

Review of alternative Operation and Maintenance (O&M) management models for Rural Water Supplies in Uganda, focusing on Hand Pump Mechanic Associations (HPMAs)

by

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List of Abbreviations

ADWO	Assistant District Water Officer
APM	Area Pump Mechanic
APWO	Association of Private Water Operators
CBO	Community Based Organisation
CBM	Community Based Management
CBMS	Community Based Management Systems
DLG	DLG
DRA	Demand Responsive Approach
DWD	Directorate of Water Development
DWO	District Water Office/ District Water Officer
FGD	Focus Group Discussions
FRUGAL	Forming Rural Utility Groups and Leases
GOU	Government of Uganda
GFS	Gravity Flow Schemes
HPM	Hand Pump Mechanic
HPMA	Hand Pump Mechanic Association
IDP	Internally Displaced Person
IWAS	Improving Water Supply Sustainability
KDBOMA	Kamuli District Borehole Operation and Maintenance Association
KAHAMA	Kasese Hand Pump Mechanic Association
KALI	Karambi Action for Life Improvement
KAWATA	Kasese WASH Technicians Association
KII	Key Informant Interview
LUDWASA	Luuka District Water and Sanitation Association
MOU	Memorandum of Understanding
MWE	Ministry of Water and Environment
NSP	Non State Providers
NWSC	National Water and Sewerage Corporation
NUSAF	Northern Uganda Social Action Fund
O&M	Operation and Maintenance
PO	Private Operator
POOM	Private Ownership and Operation Maintenance
PPDA	Public Procurement and Disposal of Public Assets Authority
PPOM	Public Private Operation and Maintenance
PPP	Private- Public partnership
PRDP	Peace Recovery and Development Programme
PSO	Private Service Operators
PSSD	Private Sector Service Delivery
PSP	Private Sector Participation
RGC	Rural Growth Centre
RUWASA	Rural Water Supply and Sanitation Eastern Uganda
RWS	Rural Water Supplies
SACCO	Savings and Credit Cooperative Organisation
SDIs	Service Delivery Indicators
SDGs	Sustainable Development Goals
SO	Scheme Operator
SNV	Stichting Nederlandse Vrijwilligers/ Netherlands Development Organization
SWOT	Strengths, Weakness, Opportunities and Threats
SWSSB	Sub County Water and Sanitation Board

SWSSC	Sub County Water and Sanitation Steering Committee
TSU	Technical Support Unit
UWSD	Urban Water Supply Department
VLOM	Village Level Operation and Maintenance
WBWSP	Water and Sanitation Program
WSC	Water Source Committee
WSDF	Water and Sanitation Development Facility
WSO	Water Service Operator
WSP	Water Service Provider
WSSB	Water and Sanitation Boards
WUA	Water User Association
WUC	Water User Committee

Abstract

There is increasing recognition that Community Based Management Systems (CBMS) have not delivered as promised in terms of providing clean and safe water access to rural areas in a reliable manner. The scepticism over the whether the traditional model of CBMS can provide sustainable rural water supplies has led to the emergence of new paradigm shifts in the sector, and the development of alternative models that seek to improve it or replace it. One such model that has come to prominence in Uganda since 2013 is the Hand Pump Mechanic Association model, which is based around a public private partnership approach and seeks to improve functionality of handpump systems through technical support to CBMS.

At present, given that the HPMA model is relatively new, there is limited knowledge of how effectively it has been rolled out on the ground at a national scale. This research seeks to bridge that gap and delve deeper into the issues, challenges and lessons learnt of the HPMA experience so far. It researches the status of the model and asks whether it represents a sustainable shift towards the improvement and professionalisation of Community Based Management in Uganda.

Key words: Hand Pump Mechanic Association, Operation and Maintenance, Community Based Management Systems, Community Management Plus, Public Private Operation and Maintenance.

