

InterAide Support to Operation and Maintenance of Rural Water Supplies in Malawi in 2008



Contents

1	Introduction	3
2	Shops Selling Handpump Spare Parts	3
2.1	Chipiku Stores.....	3
2.2	Independent Shops – Already Stocking Spares.....	5
2.3	Independent Shops – Newly Trained	5
2.4	Mchinji example	5
3	Area Mechanics	6
3.1	Description of Area Mechanic System.....	6
3.2	Example of Mchinji.....	7
4	Replication in Dowa and Salima	8
5	Project Achievements	8
6	Resource Requirements	9
7	Challenges	9
8	Future	9

Note: Exchange rate: \$1 =145 MWK (Malawi Kwacha)

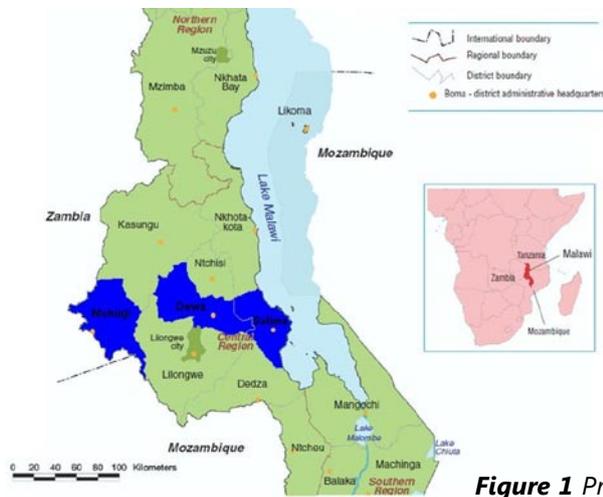


Figure 1 Project Area

1 Introduction

Malawi, located in southern Africa prides itself in being the Warm Heart of Africa. Flanked by the expanse of Lake Malawi along much of its eastern border, Malawi is surrounded by Tanzania, Zambia and Mozambique. Malawi has an estimated population of 13.2 million of which 80% live in rural areas and generally practice subsistence, rain-fed agriculture.

The main improved rural water supplies in Malawi are boreholes installed with handpumps, shallow wells fitted with handpumps and piped gravity fed schemes (GFS). Unimproved sources comprise unprotected springs, streams, rivers and shallow open wells. Coverage of improved water supplies in rural Malawi is estimated to be 71% (UNICEF, 2006b), which is reasonably high for the region ie Tanzania 46%, Mozambique 26%, Zambia 41% (WHO/UNICEF 2006 JMP Data). However, it is estimated that 31% of the improved rural water points are not functioning, thus effective coverage is reduced to 55%¹.

There has been recognition by Government that significant efforts need to be made to harmonise the wide range of approaches to operation and maintenance of rural water supplies, and to significantly improve the access to spare parts by water users. In addition, concerns have been documented regarding untrained and water point committees; poor quality of maintenance services and spare parts; inadequate financing mechanisms; lack of capacity to manage and undertake repairs which are beyond the capacity of local communities (Rural Water Supplies Sector Investment Programme, MoIWD, 2008).

The NGO InterAide has experience of supporting operation and maintenance of rural water supplies. Initiatives started in 1999 in Lilongwe and Zomba districts where there are now a total of 59 shops selling handpump spare parts and 84 private sector area mechanics repairing handpumps. Based on these fruitful experiences InterAide started (first with European Union funds, then with Pro Victimis Foundation funds) a new Operation and Maintenance project in 2008 in the three districts of Mchinji, Dowa and Salima located in the central region of Malawi (Figure 1). As about 80% of handpumps installed in Malawi are Afridev, InterAide decided to initially focus on this hand pump.

This report provides a description of the project, including the financial and human resource inputs.

It is widely recognised that the availability of hand pump spare parts is key for water point maintenance and that there is often lack of knowledge in committees to maintain and repair their handpumps. In light of these two issues the project comprised two components:

- Ensure that spares are available through existing local shops
- Train and equip technical specialists (called Area Mechanics) to provide repair or maintenance services to these communities.

These components are linked together. Area Mechanics cannot work without spare parts and shops do not sell spares if the Area Mechanics are not active and efficient.

