

Water point maintenance program follow up Malawi

Since 2002, Inter Aide and its Malawian partner BASEDA (including its branch for the south of the country called TIMMS) have launched the development of local services that enable communities to maintain their hand pumps (HP). The approach is based on 2 main components:

- **Pump spare-parts local shops network:**

Popular local groceries or hardware stores are identified to sell pump spare-parts to the rural communities. They are equipped with an initial part starter-pack, and train on stock management and customers advising. In a first time the partner shops are supplied from the project and then linked to national suppliers located in the major towns (Lilongwe, Blantyre).

- **Area Mechanics (AM) network:**

Local technicians are also identified, equipped and trained to handle hand pumps repairs. They offer maintenance services to the water points committees, in case of breakdowns but also for implementing preventive checkups and for installing [pumps security systems](#). The mechanics are independent entrepreneurs and the beneficiaries have to pay for their services.

Inter Aide and BASEDA favor the local promotion of the partner shops and mechanics, and strengthen the local authorities to ensure their regular support and monitoring.

Hand Pump maintenance



Water point Committee



Network of spare parts dealers



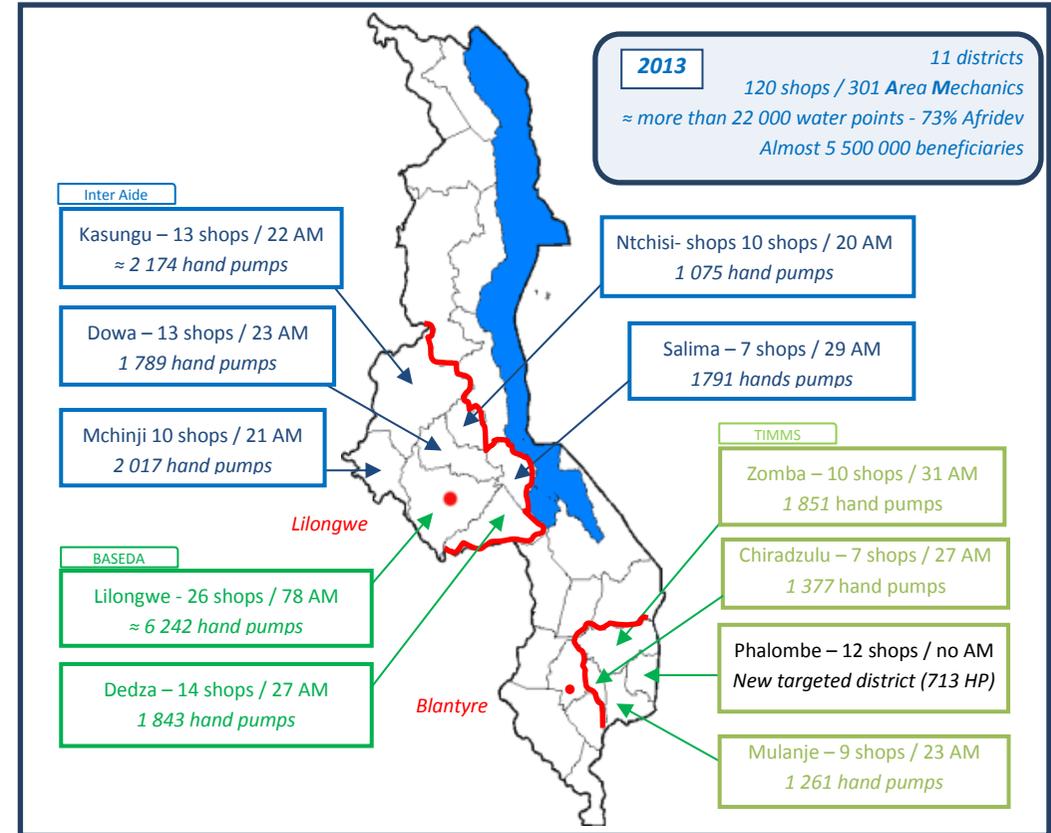
Network of hand pump mechanics



This document aims at presenting the following aspects of the projects:

- Main figures and scale of intervention of the projects (all districts included : Inter Aide + BASEDA + TIMMS);
- Main results achieved between 2008 and 2013 in the 5 districts covered by Inter Aide;
- Main results achieved in 2013 in the districts covered by BASEDA (and TIMMS)
- Durability issues and way forward.

