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Micro insurance: a proposed practical solution to mitigate hand-pump maintenance challenges in Malawi

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As part of the grant offer, stakeholder end-users in low- income or ultra- poverty regions are encouraged to contribute 5% of the total hand-pump asset cost in a form of labour or household financing, as set by IMF/ World Bank who is the main project investor. This model also outlines that stakeholder end-users take up the maintenance role when the project sponsors leave the scene, yet there are challenges to successfully maintain the assets. This study attempts to identify end-users efforts and challenges in hand-pump project maintenance and propose a strategy to overcome the gap. Data collection was done using 12 Convergence Interviews, 36 Individual Case Interviews and two sets of Focus Groups in operational as well as non-operational hand-pumps in rural Malawi. Results show that end-users financing is inadequate to cover maintenance of a major hand-pump breakdown and/or overhaul. To address the gap, a risk management plan in form of micro insurance maintenance subsidy is proposed as part of the project design.

Introduction

Hand-pump- maintenance is done within the framework of donor aid and local government policies (UNDP, 2006). Donor or foreign aid in this context is external financial aid, which could be in monetary or non-monetary terms. The significant donor in hand-pumps' projects just like most development projects is IMF/World Bank through UNDP (UNDP, 2006) which dedicated \$23 billion towards the funding of hand-pump projects (World Bank, 2008). Policies, therefore, originate from IMF/ World Bank (World Bank, 2008) as they invest the financial resources through mainly NGOs. Donor aid funding investment is the key to summon end-user requirements or contribution in hand-pump maintenance. Traditionally, IMF/ World Bank foreign aid for rural projects had no conditions attached to it until the 1990s. Since then there have been debates on foreign aid effectiveness and economic growth of recipient countries hence aid policy reform for most developing countries, since the work of Collier & Dollar (2001). Collier & Dollar (2001) propose effective donor aid in a form of decentralised pool funding and end-user contributions. The requirement is that end-users contribute to hand-pump financing in a form of cost sharing (UNDP, 2006). End-user contribution is often a requirement that funders attach to their grants offers. The concept of end-user contribution is to reduce donor dependency and 'install' the concept of self-help, ownership, and empowerment other than passive recipients. Whilst NGOs role is to cater for the total cost of the assets and project administrations, stakeholder end-users are urged to contribute 5-10% of the total cost of an asset in a form of upfront hand-pump maintenance cash, materials like sand, bricks, gravel and free labour for digging the wells (UNDP, 2006). Whittington (2002) concurs that poor rural end-users are willing to pay, but politicians discourage payment to gain votes. Schouten & Moriarty (2003) argue that willingness to pay may differ from the ability to pay as poor users may not have the ability to pay. End-user financial contribution aimed at fund-raising for on-going management of water assets is practiced in some developing countries such as India (Prokopy, 2009); Tanzania, (Gine & Prez Foguet, 2008); Swaziland, (Graciana, 2010). According to Prokopy, (2009), End-user fees and participation had a positive impact on drinking water projects in India. However, Breetz & Fisher-Vanden, (2007) argue that cost sharing can discourage end-users if payments are not fairly and transparently done. According to Harvey, (2007) demanding that rural end-users donate to project financing is 'tyranny'. Morally, marginalised end-user

human rights is to be upheld just like any other human being. Human rights is about the welfare one deserves for virtual of being a human being. Article 8 and 12 of the Human Rights Act state the roles within the government or authorities to provide for their citizens. It is therefore, the authorities' responsibility to devise ways how basic needs of the inhabitants are met. Although article 8 and 12 advocate protection of the marginalised groups; governments in developing countries often depend on donor aid (UNDP, 2006).