A third aspect of the project is follow-up, in a cost-effective manner. In each district, one InterAide Maintenance Assistant is present and equipped with a motorcycle. InterAide has also tried to cooperate with the Government, to support it to take the lead when the project ends. In the three districts, the Maintenance Assistant office is located in Government premises. The InterAide head office in Lilongwe provides backstopping support and follow-up of the Maintenance Assistance and to the spare parts dealers.

2 Shops Selling Handpump Spare Parts

In order to be as sustainable as possible, the project tried to work with existing handpump spare parts distributors. Indeed, challenging existing shops selling spare parts could make them stop this essential activity. Thus, the Chipiku stores chain and some independent shops in the three Districts were approached. Areas which were not previously covered by spare parts suppliers were identified. In these locations, potential spare parts dealers were identified, shopkeepers were trained and supplied with spare parts by the project.

¹ Assuming that 19,404 out of 24,679 handpumps (serving 250 people each) are functional and 6,050 out of 12,456 taps (serving 120 people each) are functional. Rural Population is 10,174,802.



Figure 2 Chipiku Manager in Kamwendo Stands at the Old Afridev Price Board



Figure 3 Chipiku Store in Kamwendo



Figure 4 Display Shelf for Afridev Spares

2.1 Chipiku Stores

Chipiku Stores is a rural based business, with 77 branches located in all of Malawi's 29 Districts. The stores have been around for about 50 years and were initially "run like a Government Department" under the Dr Banda regime. Seven years after the Malawian economy was liberalised in 1994, Chipiku went bankrupt and was sold to the current shareholders (Chitsime drilling and South African companies)

Chipiku has a history of stocking Afridev spare parts, which started back in 1988. Display boards (Figure 2) were an integral part of the wares sold throughout the country. The spare parts were reintroduced in 2003, seen more as a community help, than a highly profitable initiative. The Malawi Government provided Chipiki with a recommended list of spares (40,000 items) which were procured for sale through the chain of stores.

However, soon afterwards, UNICEF provided free spares for distribution through District Assemblies. Some of these have been distributed freely by the District Water Offices, with some apparently also sold. Trying to compete with free and lower cost spares was not easy for Chipiku.

Up to 2006, all imports into Malawi were subject to pre-shipment inspection. This guaranteed a certain quality, including hand pumps and spares which is no longer the case.

The main challenge faced by Chipiku has been getting the spares from the shop level to the village.

Today, Chipiku managers are still very motivated to sell Afridev spare parts even if this is a small part of their business for them. Stocking handpumps spare parts is a tradition. It helps communities, which also promotes the chain of stores. In addition, as a main shareholder Chitsime, as a driller can readily import spares straight from India.

In order not to challenge the Chipiku activities selling Afridev spare parts, the InterAide project decided to not to compete with them:

- Geographically i.e. No shop opening at 20km or less from a Chipiku store (see Mchinji, Dowa and Salima maps in Figures 7, 10, 11).
- Prices policy i.e. InterAide project spare parts prices will be equal or higher than Chipiku prices to avoid people moving to get better prices.

In exchange of for not challenging them, Chipiku managers agreed to do their best and to work with InterAide to make the spare parts available for the communities. They thus agreed on a minimum stock of spare parts to be present in each store.

In order to improve Chipiku service, the project focused on three aspects as follows:

Spare part availability

Sometimes, Chipiku stores have spare parts shortages. As the InterAide central office, including handpump spares depot, is in Lilongwe (close to the Chipiku warehouse), the project has weekly contact with the Chipiku Regional manager to check supplies. If there is a shortage, InterAide immediately supplies Chipiku to fill the gap. For example, in September and October 2008, InterAide provided 500 Afridev U-seal to compensate shortages due to problems at the border on five occasions.

Some spare parts which are important for communities (such as double-end socket, solvent cement, galvanized rods and PVC pipes were previously not sold by Chipiku stores. After some dialogue with Chitsime the following was achieved:

- Double end socket and PVC pipes are now supplied by Chitsime to Chipiku.
- InterAide has temporarily provided solvent cement to the Chipiku warehouse and informed Chitsime on where to procure it so they can supply directly to Chipiku.
- Galvanized rods will not be supplied in the short term as Chitsime has plenty of stainless steel rods in stock and wants to sell them.

Delegate training

To improve Chipiku promotion to the communities, one delegate of each Chipiku store in InterAide's working areas has been trained (ie 4 in Mchinji, 6 in Dowa and 3 in Salima). These trainings have provided guidance in selling Afridev spare parts and created relationships between the Chipiku staff and InterAide Maintenance Assistant, who visits the store for monitoring and advice on spare parts stock management.