General coverage of the maintenance services



The number of hand pumps (mostly Afridev and Malda) is the total number existing in each district and that can be potentially monitored by AM. These figures have been collected through surveys initiated by Inter Aide and conducted by AMs in 2012 (in Dowa, Mchinji, Ntchisi, Salima), or by estimation given by the Water Ministry for the year 2013 (for Kasungu, Lilongwe, Dedza, Zomba, Chiradzulu, Mulanje).

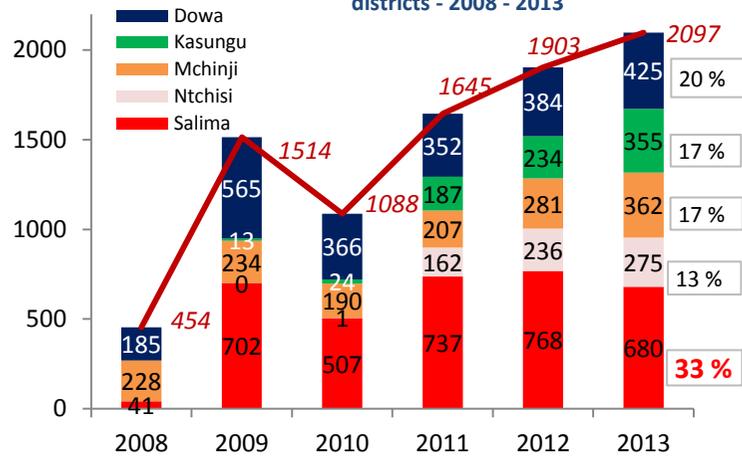
| | | | |
|--------------|--------------------|-----------------------|------------------|
| Inter Aide = | 5 districts, | 8 846 water points – | 2 211 500 users. |
| BASEDA = | 2 districts, | 8 085 water points – | 2 021 250 users |
| TIMMS = | 3 districts (+ 1), | 5 202 water points – | 1 300 500 users |
| TOTAL: | 10 (+1) districts, | 22 133 water points - | 5 533 250 users* |

*One water point for 250 people according to national standard.

Total Malawi = 42 130 Boreholes / 8 223 shallow wells (according to the Water Ministry)

44% of the hand pumps of all Malawi could be potentially maintained by the networks of Area Mechanics and spare parts shops implemented by Inter Aide and BASEDA's (covering 1/3 of the national population).

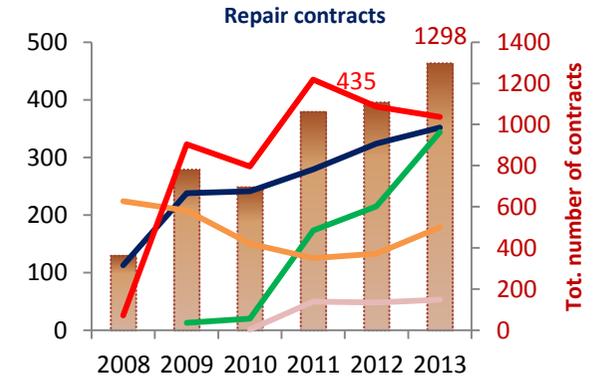
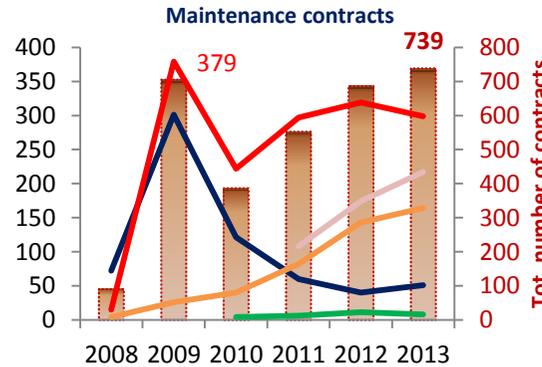
Comparison of AM total number of contracts between districts - 2008 - 2013



Big demand on maintenance contracts by Salima and Dowla in 2009.