Donor aid presents in different forms among which is micro insurance. Micro- insurance, is about the subsidy provision by the donor agent, often through the project sponsor, so the poor can access the services. The aim of external aid provision for loans and/or saving schemes is to break the poverty vicious cycle. Though the main aim was improved financial outcome, Hamid, Roberts & Mosley, (2011) postulates that there have also been benefits associated with improved general health and non-financial outcomes for the poor. Jutting (2004) observed that those in the financial micro credit for their health scheme were better off than the non-members. Dekker & Wilms (2010) highlights that rural dwellers in micro care insurance borrowed less, which eventually reduced the overall government health expenditure. However, Schneider (2005) noted that trust between the members and quality of insured services was a challenge. Therefore, the imposition of tariffs so that hand-pump water is not treated as a free commodity as proposed within the donor aid policies may be difficult to comply by some end-users in some low-income or ultra-poverty regions in developing countries. Whether end-users comply to donor aid requirements for hand-pump-maintenance remains unclear. Furthermore, questions arise as to whether the local stakeholders are able to fund the hand-pump maintenance effectively, which this research clarifies using a case study in rural areas of Malawi so as to get a detailed picture and answer the research questions:

'To what extent do end-user contributions address hand-pump maintenance in rural areas of Malawi; what are the limitations of their efforts and what strategy can fill the gap?'

The choice of case study representative sampling

The study chosen hand-pumps were from a large pool of over thousands of hand-pumps in Malawi, therefore, the working and non-working hand-pumps were samples. The study was investigating the process of managing hand-pump challenges, to make sense of the social phenomena. Multiple sites were more appealing than a single hand-pump site as can make claims about a large population of hand-pumps, settings, maintenance events, processes than a single site. So nine hand-pump sites were chosen from two different Traditional Authorities (TAs) of the two districts out of 24 districts in Malawi (NSO, 2010), divided into Traditional Authorities (TAs) and wards (sub-TAs or group village heads). Each TA comprises of villages; the smallest administrative units presided by the village headman or chief. Selections of the two districts were systematically sampled (Saunders et al, 2009) because they had NGOs, which had implemented hand-pump projects among which included Concern Universal, World Vision, OXFAM, EU and Inter AID in TA Bvumbwe, Thyolo District and TA Mazengela or (Nkhoma area) in Lilongwe District. Systematic sampling was also used for the selection of villages based on whether had operational or non-operational hand-pumps. Four operational hand-pumps in the villages of Khuwi, Chadza, Kachepa and Mavule with one non-operational hand-pump in Kamjeda were randomly chosen in Nkhoma. In Bvumbwe, Gute, Bulaki, Mphenzu was sampled as operational village-hand pumps, including Kapsyepsye, which had a non-operational hand-pump. While the researcher chose the districts and the TAs, choice of the villages and the nine hand-pumps was guided by the local extension workers and/or the chiefs or gate keepers. As the research had to concentrate on those who were familiar with the hand-pump projects so the gate keepers used snow-ball sampling. In this, the respondents sampled and interviewed, directed the researcher to another respondent (Yin, 2009).

Choices of actors alternatively called respondents or interviewees were based on whether they:

- Used the hand-pump or had knowledge about hand-pump developments
- Were village representatives with roles on the hand- pump
- Were water point committees members or local hand-pump repairers

Phases of interviews were in three categories namely: Convergence Interviews (CIs), Individual Case Interviews (ICIs) and Focus Groups (FGs). CI approach was used to funnel analysis of general categories as it started with open-ended questions. Answers were probed to help determine what they considered as negative issues of the hand-pump- maintenance. Each category had a specific definition to clarify the concept as proposed by the respondents in CI process. ICIs were the second session and used semi-structured interviews. Questions were developed based on the categories developed in convergence

interviews. The respondents were asked to score or rank the factors retarding hand-pump maintenance: whether they perceived the factor had influence or not, and if it did to what degree or influence did it affect their hand-pump operations and maintenance? The respondents were given the opportunity to add to the factors or simply make comments. Each response was tallied on each scale of the questions in terms of the level the factor had in prohibiting maintenance of the hand-pump. A summary of comments on each question as to why that scale or level of influence was chosen was written underneath. ICIs used Likert-type scales to measure the level or extent of the maintenance challenge factor in terms of the influence on the hand-pump maintenance. The scales attached a value to each influence on the hand-pump maintenance problems to aid comparison. Categories of maintenance identified in CI, ICI were further confirmed in Focus Groups (FGs). Focus Group Discussions were used as a third step to confirm categories developed in CI, and cross checked in ICIs. One member started, and others followed the snowball contributions also called 'synergy group effect'. FGs involved those who draw water from the same hand-pump throughout, as these had similar relationships. Hence discussions in FGs became group themes other than individual. The researcher moderated FGs, on a group of ten respondent end-users, one from a maintained hand-pump and the other from a non-operational hand-pump.