Advertising

In order to help Chipiku to conduct spare parts sales, a display shelf has been provided to each shop (Figure 4).



Figure 5
Advertising Poster
for Afridev

Figure 6
Display Shelf
with Prices
and Spares



AFRIDEV		MAY 2008 Prices	
Starter pack			
	Number	Unit price to the shops (K)	Total value (K)
Blue book (Lite)	3	105	315
U-seal	15	48	720
O-ring	10	37	370
Bobbin	5	68	340
Rod Centralizer	10	115	1 150
Double end socket	2	210	420
Cup seal	1	88	88
Bush bearing	8	153	1 224
Plunger body plastic	1	720	720
Mid steel pump rod	1	1 300	1 300
PVC pipe	1	1 310	1 310
Solvent cement (200ml)	2	350	700
Fulcrum pin	1	1 080	1 080
Bolts and Nuts 12 * 40	4	60	240
Total			9 977

Table 1 Afridev Price
List (for communities)

Fliers (500 to each shop) with spare parts prices on one side and information about the Area Mechanics situated around the store on the other side were provided. These are essentially for Area Mechanics. The Chipiku stores are already well known by the communities for selling spare parts. However because of frequent spare parts shortages, some communities have sometime lost confidence in spare parts availability. The fliers are intended to boost confidence thus improve the spare parts sales.

The strength of the Chipiku stores is that they are well known by the communities and are located in large trading centres throughout the country. Their power of sale is considerable compared with other small shops which have been encouraged to stock spares by the InterAide project. For example, InterAide has delivered 2.500 U-seals to Chipiku in less than 3 months for the Central region. The Mvera Chipiku store sold 50 u-seals over 4 months (July to November 2008). In comparison Matutu (not a Chipiku store) sold the same number over an 8 month period.

2.2 Independent Shops – Already Stocking Spares

Two shops (one in Kasungu and the other in Salima city), which were already selling Afridev spare parts were also approached by the InterAide project. Their problem was that they have to travel far to collect supplies (Lilongwe) and that they purchase at high retail prices from hardware shops. As a result, their selling prices are too high for the water users. For example, the Kasungu shop used to sell stainless rods at MWK 4,950.00 (US\$ 34). In contrast, the Chipiku stores sold them at MWK 3,348.00 (US\$23). As part of the project, InterAide has subsequently provided these shops with the opportunity to buy spares from its depot in Lilongwe at much better prices.

2.3 Independent Shops – Newly Trained

In areas which were not covered by spare parts supply from Chipiku stores or other independent shops, InterAide identified shops or groceries which could start to sell Afridev spare parts. Shops were chosen in big market places or trading centres.

After identification, shopkeepers were given two days training in Community Based Maintenance (CBM Level 1) and stock management. This was followed by signing a two-year contract with InterAide defining the following:

- InterAide provides an initial stock of about MWK 10,000 (US\$ 70) of spare parts, a display shelf (Figure 6), advertising posters (Figure 5) and fliers.
- InterAide provides to the shop with ways to re-supply. Either the shop owner comes to an InterAide depot in his district, or spares can be brought to the shop. Prices for shop owners are different and depend on the distance and fuel cost when the spare parts are delivered.
- The shop owner has to maintain his spare parts stock at an agreed minimal level (equivalent to the starter pack value).
- The shop owner has to sell to the communities at prices fixed by the project (Table 1) and indicated on the shelf (Figure 6), and use the triplicate cash receipt provided by the project.

2.4 Mchinji example

In April 2008, 6 independent shop owners and 4 Chipiku were trained as set out in Table 2.

