

Community financing of handpump maintenance: a case study in rural Mali

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Abstract

Raising money from water users in the form of direct fees or other ways in which communities can generate revenue is considered essential by policy-makers to ensure the sustainable operation and maintenance of community handpumps. This paper summarises a case study of three villages supported by WaterAid and its local partner AMEPPE in rural Mali. The research explores the ways in which communities finance the ongoing costs of handpump maintenance and how these are linked to traditional social practices and more recent structures for water management promoted by non-governmental organisations (NGOs).

Although regular tariffs are considered the most preferable form of cost recovery by NGOs and donors, this research suggests that communities use a wide variety of ways of raising money. These may include fundraising activities such as collective farming by the water management committee or other village groups; setting varying prices for different uses of 'drinking' water (for example for animals or for construction purposes); imposing charges on particular occasions (for example on market days); and informal collections.

However, none of the payment systems observed is sufficient to sustain the operation and maintenance costs of the handpump and ensure that any breakdowns are repaired quickly. Seven of the eleven handpumps studied were broken for periods of several months between the two research periods of May 2009 and September 2010.

The paper suggests that NGOs such as WaterAid Mali should therefore: (a) explore how and why some communities do develop more successful ways of funding operation and maintenance; (b) consider lower-cost water services such as improved traditional wells as an alternative to handpumps; and (c) explore more innovative methods of funding operation and maintenance which may include external subsidies. They should also consider how current ways of raising money are influenced by both traditional social practices, and more 'modern' ideas from NGOs. More research may be needed on the details of payment and costs over time, and the effect of these on sustainability and access to water.

Keywords

Financing, Mali, participation, rural water supply, WaterAid.

INTRODUCTION

This paper addresses the theme of sources and sinks of finance for water provision. Specifically, the research explores the ways rural communities in Mali finance the ongoing costs of handpump maintenance. The objectives are to:

1. understand the different ways in which communities raise funds for operation and maintenance of handpumps and
2. assess the effectiveness of these methods for sustaining handpumps in working order.

The research was developed as part of a wider project about the links between 'capacity-development' by WaterAid and community participation in water management.

Background to financing operation and maintenance of rural water supplies

Inadequate maintenance of water infrastructure is increasingly recognised as a major barrier to achieving sustainable, widespread access to water for the poor in sub-Saharan Africa, especially in rural areas (Skinner, 2009). Lack of secure long-term financing for operation and maintenance is a critical obstacle to ensuring ongoing safe water supply (Breslin, 2010).

This is typically considered a problem of 'cost recovery'. Cost recovery is defined in its most comprehensive form as the matching of *all* long-term costs of a water service with *all* the ongoing sources of funding that enable these costs to be met (the users, donors or NGOs, the private sector, government). However, cost recovery in practice usually refers only to operating and minor maintenance expenditure, and capital maintenance expenditure (Cardone and Fonseca, 2003). Paying these ongoing operation and maintenance costs is usually considered the responsibility of the users, although there is often limited understanding of people's ability or willingness to pay (Calkins et al, 2002; Budds and McGranahan, 2003), or of the actual long-term costs. There is sometimes also disagreement about whether users should or can pay for capital maintenance expenditure as well as operating and minor maintenance expenditure, and where the distinction lies between these two types of costs.

There are three types of revenue collection considered to be most common for the operation and maintenance of rural water supplies. These are reactive financing (collecting money from users for repairs when a system breaks down), monthly tariffs and pay-as-you-fetch (users pay a set amount per container or volume) (Harvey and Reed, 2004). However, combinations of these or other methods may be used. The crucial question is whether enough money can be raised by the adopted mechanism to cover operation and maintenance costs and ensure sustainability of the service, while also achieving equality of access which includes the poor and those with less ability to pay.

Current policy for cost recovery in Mali

In Mali, current legislation on water pricing requires cost recovery from the users, although the law relating to rural areas is ambiguous. The Water Code states that in rural areas “full” recovery of operating costs, but only “part” recovery of investment costs (République du Mali, 2002, Article 53) is expected. Official policy from the National Department of Hydraulic Infrastructure is more specific: users should pay for maintenance, management, replacing parts less than 20 years old, monitoring, and any relevant taxes. However, a maximum rate is set for the first 20,000 litres per month consumed by a household as a “social tariff” (DNH 2007, p44).. This maximum tariff is 500 CFA (about 1 USD) per 1000 litres, i.e. about 10 CFA (0.02 USD) for a 20 litre bucket.