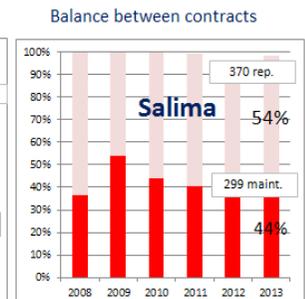
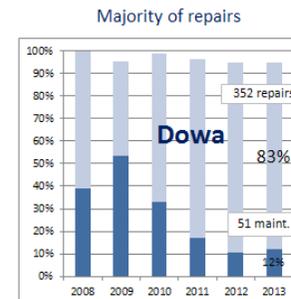
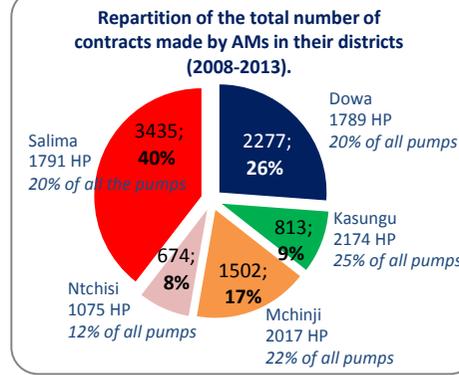
The districts of Ntchisi and Kasungu integrated the approach in 2011.

- A general **constant increase** of the amount of contracts is observed
 ⇒ **more than 2 000 contracts in 2013** (almost 1300 repair / 740 maintenance contracts)
- More than **8 700 contracts** have been done during the 2008 – 2013 period
 ⇒ **5 300 repair contracts / 3 200 maintenance contracts**



| | Total number of Hand Pumps (Afridev + Malda) | Total number of AM | Number of interventions in 2013 | Approximative ratio of HP covered by interventions | Total repairs in 2013 | Approximative ratio of HP covered by repairs | Total maintenance in 2013 | Approximative ratio of HP covered by maintenance |
|-----------------|--|--------------------|---------------------------------|--|-----------------------|--|---------------------------|--|
| Dowla | 1789 | 23 | 425 | 24% | 352 | 20% | 51 | 3% |
| Kasungu | 2174 | 22 | 355 | 16% | 344 | 16% | 8 | 0,4% |
| Mchinji | 2017 | 21 | 362 | 18% | 179 | 9% | 164 | 8% |
| Ntchisi | 1075 | 20 | 275 | 26% | 53 | 5% | 217 | 20% |
| Salima | 1791 | 29 | 680 | 38% | 370 | 21% | 299 | 17% |
| Gd Total | 8 846 | 115 | 2097 | 24% | 1298 | 15% | 739 | 8% |

The number of interventions includes repairs, maintenance and installation of security systems.

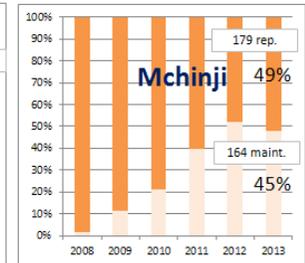
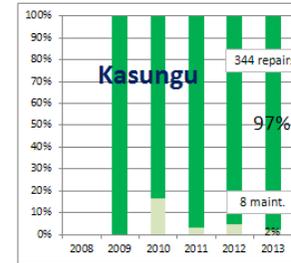
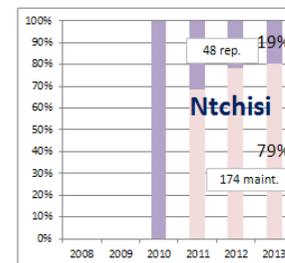


If a correlation is made between the number of interventions and the number of systems, it can be estimated that servicing has been made by pump mechanics for **1 hand pump for 4** in the area concerned in 2013.