1. Executive summary

1.1 Background

This research investigates the success of the Hand Pump Mechanic Association (HPMA) model so far in improving the operation and maintenance of Community Based Management Systems (CBMS) in Uganda.¹ Although the HPM approach has been used in Uganda since the 1980's, the HPMA model has only come to prominence since 2011, and was adopted under the HPMA Framework developed by the Ministry of Water and Environment (MWE) of the Government of Uganda (GoU). Given its short lifespan so far there is limited knowledge and understanding on how effectively the national level guidelines have been rolled out at the district level and whether an enabling environment has been created to allow this to happen. At the same time it has not been clear how operational HPMA's are and if there have been any improvements on what was in place before under traditional CBMS.

1.2 Problem statement

Despite the continued improvement in the functionality of rural water supplies in Uganda from 84% in 2013 to 88% 2015, and a marginal increase in access from 64% to 65% in the same period, this is still below the expected targets set by the Government of Uganda. Moreover, although functionality levels are better than the global picture, only 53% are fully functional in that they provide adequate and reliable yield throughout the day. (MWE: 2011b). This suggests that the CBMS model is not fully delivering on its mandate to provide sustainable rural water supplies in its current form.

In Africa, the overwhelming majority of households rely on shared water facilities – such as handpumps and stand posts - to access water (WHO/UNICEF: 2015). Although the Sustainable Development Goals emphasize the shift towards 'on plot' water supply solutions in rural areas, the reality in countries such as Uganda is that currently 66% of rural people rely on shared facilities such as handpumps and shallow wells to access water (MWE: 2015). As such efforts still need to be made to improve the functionality of handpump systems while efforts to find on plot solutions are being stepped up.

One of the key components of sustainability of rural water supplies is operation and maintenance (O&M). Given the need to seek improvement to CBMS a number of alternative O&M models have emerged in recent years one of which is the HPMA model. Despite the prominence of the model there is a gap in understanding on how this model is actually working on ground and whether it is

¹ Community Based Management Systems are often used interchangeably with Community Based Maintenance Systems. For the purposes of this research Community Based Management Systems will be used which also covers the maintenance part.

improving the sustainability and functionality of rural water supplies. At the same time other approaches have emerged that need to be compared with the HPMA model to see what lessons can be drawn for future improvement of the O&M in Uganda.

1.3 Methodology

A standard mixed methods methodology was adopted for the research. The methods used were mainly qualitative given the constraints of time and resources in the field research, however, some quantitative methods were employed to generate data for comparison of the case study HPMA's.

A wide ranging literature review was conducted for formal and informal or 'grey' literature on four key research areas. The literature review revealed a number of interesting findings. The most important of these in the context of the research that CBMS, despite some success, has not been able to achieve the levels of sustainability of rural water supplies it promised. This has triggered several paradigm shifts including the shift towards a service delivery approach and community management plus. It was apparent that that HPMA's was an under researched area both within Uganda and the wider water sector.

For comparative purposes the fieldwork was conducted in two different phases, across three regions of Uganda. The first stage of the research was conducted in northern Uganda in 2015 and the second phase in eastern and western Uganda in 2016. Several criteria were employed in selection of district/location of research including: availability of data, presence and years of HPMA operation, presence of alternative O&M models, and lastly travel time in relation to length of fieldwork. The research methods employed focused on the HPMA's as the central point of the research, however, other stakeholders such as the District Local Government (DLG), the Water and Sanitation Development Facility (WSDF), private sector actors, and institutions/organisations supporting alternative O&M models were included.

1.4 Main findings

Under **objective one** which focused on the broader issue of the status of CBMS in Uganda, the literature revealed that CBMS, despite some success, has not been able to achieve the levels of sustainability of rural water supplies it has often promised. Despite overall improvement in levels of access and functionality of rural water supplies in Uganda, both were below the national targets in the majority of case studies researched. In most case studies it was apparent that the traditional concept of volunteerism has now been eroded and that there are recurring challenges that most districts could not easily find solutions to, given the availability of resources versus the widespread and ubiquitous nature of the community issues.

