of the water committees to afford the hand pump technician services	Ratio of water committees that have the money available to pay for the service	At least 80% of water committees with money available to pay services of mechanics	project surveys and interviews of water committees and mechanics

	n.	Evaluation questions	OECD criteria	Judgment criteria	indicators	target	Source of information
Maintenance		Are the hand pump technicians trained by the project providing satisfactory reparation service at the water points? (cont.)		Competencies of the hand pump technicians	Ratio of water committees that use the services of hand pump technicians trained by the project and are satisfied	At least 80% of water committees use the services of hand pump technicians trained by the project and are satisfied	Interview of water committees, mechanics
					Ratio of hand pump technicians trained and technically supervized by the project	All hand pump technicians trained and technically supervized by the project	interview of OSUWELA team and mechanics
					ratio of hand pump technicians that can make an average of 2 repairs per week and work 11 month per year	At least 80% of hand pump technicians can make an average of 2 repairs per week and work 11 month per year	interview mechanics
	7	Is the service provided by the hand pump technicians trained by the project sustainable?	Sustainability	Strength of the link between water committees and handpump technicians	Ratio of water committees with written and signed roles and responsibilities among parties in service delivery	At least 80% of water committees with written and signed roles and responsibilities among parties in service delivery	Interview of water committees, mechanics and OSUWELA team
				Profitability of the reparation service business	Ratio of hand pump technician that declare satisfactory income by services provided to the water committees	At least 80% of hand pump technician declare satisfactory income by services provided to the water committees	mechanics
					Average number and cost of paid services provided by year by hand pump technicians	At least 100 paid services provided by year by hand pump technicians	Interview of mechanics OSUWELA data base
				Capacity of the hand pump technician to reach the communities	Ratio of hand pump technicians with own transport	At least 70% of hand pump technicians with own transport	Interview of mechanics
	8	Is the provision of the main spare parts insured by the retailers' network?	Sustainability Effectiveness Impact	Awareness of the water committees about the localization of spare parts retailers	Ratio of water committees which know where the retailers are	At least 80% of the water committees know where the retailers are	interview of water committees, OSUWELA team
				Capacity of water committees to reach them quickly	Ratio of communities with a retailers close enough	Distance between communities and retailers allow round trip within 48h	maps, interview of water comittees and OSUWELA team

	n.	Evaluation questions	OECD criteria	Judgment criteria	indicators	target	Source of information
Maintenance		Is the provision of the main spare parts insured by the retailers' network? (cont.)	Sustainability Effectiveness Impact	Capacity of the water committees to afford the spare parts	ratio of water committees with money available to pay spare parts	At least 80% of water committees with money available to pay spare parts	project surveys and interviews of water committees and retailers
				Quality and reliability of the service provided by the retailers	ratio of water committees that use retailers' network and are satisfied by the service	At least 80% of water committees use retailers' network and are satisfied by the service	Interview of water committees, retailers and OSUWELA team
					Ratio of retailers that know which spare parts are more requested and never failed to provide the requested products	All retailers know which spare parts are more requested and never failed to provide the requested products	Interview of retailers, water comittees mechanics
	9	To what extent Is the retailers' network provision of the main spare parts sustainable ?	sustainability	capacity of the spare parts retailers to maintain availability of required spare parts without the support of the project	Ratio of retailers that know suppliers of spare parts	All retailers know suppliers	Interview of retailers
					Ratio of retailers that have their own supply system from places where there are suppliers	At least 70% of retailers have their own supply system from places where there are suppliers	Interview of retailers
					Ratio of retailers that renew spare parts without the support of the project	At least 50% of retailers that renew spare parts without the support of the project	interview of retailers and OSUWELA team
				Benefit of the spare parts business	Ratio of retailers that are satisfied by the spare parts business	At least 90% of retailers are satisfied by the spare parts business	Interview of retailers
					Average number of spart parts sold by month / income	All retailers make at least 5000 met benefit per month	Interview of retailers
	10	Does the monitoring done by OSUWELA about pump technicians, shops, water committees allow the detection of failure and on time interventions to remedy?	Sustainability	capacity of OSUWELA monitoring system to provide relevant data	Information provided by the indicators	Communties, retailers and mechanics part of the network; distances; which mechanic provided service to which community and when; which community bought spare parts to which shop	database
				Efficiency of data collection mechanism	carateristic of data collection tools	monitoring tools are simple	tools used and interview with OSUWELA team