In rural areas, the municipal council is responsible for drinking water provision, although day-to-day running of services is delegated to a private operator or a local Water Users’ Association (République du Mali, 2002). The actual local arrangements in different areas vary, often involving payment systems outside official policies. However, the current arrangements are not succeeding in keeping water supplies flowing and over one third of water points in Mali are not working (WaterAid Mali, 2005). Therefore there is a need for NGOs such as WaterAid Mali to understand better the different ways communities raise money for operation and maintenance, and how effective these different methods are at achieving sustainable and equitable access to water.

Methodology

The research was undertaken in three villages (Guily, Fansiracoro and Yélékébougou) in the rural commune (municipality) of Yélékébougou, Mali. The municipality is centred on a large village, also called Yélékébougou, situated about 50km away from the capital of Mali, Bamako. Yélékébougou commune is part of the *cercle* of Kati and the region of Koulikoro. The commune comprises 17 villages and 11,134 inhabitants. The livelihoods of almost 90% of the population are based around agriculture or pastoralism. Surveys suggest that only 30-45% of the population of Yélékébougou uses safe drinking water, below the national average for Mali (WaterAid, 2005; WHO/UNICEF, 2008). WaterAid has been working in the Yélékébougou commune through its local NGO partner AMEPPE since 2005.

The field research took place over six weeks: five weeks in May-June 2009 and a week of follow-up visits in September 2010. Six focus groups were conducted: three in Guily and three in Fansiracoro. These were held with the water management committee (WMC), the sanitation committee and a women’s association in each village. A total of 64 semi-structured interviews were performed. 49 took place at village level. Eight interviews were also performed with members of local government and district-level committees, and seven interviews with staff from WaterAid and AMEPPE.

Findings and discussion

Results: current methods of payment or raising money for different pumps

Table 1 describes the management arrangements and the systems of raising money for the different handpumps in the case study villages, and whether or not these are successful at covering ongoing costs.

Table 1 Methods of raising money for different handpumps.

<i>Village, handpump and system of management</i>	<i>Payment system</i>	<i>Sufficient for ongoing costs?</i>
Fansiracoro:		
Two old handpumps – a committee of about six active members appointed by the village chief and made ‘official’ by AMEPPE.	The water management committee (WMC) organises men to undertake days of collective farming in the rainy season (once a week for about 3 months). The group’s payment of 5,000 CFA ¹ per day is put in the WMC ‘account’, totalling about 50,000 CFA (about 100 USD) over the season.	There were no breakdowns between May 2009 and September 2010, but in previous years when there had been breakdowns, the money collected was not always enough to pay for repairs.
Guily:		
Old handpump – a keyholder who unlocks the pump and collects money. He was chosen by the village chief and has no contact with AMEPPE.	Payment of 50 CFA is charged for an oil drum of water (the amount needed for making mud bricks or for animals). Some people also paid for smaller amounts. Collections also take place when repairs are needed (25 CFA upwards per person).	No. The pump is hardly used because it is locked and people think it is broken or cannot find the keyholder. Only 7,500 CFA has been collected. Some people consider the price of 50 CFA per barrel too much to pay.
New handpump – an ‘official’ committee on paper, but in practice only two members, who do hygiene promotion and collect data for AMEPPE.	No payment is charged because the Italian NGO who installed it said that it was free.	No. The pump broke during the field research in June 2009 and there was no plan in place to collect money for the repair. The pump was still broken in September 2010.

¹ 460 CFA (West Africa Franc) = 1 USD (United States Dollar) in June 2009.

<i>Village, handpump and system of management</i>	<i>Payment system</i>	<i>Sufficient for ongoing costs?</i>
Yélékébougou:		
Handpump near school – the school management team.	No payment is charged; if there was a fee, they think people would over-use it because they would feel they have more 'right' to the water.	No, the pump was broken for most of 2009, was then repaired by AMEPPE but has been broken since June 2010. The school has no funds to use.
Handpump near clinic – the matron and the facilities manager of the clinic.	No payment is charged except for making bricks for building, at 500 CFA per day of use.	No. Only 1500 CFA has been collected and they are unsure if other clinic funds could be used if there was a breakdown.
Handpump near Catholic church - a representative of the Catholic church who lives near the pump; he took over the role to help an elderly man who was chosen by the village chief.	1,000 CFA is charged for making a house, and 5000 CFA is charged per month for animals to drink from it. Collecting smaller amounts was suggested but the collector did not do this. 100 CFA per family per month was requested but not paid.	No. The pump was broken for most of 2009. Only one person used it for his cows, and collecting money was difficult after the breakdown. However, it was alleged that up to 50,000 CFA was collected but 'disappeared'. AMEPPE repaired the pump in 2010.
Handpump near market - the owner of the village shop near the market and the pump; he is also the president of the market management committee.	Used to charge payment on Thursdays and Fridays (market day and the day before).	No, people changed their collection time to earlier in the week. No-one is willing to collect money. There is no trust from the users. Repairs have either been paid for by the shop owner or AMEPPE.
Handpump in Namankanbougou Neighbourhood - two people who tried to collect money after breakdowns.	No payment is charged despite being told by the council that everyone should pay 50 CFA per family per week.	No. The pump breaks down about once every 3 months. It was broken in May 2009 and Sept 2010, even though AMEPPE repaired it in 2010.
Handpump in Sarakoli neighbourhood - two elderly men who live near the pump.	No payment is charged except trying to collect money after breakdowns.	No. The pump was working in May 2009, broke down and was repaired by AMEPPE later. It has now been broken since June 2010.