Shops and groceries		Chipiku Stores	
Location	Name	Location	Name
Bua	D.K & Sons shop	Kamwendo	Chipiku store
Chiosya	Try Again shop	Kapiri	Chipiku store
Matutu	R.K Hardware	Mkanda	Chipiku store
Mikund	M.Z Hardware	Mchinji	Chipiku store
Kaigwazanga	Angoni minishop		
Waliranji	Kabowa shop		

Table 2 Spare parts dealers

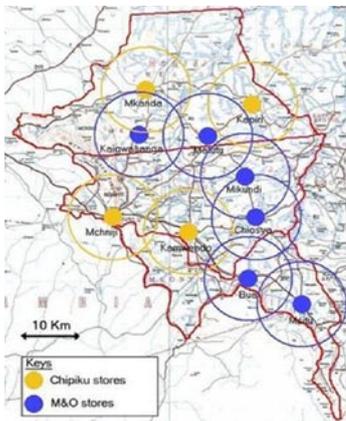


Figure 7 Area Covered by Each Spare Parts Dealer in Mchinji



Figure 10 Map of Area Mechanics' Pumps

Figure 7 indicates the coverage of each shop. Each circle represents a radius of 10 km. Sales from the six independent shops from May to October 2008 are set out in Figure 9.

From May to August, the total volume of the sales increased as the communities got accustomed to these news shops (Figure 8). In September, sales decreased slightly just before the rainy season.

In six months, 661 seals (U-seals and cup-seals) were sold to the community, representing about 75% of Afridev number in the district (about 900 Afridev in total).

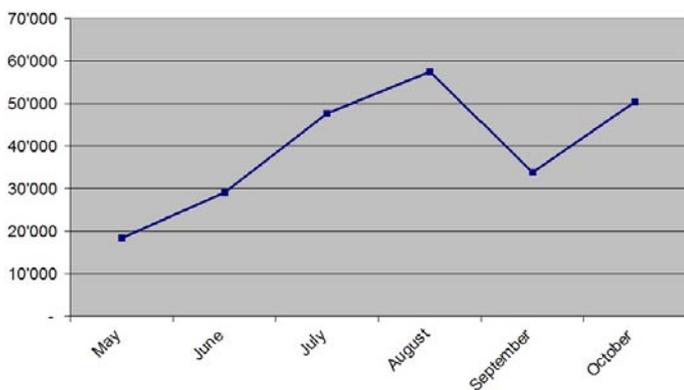


Figure 8 Change in sales (in MWK) from all independent shops in Mchinji

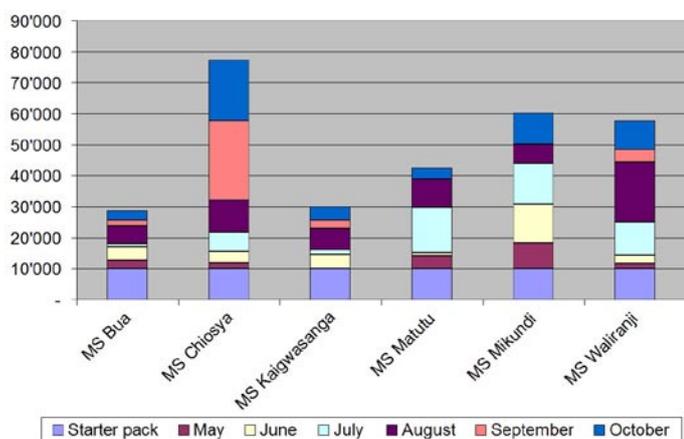


Figure 9 Sales (in MWK) from each independent shops in Mchinji

3 Area Mechanics

3.1 Description of Area Mechanic System

Area Mechanics who already live in the rural areas are selected and trained to provide maintenance and repair services to the communities. The Area Mechanics work as private sector artisans. One Area Mechanic is responsible for about 50 hand-pumps, and is paid by the communities when he repairs or maintains a pump. These charges are not fixed by the project but rather come from an agreement between both parties.

Once the Area Mechanics are identified, they are trained in Community Based Maintenance (CBM level 2) to be able to make major repairs that communities are not able to make themselves, as they were only trained CBM level 1. They subsequently sign a two-year contract which defines:

- InterAide provides the Area Mechanics with a bicycle, special Afridev tools and a plastic file containing pens, Afridev documentation (including a short version of the "Installation and Maintenance Manual for the Afridev Hand Pump²"), a contract book in triplicate, stickers, a calendar and contract samples. InterAide provides technical support through the Maintenance Assistants (one per District) and advertises for them when it has an opportunity.
- InterAide provides the Area Mechanics with a map describing their area (Figure 11), with position and the list of the water points inside their area.
- The Main Area Mechanic duties:
 - to cover their area regularly to offer their services (at a fee)
 - attend monthly meetings with the Maintenance Assistant
 - undertake a minimum of twelve repairs or maintenance contracts per year

Area Mechanics provide two types of contracts to the communities: Repair contracts in the case of breakdowns; and Maintenance contracts, corresponding to four visits a year in order to make preventive maintenance and anticipate problems.