All mentioned districts considered, the trend in the intervention is 60% of repairs, 35% of maintenance contracts (5% difference is contracts for safety systems). Improvement could probably be done in prevention of breakdowns by regular preventive servicing. Indeed, local authorities, as well as AM themselves, could better promote preventive maintenance toward water points' users.

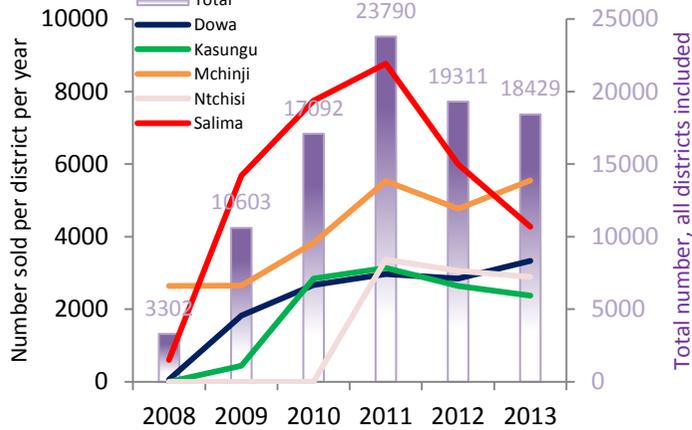
However there are differences in these trends between districts. It can be explained by the fact that some water committees learned how to proceed to routine maintenance and therefore contact AM only for major breakdowns. Other actors were initially overlapping AM by intervening for free.

Majority of maintenance



N.B. : there is no chart representing the specific contracts to secure the pump, but they have been integrated in the calculation and therefore correspond to the slight ratio to reach 100% !

Total number of spare parts sold per year and per district



The evolution of sales has been indirectly measured by the follow up of spare parts sold by Inter Aide to the partners shops to refill their stocks. However, this is representative of the demand of the customers and water points' users.

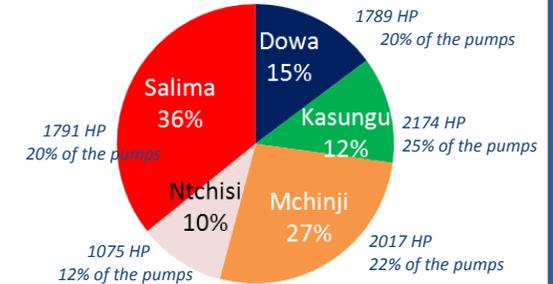
Shops owners are progressively trained to also do their own monitoring of quantities of items.

The general trend is an **increase** of sales of spare parts through the years, despite a slight recent slowdown after a peak in 2011, especially for Salima's district.

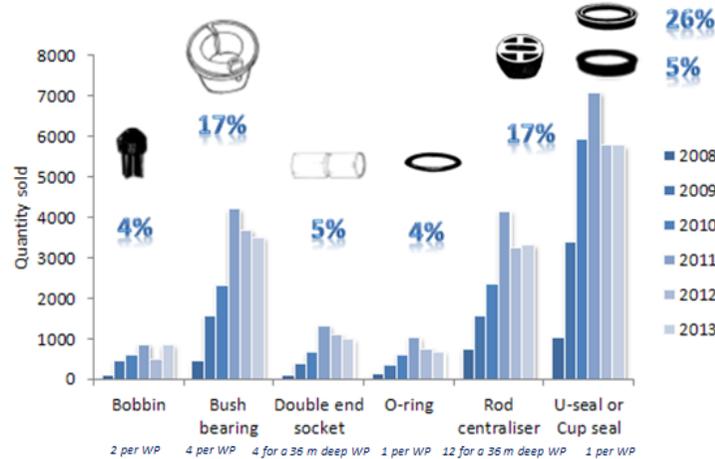
That might be explained by an important demand at the beginning of the implementation of the services and the need to rehabilitate a lot of water points, which now might just require routine maintenance.