<p>Handpump in Bogo hamlet - the outgoing councillor who lives in the hamlet; a full committee may be chosen when the wall of the pump is complete.</p>	<p>No payment is charged because the wall around the pump is not yet finished (the pump was new in 2008). They plan to start charging when this is done.</p>	<p>Over 50,000 CFA is in the 'account' because it was raised as community contribution to capital costs but the users are disputing what this can be used for. By September 2010, the pump had been broken for 3 months.</p>
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Table 1 shows that none of the payment systems observed is sufficient to sustain the operation and maintenance costs of the handpump at all times. Only the two handpumps in Fansiracoro have come closest to achieving this goal. None of the systems take the form of regular tariffs or point-of-collection payments that are the methods preferred by government and NGO policy. The systems demonstrate a variety of forms of raising money. These differ according to the circumstances in each of the three villages and are also affected by the involvement of AMEPPE and the council. The actual costs of operation and maintenance can vary widely – these are discussed later in relation to the role of AMEPPE.

Analysis: why do different ways of raising money exist?

The different forms of raising money have emerged from the ways that decisions are made concerning drinking water provision in the different communities. In theory, water management committees (WMC) are meant to promote participation of the wider community in a forum for decision-making, supported by WaterAid's local partner AMEPPE. However in practice, committees do not usually exist in the form imagined by NGOs. Instead, they emerge from a combination of existing local social structures and the influence of more 'formal' ideas from NGOs. This highlights the difficulty for NGOs of "institutional engineering" (Nemarundwe and Kozanayi 2003): creating new resource management structures in a community without sufficient consideration of existing forms of governance. The actual structures that emerged for managing handpumps are described in Table 1. The remainder of this section analyses the influence of these factors on raising revenues.

The community of Fansiracoro is more successful at raising money for operation and maintenance for two key reasons: a more active and effective water management committee, and a greater dependence on water from handpumps than in the other villages. In most of Fansiracoro there is hard rock relatively close to the surface of the ground so it is difficult to dig traditional wells to a sufficient depth to obtain water. Particularly during the dry season, there is barely any water available in any wells. Therefore if one of the handpumps breaks there is a strong incentive to ensure it can be repaired as soon as possible because there is little alternative. In other villages, people can use hand-dug wells in addition to handpumps.

The other reason for greater success in Fansiracoro, which also demonstrates the importance of how decision-making occurs, is the way the water management committee has formed from a process of mixing strong traditional social structures and associations

with more 'modern' ideas from NGOs (Cleaver, 2002). This has created a group which combines the traditional strengths of collective action (community agricultural work, which is a tradition in Mali) with a new purpose of raising money for the operation of water supplies.

The village of Guily highlights the struggle between traditional decision-making and externally-initiated activity: there is conflict between the family chiefs who make decisions based on the needs of the main village, and AMEPPE which seeks to promote more equitable arrangements via a water management committee. People from the hamlet just outside the main village of Guily were excluded from decision-making regarding the payment and locking of one of the pumps, so that people *in* the hamlet do not think that it is possible to use the pump at all. Yet the motivation to change this is much lower than in Fansiracoro, because the area around Guily has better access to traditional wells. This means there is less dependence on handpumps, even if they think the water from the wells is of lower quality than the water from handpumps.

Guily also demonstrates the importance of particular individuals in shaping the forms of institutions and the decisions made about raising money. The village chief in Guily is far more proactive in decision-making than his counterpart in Fansiracoro. Further insight into the importance of individuals emerged in Guily when it was discussed that some people had attempted to raise money for water infrastructure via collective farming, but had lost interest and motivation when the most active individuals involved left the village. This highlights the importance of particular individuals who can become 'champions' for promoting positive change in water management (Howarth, et al. 2007).