The list of pumps in the area to be covered by the Area Mechanic comes from the MASEDA database, which was prepared by WaterAid in 2004. When they visit a particular pump, the Area Mechanic is supposed to update his list of water points, and provide an update to the project database.

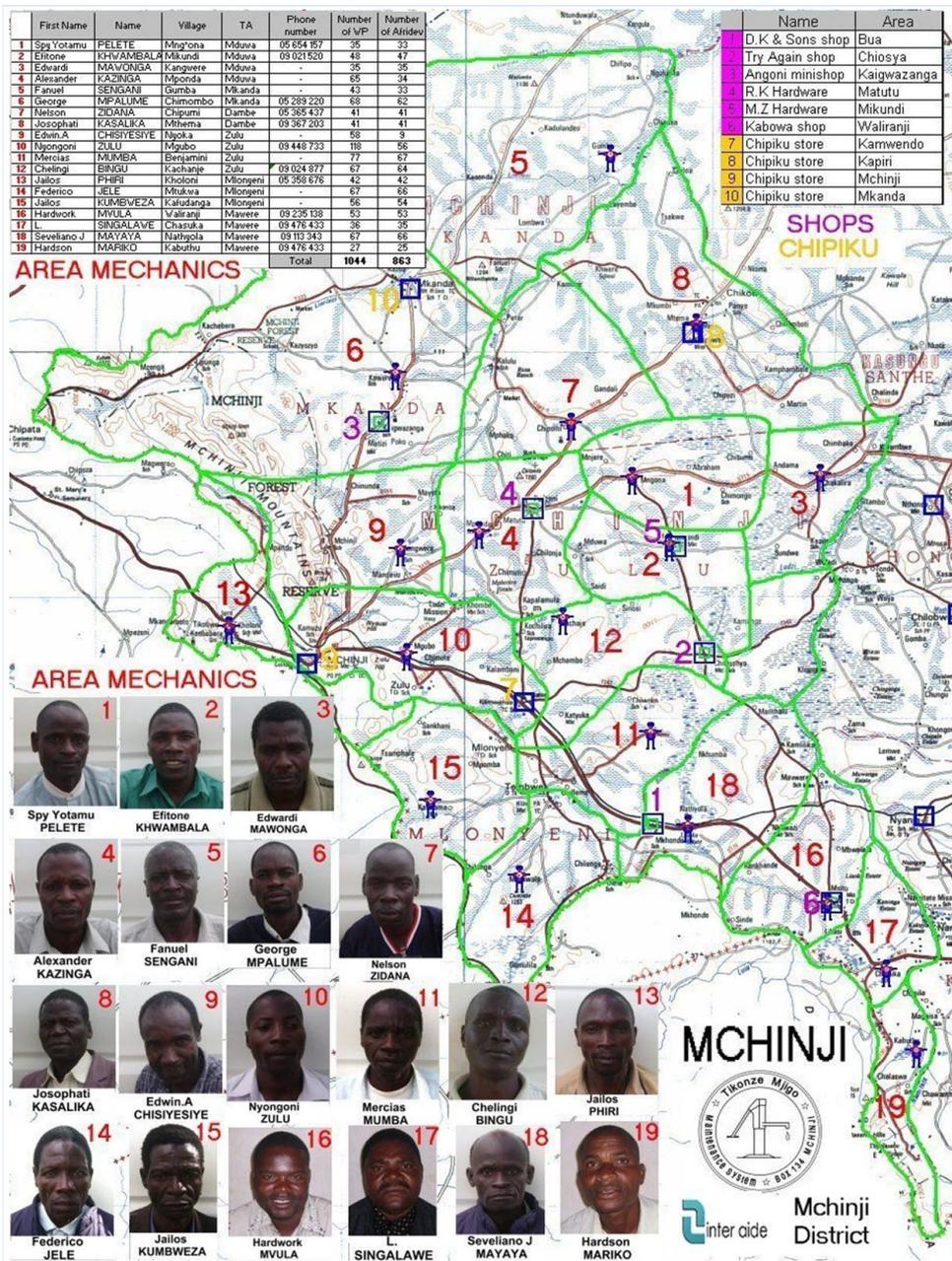


Figure 11 Summary of Area Mechanics and Stores in Mchinji District

3.2 Example of Mchinji

A total of 19 area mechanics were trained in November 2007 by UNICEF, and were given material to work in May 2008 (Figure

11). Between May and October 2008, a total of 182 contracts between the Area Mechanics and Communities were signed (Table 3).