Nevertheless **Salima is the district where the demand has always been and is still the most important.** Even if sales in Mchinji are increasing. Ratios of sales are in direct link with the level of interventions of Area Mechanics.

Repartition of the volume of spare parts sold between districts for the 2008 - 2013 period



Equivalent of sales of spare parts in Kwacha and US Dollars



| Sales of U-Seal | | | | | |
|-----------------|---------------------------|---------------------|--|-----------------------------------|------------------------------------|
| | Total number of Hand pump | Total sales in 2013 | Ratio compare to the required maint. of the tot. number of pumps | Total sales between 2008 and 2013 | In average per month for 2008-2013 |
| Dowa | 1 789 | 756 | 42% | 3 051 | 42 |
| Kasungu | 2 174 | 601 | 28% | 3 056 | 64 |
| Mchinji | 2 017 | 1 684 | 83% | 7 644 | 106 |
| Ntchisi | 1 075 | 347 | 32% | 1 335 | 37 |
| Salima | 1 791 | 1 147 | 64% | 9 125 | 127 |
| Total | 8 846 | 4 535 | 50% | 24 211 | 75 |

Nearly 80% of the sales targets only the 5 fast wearing Afridev hand pump parts + sockets to join pipes; and **1 of 4 sales corresponds to U-Seal/Cup-seal.**

As the pump manufacturer recommends replacing this part every year, with 8 846 Afridev inventoried and 4 535 U-seals sold within 12 months, it can be considered that **half of the pumps have been covered.**

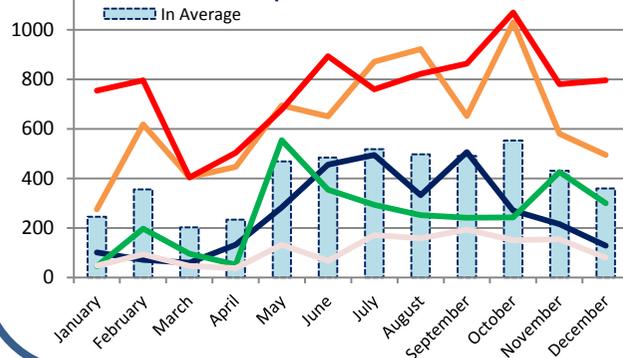
(Even though parts must be sold out of the districts)

Highest sales in a year have been made in Salima **2 397 U-seals** (in 2010).

Highest sales in a month have been made in Mchinji **424** (in July 2013).

The rainy season in Malawi lasts from November to April. It seems that especially in March, April, the demand in spare parts is the lowest, probably because the pumps are less used as there are other sources of water. It corresponds also to the lean period and most of the incomes start in May/June after harvesting.

Evolution of sales of U-Seal throughout the years - total period 2008 - 2013



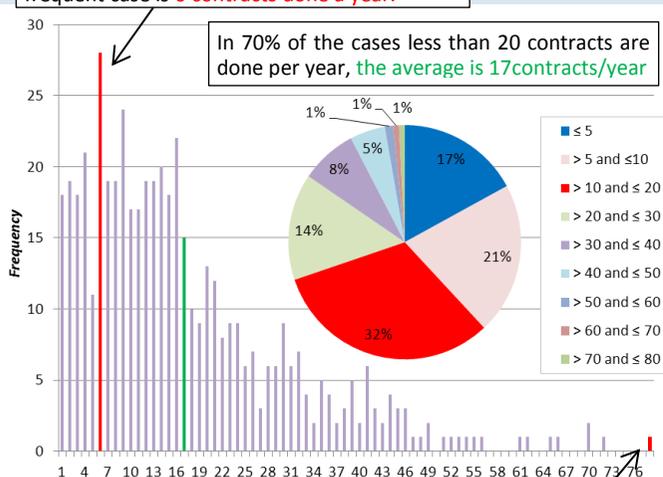
The services proposed by the area mechanics and the partners shops allowed the water points' users and water points committees to maintain a rate of 80% of water points functional in all the areas concerned.