Yélékébougou is the village that has received most exposure to the ideas of paying for water because it is the central village of the district and has closer links to the council which tries to promote the idea that people should pay regular tariffs. However, this has rarely led to increased payment except for non-drinking water purposes such as animals or construction. As in Guily, most people are not fully dependent upon one handpump source because they can either use other pumps (even if they dislike travelling further) or traditional wells (even if they consider the quality of well water to be lower). Both these options were usually seen as preferable to paying for handpump repairs.

Discussion: the role of AMEPPE and the council

A further key issue is the users' awareness that AMEPPE or other organisations sometimes pay for repairs to handpumps. This leads to an inclination to focus efforts on petitioning NGOs for assistance rather than collecting funds from the users. AMEPPE considers that the cost of low-cost (defined by approximately 5000 CFA to 50,000 CFA, or 10 USD to 100 USD) repairs should be covered by the communities, and its annual training sessions for water management committees encourage community-level fundraising. But AMEPPE also plans its own budget to include about three major rehabilitations of handpumps per year (including replacement of major parts, handpump surrounds and soakaway), costing up to 800,000 CFA (about 1,700 USD) each. Communities are not expected to contribute to this. If there are funds remaining in the budget after this, AMEPPE may also pay for some smaller repairs.

However, there is no structured approach to assessing what level of expense between very small repairs (5,000 CFA or so) and major rehabilitations (up to 800,000 CFA) can or cannot realistically be raised from the users; AMEPPE considers the problem to be unwillingness rather than inability to pay. The evidence from users of the handpumps in Fansiracoro suggests that organized committees currently raise up to 50,000 CFA per year. This can be placed in the context of WaterAid surveys that suggest annual average household income in the area is about 170,000 CFA (370 USD).

The approach of AMEPPE and the council is based on a belief that traditional rural views on water being 'free' can gradually be changed by education until users accept the need to contribute to cost recovery. However, Page (2005) has shown from research in Cameroon that the process of communities changing from ideas of 'free' water to paying for water is not always a one-way transformation. Instead, people have paid different amounts for water, in different ways and at different times, according to particular local circumstances, such as the quality of service and the method used to raise money. This suggests that the belief of AMEPPE and the council in Yélékébougou that the population will gradually be 'sensitised' to paying may not be true.

Discussion: the role of gender relations in paying for water

Gender relations also emerge as significant in regard to payment for water. When people do pay money for water (either directly or via repair costs), payment is viewed as a male responsibility, even though it is predominantly women who collect the water. Fees are collected per household or per married man. Occasions when women also contribute to water payment are considered highly exceptional.

However, women's activities in traditional women's associations demonstrate an interesting comparison regarding raising local revenues. Women's associations in Fansiracoro, Gully and Yélékébougou traditionally collected money from their members every month and then gave the total in one lump sum to one family. In recent years, each group has received training from outreach workers of the local NGO TONUS to develop revolving credit schemes among their members. Typically each association has up to 25 members who pay 100 to 250 CFA per week (depending on the season). Every 1-3 months, loans of up to 15,000 CFA (about 30 USD) are given. Like the water management committee in Fansiracoro – but unlike the scenarios in Gully and Yélékébougou – the women's associations are a mixture of strong traditional groups which have taken on 'modern' ideas from NGOs. They have received close ongoing support from NGOs, who attended weekly meetings with the groups until the women became confident at organising the credit schemes on their own. This may demonstrate some of the benefits to other NGOs of working with existing associations (instead of trying to set up new committees) and providing close long-term support (instead of infrequent isolated training sessions).

Lessons learned: the outcomes for sustainability and equity of water access

The immediate practical measure of the success of the forms of raising money discussed is whether sustainable and equitable access to drinking water is achieved. The key indicator of sustainability of a handpump system is whether the handpump is maintained in good working order and breakdowns are repaired promptly. Four out of eleven of the handpumps

studied were broken at the time of the research in May-June 2009 and five were broken during the follow-up in September 2010. Therefore the current methods of raising money do not provide sustainable access to improved drinking water sources. Overall, seven of the eleven handpumps were broken for periods of several months between May 2009 and September 2010; three handpumps worked without breakdowns throughout the period; and one other had minor breakdowns.

In terms of equity, the research did not focus specifically on the links between paying for water and the access for different individuals. However, geographic location is currently a key issue affecting equity of access in part of the area studied, for example through the problem in Guily where people living just outside the village have less access to handpumps because of decisions made by people in the main part of the village.

Therefore the key lesson is that the current systems of raising money from communities are not achieving sustainable operation of handpumps, although one of the communities studied was more successful at fundraising by using traditional collective farming. This research was a study limited to three communities in the same district in Mali.