Area Mechanic	May		June		July		August		September		October		Total Number of contracts	Total Money collected
	Number of contracts	Money collected												
Fanuel SENGANI	4	2470	1	1000	2	3000	6	8200	2	2500			15	17 170
Hardwork MVULA	1	500	6	3000	2	1000	3	1750			4	2000	16	8 250
Jailios PHIRI	4	2750	2	750	5	3250	5	3200	7	3800	3	1650	26	15 400
L. SINGALAWA	5	2500	4	2000	3	1500	1	500	2	1000	2	1000	17	8 500
Mercias MUMBA	1	300	1	400			2	850	1	700			5	2 250
Nyongoni ZULU	2	1000			2	1500	3	2250					7	4 750
Spy Yotamu PELETE							1	500	2	1300	1	1000	4	2 800
Efitone KHWAMBALA							3	1750	2	2000	3	4850	8	8 600
Edwardi MAWONGA			13	6800							2	1700	15	8 500
Alexander KAZINGA			2	1000									2	1 000
George MPALUME			3	1600	1	1500	1	1000	3	1300	3	2900	11	8 300
Nelson ZIDANA			3	2500	2	2000	4	2000	1	500	1	1000	11	8 000
Josphati KASALIKA					1	1500							1	1 500
Edwin.A CHISIYESIYE			1	200	1	600	1	1500					3	2 300
C. BINGU			1	200			3	2150	3	1900			7	4 250
Federico JELE			3	0	2	0	3	1500	2	900			10	2 400
Jailios KUMBWEZA			2	600	3	600	2	800			1	500	8	2 500
Seveliano J MAYAYA			7	2550			2	1000	2	1000			11	4 550
Hardson MARIKO					1	500	2	1000	2	1000			5	2 500
Grand Total	17	9 520	49	22 600	25	16 950	42	29 950	29	17 900	20	16 600	182	113 520

Table 3 Contracts between Area Mechanics and Communities signed from May to October 2008 in Mchinji (Money collected in MWK)

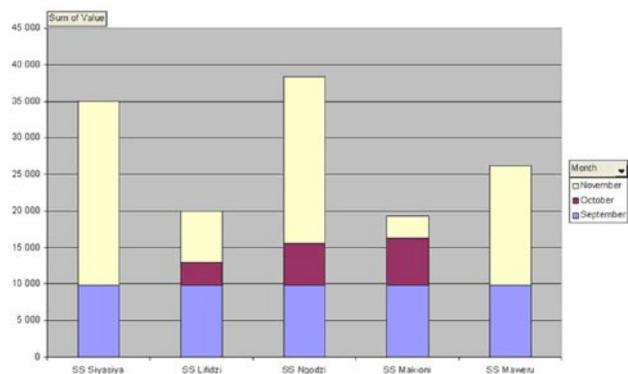


Figure 12 Sales (in MWK) from each independent shops in Dowa³



Figure 13 Areas Defined for the Area Mechanics in Salima District

4 Replication in Dowa and Salima

InterAide has followed the approach used in Mchinji to start supporting operation and maintenance in Dowa and Salima.

In Dowa, InterAide is cooperating with the six Chipiku stores of the area and four independent stores. A total of 21 Area Mechanics, trained back in 2007 by UNICEF were supplied with bikes and tools in June 2008. From July to November 2008, they undertook more than 109 contracts of repair or maintenance. Note that the shop component is too recent (November 2008) to provide significant results yet.

In September 2008, activities started in Salima district. Four independent shops (existing groceries) started selling spares at the end of September 2008, and a delegate from the Chipiku store in Salima was trained in December 2008. From September to November, the shop activity is very encouraging (Figure 12).

In Salima, 29 Area Mechanics were supplied with bikes and tools by UNICEF in 2007, but spare parts were not available and there was no follow up. As a result, there was no activity. In November 2008, InterAide assessed them, defined their areas of operation (Figure 13) and signed contracts of collaboration with the most motivated of them.