	n.	Evaluation questions	OECD criteria	Judgment criteria	indicators	target	Source of information
Maintenance		Does the monitoring done by OSUWELA about pump technicians, shops, water committees allow the detection of failure and on time interventions to remedy? (cont.)		Efficiency of data collection mechanism	frequency of data collection	Data collected at each occurrence by retailers, mechanics and communties, each month by OSUWELA	interview of OSUWELA team, mechanics, retailers, water committees
					human resources mobilised for data collection	one personn / week / district for OSUWELA, among routine tasks for the others	interview of OSUWELA team, mechanics, retailers, water committees
				Effective use of the information of the monitoring system to plan support activities	Effectiveness and relevance of data analysis	Data collected are treated every month and the results allow to detect failures	data treatment reports and interview of OSUWELA team
					Interventions that took place on the base of the information provided by the monitoring system	OSUWELA team confirms that interventions took place on the base of information of monitoring system	interview of OSUWELA team
						water commitees, retailers and mechanics confirm that problems raised are solved	interview of retailers, mechanics, water committees
				Capacity and competency of OSUWELA for required interventions	HR for the monitoring and field inspections, transport for field inspection, financial mechanism to cover the costs	OSUWELA has at least one personnin each district for the monitoring and data treatment and field inspections and one personn qualified in hand pump repairs for trainning and supervision , there is at least one car in each district for field inspections, the financial mechanism allow to cover the costs	interview of OSUWELA team

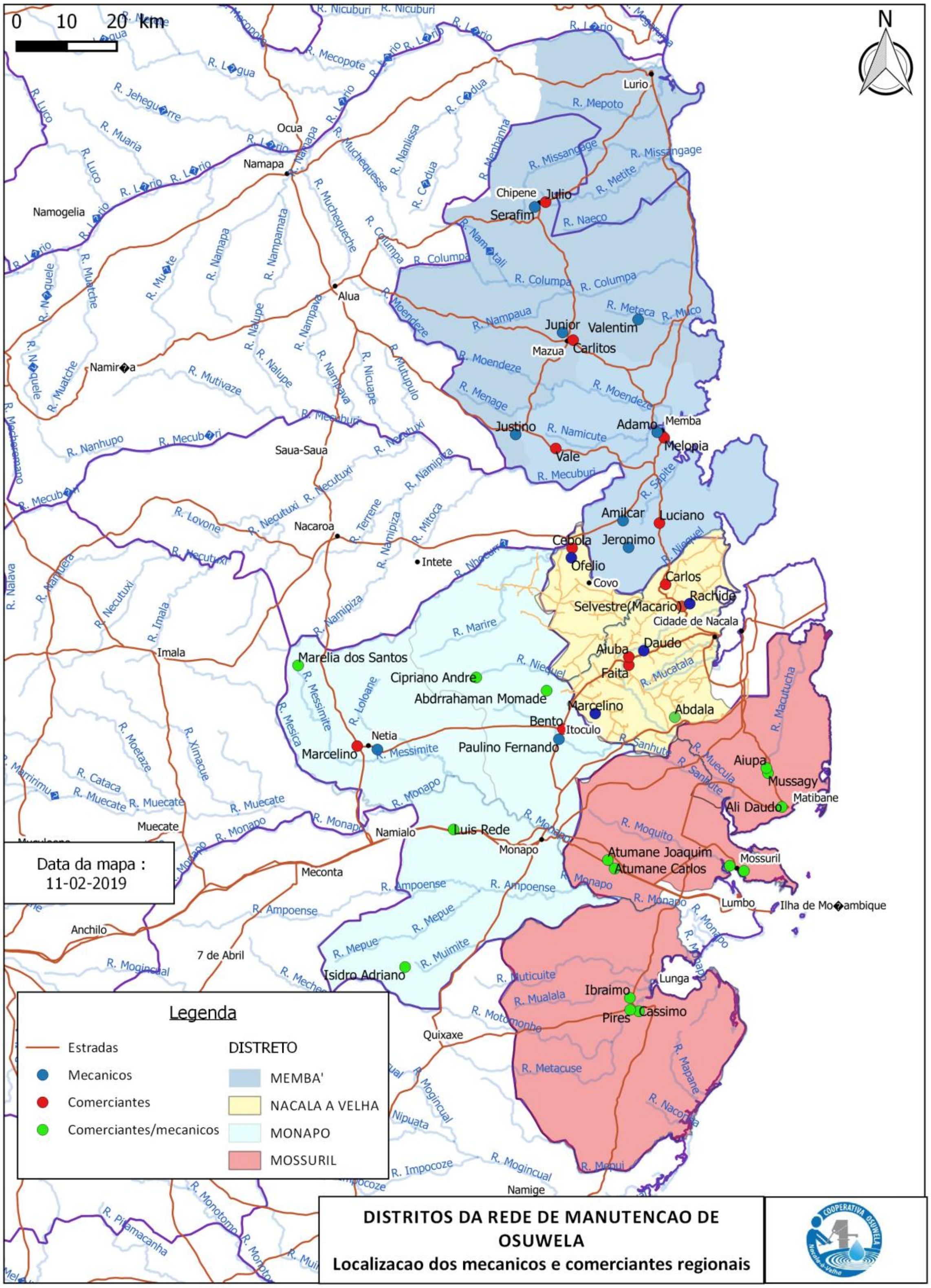
	n.	Evaluation questions	OECD criteria	Judgment criteria	indicators	target	Source of information
enanc	11	To what extent capacitated district	Sustainability	link established between the SDPI and the	district water institution has updated information regarding the water		Interviews of OSUWELA