Area Mechanics

Most of the Area Mechanics are regularly active and have been proposing an efficient service since the beginning: only 8 out of 115 have been replaced.

In terms of activities and number of contracts that AMs signed with communities, the most frequent case is 6 contracts done a year.

In 70% of the cases less than 20 contracts are done per year, the average is 17 contracts/year



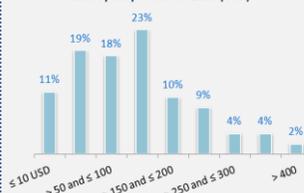
Maximum is 79 contracts a year

Distribution of number of contracts done in a year (whole 2008 – 2013 period)

The average amount of money earned a year by an AM is 21 000 MKw – 60 USD - whole period 2008-2013* (36 000 MKw – 103 USD in av. for 2013)

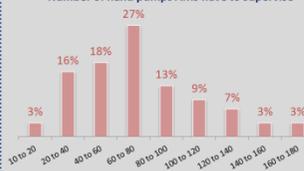
But it is variable from an AM to another. M. Bulinde Mtamanja (Dowa) earned 143 050 MKw - 400 USD in 2013*.

Distribution of Area Mechanic according to the money they earned in 2013 (USD)



Their profit depends on their dynamism and the number of systems they have to follow in their catchment: 75 in average, but goes from 20 to 180 Hand pumps.

Number of hand pumps AMs have to supervise



AM earned more money in 2013 mostly because they are doing more contracts, but also because the cases, when they were intervening for free or when water committees were not paying them, have decreased. They are more recognized. If it cannot represent a salary, it is an interesting additional source of incomes*.



AM giving the bill to the treasurer after intervention.

Partners shops

From the beginning of the implementation of spare parts resellers, most of them are still operating.



Training on Afridev spare parts with a new shop owner.

Only 30% of shops have been closed or replaced by other more active shops (14 out of 52 between 2008 and 2013).

Over the whole period 2008-2013, it can be estimated that one shop can sales approximately 500 USD of spare part per year (170 000 MKw – 2013 exch. rate), 40 USD per month.

Prices have been determined in a way that they can make a profit of 20% on average. Results show that they earn approximately 100 USD per year, 8 USD per month*. But Siyasiya shop in Salima bought for 760 000 Mkw of parts in 2011, that represents 450 USD of benefit in a year.

This is a quite good and regular complement of activity; a product that can attract additional customers. Some shops owners observed that their profit is better than for other items (soft drinks for ex.).

* Gross National Income per capita: 270 \$ (World Bank – 2013)

Cost for the community

Considering all contracts done between 2008 and 2013 in all these districts, the average cost of an intervention for a community has been 1 500 MKw for labour cost and 3 200 for spare parts, i.e. 4 700 MKw in total / 13 USD

(in 2013, it was 2300 for the labor cost and 5400 for spare parts – 7700 Mkw / 22 USD).

This has to be compared with

1/ the 9 000 MKw minimum yearly maintenance required to change the 5 fast wearing parts + the 2500-3000 of maintenance contract (= 12 000 MKw in Total) and the 10 740 Mkw that costs one rod.

2/ the fact that Water points committees can collect between 20MKw and 100MKw on average in a month per household (4 to 20 cents), i.e. 5000 MKw – 14 USD in total per month (considering one water point –250 users, almost 50 households).

To make the maintenance services sustainable, several approaches are currently implemented:

- The biggest partner shops are progressively linked to national suppliers based in main cities. Commercial partnerships and supply systems are defined to favor a direct restocking of the rural retailers.
- Inter Aide supports the creation and strengthens a local private company (called RUWASO) to take over the spare-parts supply-chain and act as intermediary between the suppliers and the local shops (especially those far from the main cities)
- The District Water Departments are trained and reinforced to gradually be able to ensure the support and monitoring of the AM on the long run.
- Inter Aide and BASEDA promote the existing networks to the other stakeholders (NGO, Government) to avoid duplication of similar actions in the same areas and their extension to new Districts. They also advocate integrating the hand pump maintenance services in the National and District Strategic Plans.