5 Project Achievements

Table 4 provides an overview of the handpumps as well as spare parts shops and area mechanic activities for the three project Districts. In addition, InterAide has sold 338,000 (US\$2,331) of spare parts to the Chipiku stores to compensate stock shortages, including 3, 195 U-Seals (used for the entire Malawi central region of 25 stores in 9 districts).

	Mchinji	Dowa	Salima
Population	440,162	511,448	342,979
Area (Km ²)	3,356 km ²	3,041 km ²	2,196 km ²
Number of pumps			
- Afridev	865	1101	850
- Malda	5	224	125
- Gravity fed pipes	137	0	88
Total	1046	1453	1236
Handpump Spare Part Suppliers			
Start selling spares	May 2008	November 2008	October 2008
- Number of independent shops	6	4	4
- Number of Chipiku Stores	4	6	1
Sales of spare parts by independent shops (MWK)	27,000 MWK	<i>Not applicable</i>	86,000 MWK
Sales of spare parts by independent shops (US\$)	US\$ 186	<i>Not applicable</i>	US\$ 593
Number of U-Seals	327	<i>Not applicable</i>	45
Number of Area Mechanics	19	21	27
Number of contracts between Area Mechanics and Communities	Since May 2008 191	Since August 2008 84	<i>Not applicable</i>

Table 4 Summary Data for the Project Districts of Mchinji, Dowa and Salima

3 The chart includes the Maweru shop, which is actually in Dowa (at the Salima border).

6 Resource Requirements

In the period December 2007 (when the project commenced) to November 2008, a total of MWK 7.95 million (US\$ 54,828) had been spent on this project (Table 5).

7 Challenges

One challenge of this project is its geographical organization. Its head quarter is in Lilongwe, and the different branches are all at about 100km, which make follow-up difficult.

The sustainability goal is also far to be reached. The first step is to make this initiative as cost effective as possible.

8 Future

Once an O&M project is set in a District, the idea is to reduce follow-up to the minimum to enable it to continue. The Maintenance Assistant in place in a district will move to another place but will still have a remote look on the area. By extending the project to Kasungu, and cooperating with other NGO in Dedza, all the Central region could be then covered by this O&M project, and maybe more...

Once the 2 years contracts with Area Mechanic finished, it is envisaged that a short monthly meeting should be enough with the most motivated of them. However follow-up is still crucial to assess the O&M project evolution and efficiency, and maintain it.

For the shops, we hope that after two years of follow-up, the shop owners will be accustomed to re-supply and still interested in the benefits they can get from this business. However, as the InterAide depository will not be in the area any more, one big challenge will be to organize a more centralized supply system for the shops for either delivery or collection of spares.

Item	Expenditure (MWK)	Expenditure (US\$)	Proportion
Salary of Project officer and Headquarter management	2,650,000	18,276	1/3
Spare parts to be revolved	2,650,000	18,276	1/3
Running cost			
Fuel	600,000	4,138	1/3
2 motorbike purchased	900,000	6,207	
Local salaries	200,000	1,379	
Training	100,000	690	
Administration cost and miscellaneous equipment	200,000	1,379	
Maintenance vehicle (old car from a previous project)	300,000	2,069	
Other supplies	200,000	1,379	
Office rent (Lilongwe)	150,000	1,034	
Total	7,950,000	54,828	
7 months activity in Mchinji, 5 months in Dowa and 2 months in Salima.			

Table 5 Breakdown of Operation and Maintenance Project Costs (covering all three Districts)

About the author

Bertrand de Saint Méloir is a 36 year-old French engineer with ten years of experience as a consultant in payment systems for Galitt Group. He is on a two year sabbatical and has been in Malawi since November 2007.

Contact



The Rural Water supply Network (RWSN) is a global knowledge network for promoting sound practices in rural water supply.

RWSN Secretariat
SKAT Foundation
Vadianstrasse 42
CH-9000 St.Gallen
Switzerland

Phone: +41 71 288 54 54
Fax: +41 71 288 54 55
Email: rwsn@skat.ch
Web: www.rwsn.ch



Inter Aide is a French field-oriented NGO, which is currently implementing development projects in eight countries. Inter Aide has been working in Malawi since 1991, in the areas of agriculture, community health, water-supply & hygiene and AIDS prevention.

Inter aide
Area 47/3/213
PO Box 31405
Lilongwe 3
Malawi
Email: maintenance.interaide@gmail.com