		water technicians and local institutions linked with maintenance networks provide support?		maintenance network	committees performance and the maintenance network		team, SDPI
				District water institution's understanding of its role	District water institution monitors the effectiveness of maintenance system of the water points, insure coordination among partners' interventions and provide assistance when needed		Interview of SDPI and OSUWELA
M&E	**12**	Does the M&E system of the project allow the team to follow the progress (qualitative and quantitative) of outputs, outcomes and impact and is used for improvement when needed?	Efficiency	Capacity of the M&E system to provide relevant data	Capacity of the indicators to measure outputs and outcomes	The indicators allow to follow where and when the activities of each component are implemented and allow to measure the number of personns, HH reached by outputs and outcomes of all components in each community	Project database
					Capacity of the M&E system to measure the impact	impact indicators are established (functionalty of water points, ratio of HH using safe water, diarea prevalence, etc) and the M&E system evidence the outcomes and impact per village	
				Relevance of the data collection strategy	Frequency of data collection, usefullnesse of the surveys to assess the impact	The data and surveys produced help the team to assess its performance	analysis of the data,surveys, interview of the team
				capacity of the data base to evidence progress, outcomes and impacts	easyness to use the data base and find information	project team confirm that they have no difficulty to find data in the data base	Database + interviews of team
					Visibility of evolution of outputs, outcomes andd impacts	project team confirms that way the data are presented evidence the progress of activities, outputs and outcomes toward target and that maps evidence their geographical localizations	Database + interviews of team

Annex 3 Sources of information

	Source of information	Project componente						
		Hygiene promotion	Sanitation	Water point construction	maintenance /mechanics	maintenance / retailers	OSUWELA monitoring	M&E
Memba	HH							
	Vulner. families							
	Community leaders							
	Hygiene committees							
	Water committees							
All districts	Mechanics							
	Retailers							
	Water committees							
Project team	IA manag. team							
	OSUWELA manag. team							
	OSUWELA supervisors							
	OSUWELA mechanics' trainers							

Annex 4: map of hand pump technicians and retailers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11-02-2019
Legenda
Estradas
Mecanicos
Comerciantes
Comerciantes/mecanicos
DISTRETO
MEMBA'
NACALA A VELHA
MONAPO
MOSSURIL
DISTRITOS DA REDE DE MANUTENCAO DE OSUWELA
Localizacao dos mecanicos e comerciantes regionais
Lurio
Ocua
Namapa
Namogelia
Chipene
Julio
Serafim
Alua
Junior
Valentim
Mazua
Carlitos
Justino
Vale
Adamo
Memba
Melonia
Saua-Saua
Amilcar
Luciano
Nacaroa
Cebola
Jeronimo
Intete
Ofelio
Covo
Carlos
Rachide
Selvestre(Macario)
Cidade de Nacala
Imala
Aluba
Daudo
Faita
Marelia dos Santos
Cipriano Andre
Abdrrahaman Momade
Marcelino
Abdala
Bento
Itoculo
Netia
Marcelino
Paulino Fernando
Aiupa
Mussagy
Matibane
Ali Daudo
Muecate
Namialo
Luis Rede
Monapo
Atumane Joaquim
Atumane Carlos
Mossuril
Meconta
Lumbo
Anchilo
7 de Abril
Isidro Adriano
Lunga
Ibraimo
Pires
Cassimo
Quixaxe
Namige
R. Lurio
R. Mepoto
R. Missangage
R. Metite
R. Naeco
R. Columpa
R. Nampaua
R. Meteca
R. Muco
R. Moendeze
R. Menage
R. Namicute
R. Mecuburi
R. Sanhute
R. Monapo
R. Moquito
R. Mucatala
R. Macutucha
R. Marire
R. Niequel
R. Messimite
R. Muecate
R. Ampoense
R. Mepue
R. Muimite
R. Mualala
R. Metacuse
R. Mapane
R. Mogincual
R. Impocoze
R. Nanhupo
R. Lovone
R. Namipiza
R. Mitoca
R. Terrene
R. Imala
R. Nacutuxi
R. Mutivaze
R. Nalupe
R. Nicuape
R. Mutupulo
R. Nampaua
R. Namapa
R. Muatche
R. Cataca
R. Ximacue
R. Moetaze
R. Mesica
R. Loloane

Annex 5 – Persons met

Inter Aide

Simone Menicocci – Program manager Nampula province

Annalisa Giordano – In charge of water committees and maintenance Nampula province

Mathieu METOIS – Inter Aide Paris

Olivier Celaries – Inter Aide Paris

Gamito Nicura – Program manager assistant Memba

Osuwela

Emelda Francisco -Supervisor Nacala a Velha

Jacinto Julião Felix 6 Supervisor- technician Nacala a Velha

Angela António Namfuifa – Supervisor Çonapo

Octávi Justino – Supervisor Mossuril

Fernando Simpai Macute – Coordinator Nacala a Velha

Hand pump technicians

Abdala

Paulino Fernando

Daude

Adriano

Adamo Ussene

Jeronimo

Amilcar

Justino Senastião

Retailers

Abdala

Ramadane

Bento

Aiuba moeneira

Carlos Gabriel

Luciano

Vale