The FGs were analysed using content analysis. Content analysis involved identifying, coding and categorising the primary patterns. Chunk of data was organised into topics and files and were given a name and a label (Robson, 2011). Grouping involved identifying key words in the contexts. Transcription was done using listening, categorising and summarising data. The key words with similar meaning were grouped together into piles of similar meaning. Summarizing data also involved identifying key points emerging and compressing (condensing) long statements to brief statements in which the main sense of what was said could be rephrased in a few words. The researcher also looked for missing words related to maintenance challenges as identified in literature. Missing words indicated that the respondents may not have been familiar with the hand-pump maintenance challenge factor, or if it did not happen at all in the process of their hand-pump maintenance. After this process, the researcher then returned the transcribed description to the respondent end-users for validation of findings. The presentation of data followed thematic coding of the data analysis; for theme emphasis, clarity and easy understanding, some exact words stated by respondents were included.

Findings

Four main problems were identified by respondents both Convergence Interviews and Individual Case Interviews. Lack of capacity to repair major faults had the highest ranking. Respondents commented that hand-pump local mechanics could repair most faults in hand-pumps, but the Afridev hand-pump cylinder which he could not do as it required special equipment to dismantle. In Nkhoma, the pump technician reported he was also unable to repair the cylinder because it required dismantling the part which he could attempt to do if he had the equipment to do so. This section, therefore, confirms that hand-pump major hand-pump maintenance and/or rehabilitation (replacement of the whole asset) still rely on external aid or project sponsors at present in both Nkhoma and Bvumbwe.

Inadequate local fund as their chief challenge was ranked as the primary challenge. End-users identified this as a challenge because as much as most people were keen to contribute, most end-users were financially constrained, often hit by draughts as much as subsistence farming is the main source of their livelihood and economic security. End-users were encountered with financial problems to raise funds for hand-pump maintenance, because some spare parts had cost them more than £ 120. Such expensive parts took rural end-users from 3 to 4 villages an average of 4 to 6 months to contribute. In Gute village, respondents EU 10 and 31 stated they had to get a loan from a local farmer to pay for the hand-pump expenses and eventually pay back the debt over a period of one year. This section shows that though end-users are proactive in making household contributions, funds are inadequate to meet major hand-pump refurbishment, which required dearer spare parts.

Spare parts as a challenge: One of the challenges respondents scored was the issue of spare parts. Spare parts problem was reported as the third mode because respondents still faced some problems to find spares. Obtaining spare parts for Afridev (deep wells) was considerably more difficult than obtaining for MALDA hand-pumps (shallow wells). This is because MALDA hand-pumps were manufactured locally whilst the Afridev were imported from abroad. Respondents preferred to have Afridev pumps than MALDA hand-pumps because they were more reliable and yielded more water in wet and dry seasons. This section shows

that although end-users preferred Afridev hand-pumps, but spare parts were either more expensive or not readily accessed for maintenance purposes.

Challenge of hand-pump vandalism: The least ranked challenge was vandalism. Hand-pump vandalism was also a concern as some few hand-pumps particularly MALDA hand-pumps were easy to vandalise. Vandalised hand-pumps incurred more maintenance demands as often major parts were rooted out. Some villages like Mavule and Gute took strict measures to counteract this malpractice by installing a rock or employing a watchman from the village to guard the hand-pump at night. This suggests that though end-users had maintained hand-pumps, some few individuals had ill intentions.