However the widespread problem of broken handpumps in Mali (WaterAid Mali, 2005) and sub-Saharan Africa in general (Skinner, 2009) suggests that an understanding of the different methods of raising money is of wider importance than solely what appears in this small case study.

There is a need for more detailed research in other communities, particularly to see if examples exist of community fundraising in Mali which do achieve sustainable and equitable water access.

However, a second consideration is the possibility of implementing drinking water services which have a lower running cost than handpumps. Studies by WaterAid elsewhere in Mali (Maiga, et al 2006) suggest that users may prefer improved versions of traditional hand-dug wells because they are cheaper to maintain and more reliable than boreholes with handpumps. The wells are also likely to be closer to the majority of people's homes than handpumps, supporting the desire for a conveniently-located water supply shown by many users. The improved wells have wellhead protection, and sometimes a lining and pulley/bucket system. Testing showed that the water quality from improved hand-dug wells was generally good. WaterAid's piloting of lower-cost 'self-supply' initiatives such as this is currently undergoing evaluation.

Finally, discussion is needed about the possibility of some financing for operation and maintenance coming from outside the community. Although the official policy is for full cost recovery of operating costs from users, NGOs such as AMEPPE do sometimes pay for repairs to handpumps, as discussed above. WaterAid is also supporting municipalities to increase their own revenue from local taxes (by improving relations with citizens through initiatives such as public hearing days), central government grants and donors (by capacity-building to demonstrate that municipalities have the ability to effectively use increased funds). However under current plans, funding is generally targeted towards new infrastructure rather than

assisting with the operation of existing services. This policy could be reconsidered in light of further research on the potential for better community fundraising or lower-cost water supply options.

CONCLUSIONS

Conclusions	Key suggestions or recommendations
<p>1. Insufficient payment for operation and maintenance of handpumps appears to be the critical obstacle to immediate improved water access.</p>	<p>1.(a) Explore how some communities do develop more successful ways of funding operation and maintenance.</p>
<p>Current levels of individual or household payments are not enough for cost recovery therefore handpumps often remain broken for months at a time. However, the village of Fansiracoro has had greater success than the villages of Guily and Yélékébougou by using the money earned from the collective farming of another person’s land to contribute to the water committee’s ‘account’ for handpump repairs.</p>	<p>For example in Ghana, initiatives have linked informal savings groups such as women’s associations to community funds for handpump maintenance (Agbenorhevi, 2005).</p>
	<p>1.(b) Consider lower-cost water services such as improved traditional wells.</p>
	<p>For example, WaterAid is evaluating in other regions the potential for improved traditional wells as alternatives to handpumps.</p>
<p>2. Institutions for water management are often hybrids of traditional structures and modern NGO influences; this affects decisions made about paying for water.</p>	<p>1.(c) Explore more innovative methods of funding operation and maintenance that may include external subsidies.</p>
<p>For example, the water committee in Fansiracoro emerged from a traditional association but now has formal status because</p>	<p>For example, forms of subsidised insurance for handpumps have been piloted in Angola and Mauritania (Harvey, 2008). This could be a more structured way for NGOs or the municipality to contribute.</p>
	<p>2. Consider the constraints and opportunities of existing social structures.</p>
	<p>NGOs must recognise existing social factors and traditions and investigate ways of promoting participation and discussion about different ways</p>

Conclusions	Key suggestions or recommendations
of AMEPPE. These influences combined in their decision to raise money for handpump repairs by collective farming.	of community fundraising. For example, AMEPPE has run an initial workshop with community members to discuss ways of changing gender roles.
3. There is a lack of detailed data on how much people pay over time, the long-term costs, and the effects on sustainability.	3. Develop detailed research on financial flows and sustainability over time at community levels.
Most research such as this provides little detail on historical or seasonal changes. There is a lack of information on the long-term costs of operation and maintenance and whether communities can cover these.	For example, further research could consider the ability and willingness to pay of different families and communities, and how access to cash changes with seasonal issues and unusual events.

ACKNOWLEDGEMENTS

Thank you to all the research participants from Guily, Fansiracoro and Yélékébougou; Salia Diallo and Lassana Bagayogo at AMEPPE; Nicolas Sidibé and the staff of WaterAid Mali; and Maiga Diop. Helpful comments on the research and/or the paper were provided by Alex Loftus, Vandana Desai, Nick Bundle, Richard Carter, Adama Sanogo and two anonymous reviewers. This research was undertaken as part of a collaboration between WaterAid and Royal Holloway, University of London, supported by the Economic and Social Research Council grant ES/G030243/1. The views expressed are those of the author and not necessarily those of WaterAid or AMEPPE.

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