Focus group thoughts about the problems of hand-pump maintenance

Respondents were asked about challenges related to spare parts, whether they had actual experiences of the hand-pump challenges, how they sorted the challenges and what they thought could be done in the future to avoid such problems. Most discussion showed that end users were concerned if a major hand-pump fault occurred as they may not be in a position to meet the maintenance requirements. Khuwi respondents agreed that they had experienced a problem of major spare part fault on their hand-pump, installed by Interaid NGO, which they failed to repair until when World Vision, another NGO came on board to repair it. Respondents echoed, *'we need external help if it is a big hand-pump problem beyond our scope'* (EU 57 *Khuwi*). In Kapsyepseye 1 village a water committee member had a different opinion and said:

'European Union (EU) constructed the bore hole in 2002. Concern Universal assisted to repair while they were in project phase in 2006 ...then it broke down again ...by then Concern Universal had phased out we could not repair itthough we had made contribution of K4200 (£16)' (EU 63,65 &68)

This situation was also seen in Kamjeda village hand-pump. Household contributions were generously done for Kamjeda village hand-pump yet the hand-pump was abandoned. The reason for failure to maintain it was because a maintenance expense to replace the asset was beyond their ability, mostly because of the underlying poverty situation.

Conclusion

- End-users are incapacitated to do major hand-pump maintenance
- IMF/World Bank policy of cost sharing limited to minor maintenance

NGO projects sponsors, which included Interaid, OXFAM, and Concern Universal were the main investors for capital equipment of the hand-pumps in Nkhoma and Bvumbwe, but serious maintenance flaws occurred when these NGOs phased out. This implies that NGOs or project sponsors spend more capital costs to install the hand-pumps than the return on investment. Value for money is reduced because some hand-pumps do not last long and lacks a system to sustain them when they require refurbishment or repair of a major breakdown.

Lessons learnt

- End- users are resourceful, keen to maintain hand-pumps despite poverty and this is seen by their initiative to establish maintenance bank accounts although the accounts had inadequate money

As much as IMF/World Bank provides guidelines for stakeholder End-User financing for hand-pump maintenance, the guidelines are inadequate to cater for major maintenance. There is need for the project sponsor intervention in assisting for upfront plans for major maintenance and/or refurbishment. Project sponsors can, therefore, further scale-up the end-user initiative with a micro insurance subsidy as part of the risk planning for major maintenance costs. The requirement of 5% financial/labour in put as proposed by the donors is practicable when stakeholder end-users are mobilized to manage the hand-pump assets.

Contribution to policy and practice: micro insurance subsidy

This study contributes to the clarity of debates, whether the poor and marginalised end-users should solemnly shoulder the financing of the hand-pump maintenance. As the study, main outcome is failed major maintenance due to financial constraints, the study, therefore, recommends that new and existing hand-pumps have a subsidy, for anticipating major breakdown, in a form of a micro insurance scheme. Each hand-pump micro-insurance scheme to be equivalent to about one-third of the total hand-pump asset and to be part of the project design. To reduce the costs for the funders, project sponsors may consider a concept of

‘doing less for the better.’ In this model the number of hand-pumps constructed may be reduced to cater for the extra one-third major maintenance subsidy. This concept is about building fewer hand-pumps with the purpose of increasing the asset productive life span. For example, instead of constructing 100 pumps, the NGO would fully fund for 66 and summon the extra third as a risk plan for major maintenance or rehabilitation subsidy. This could increase the number of hand-pumps working by 10-20% in Malawi as 66 hand-pumps would give a higher asset productive life cycle-years than 100 when 35% end-up with major breakdown and deemed non-functional (WHO/UNICEF, 2009; NSO, 2010). This recommendation is about small changes that could end up with lasting impact thus improving a failure rate from the current 30% to about 15% at no extra cost. NGOs or project sponsors could also provide money for the micro insurance in a form of credit provision to cater for maintenance activities. Donor's subsidy is required because NGOs phase out hence not considered a viable financial strategy. So a new financing strategy would be required in the form of credit provision to improve affordability of expensive parts. This approach shifts from relying upon the presence of NGOs for maintenance to credit provision. So the study recommends financial support from the project sponsor in the form of a micro insurance linked to a revolving fund through the local banks, which are savings and credit cooperations as such allow banking conditions for rural community groups. Therefore, this study recommends that the project sponsors do not construct hand-pumps unless each pump has been assigned an extra third of the grant for major maintenance subsidy.

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