This prompted further research into the status of the HPMA as the emergent CBMS model in Uganda. Under **objective two** the capacity of HPMA was analysed under four categories. Overall, HPMA were rated as average in their capacity assessment scores. HPMA scored highest in technical capacity, poorly in financial management, with average ratings in management/leadership and operational/business capacity. These findings suggest that HPMA have been able to continue with the technical work (minor and major repairs) that they have been carrying out for a number of years as HPMA, but have been less inclined to adopt some of the more managerial and financial aspects of the HPMA model. This is perhaps due to the lack of incentives put in place to expand their services. A key challenge is the reluctance of communities to pay the HPMA for preventative maintenance, which costs less in the long run, compared to paying for corrective/crisis maintenance when a more serious problem occurs.

On another note, 80% of case study HPMA were able to perform complex rehabilitation tasks such as fishing pipes out of the boreholes and the majority have branched out into other areas such as handpump installation. This is indicative of how far they have come through learning from each other 'on the job'. At the same time the capacity of HPMA in the areas of operations/business at the moment is insufficient to fully exploit the opportunities available to them. Variations in scores between HPMA can be attributed to a number of factors including longevity of the association, strength of the enabling environment, and availability of business opportunities.

Further investigation into the enabling environment revealed that although the policy and regulatory framework is in place to support the HPMA model, the technical support provided is still inadequate. These technical shortcomings are a result of lack of resources at the local level to support critical trainings (and provide follow-up strategies) in areas such as financial management, monitoring and evaluation, and contract management. Quite simply the level of technical support is presently insufficient to fully operationalize the HPMA.

Under **objective three** the successes of the model so far and the critical factors and challenges influencing the operationalisation and professionalisation of the model in future were researched. Despite its short life span so far there were numerous examples of successes particularly on a technical level where at least three of the associations had branched out into other technical areas beyond corrective maintenance including installation of handpumps, and O&M of Gravitational Flow Schemes (GFS). Other successes have been on the introduction of standardised tariffs that has led to a reduction in overcharging in 80% of the research districts. In business some HPMA have prospered in successfully completing repair or installation work of which three of these through

formal agreements such as a contract or a MoU. Success in financial management and governance are less evident.

Of the two other alternative models researched, the Whave Public Private Partnership (PPP) model was found to have achieved more in relation to improving functionality and reliability (albeit on a small scale so far) than the Sub County Water and Sanitation Board (SWSSB) model. In the two districts where the Whave PPP model operates, there was evidence to suggest some integration with the HPMA model which had boosted functionality and reliability figures overall and shifted the emphasis back on preventive maintenance.

The research revealed that there are a multitude of challenges facing HPMA (and the implementation of the HPMA model) of which the most significant is sourcing sufficient business. At the moment all HPMA are strongly reliant on one source of business, namely the DLG, and are therefore not reaching their goal as competitive private sector service providers. The second biggest challenge facing HPMA is the operational and logistical challenges of doing their work whereby HPMA predominantly travel to carry out O&M tasks by bicycle. Interestingly, this was not emphasised by the Water Service Providers (WSPs) under the Whave PPP model which suggests that if properly incentivised the solutions to this challenge can be found.

The results show some indicators of professionalisation in the HPMA model such as formal contracts, financial management etc. It is perhaps too early to determine whether this has had any impact on the professionalisation of CBMS beyond a more efficient corrective O&M mechanism that the community has been able to utilise. Overall, the results show that the Whave PPP model has made some gains in a small geographical area on performance based contracts where local service providers (WSPs) are held accountable for results. The extent to which this can be replicated and indeed be taken on board for the HPMA model is yet to be seen, given the level of resources and support required to manage the model against its high targets.

1.5 Conclusion

Firstly, in relation to the current status of CBMS in Uganda it emerged that CBMS still has relevance albeit in a more dynamic sectoral environment where change is taking place. CBMS in its traditional form is under threat, however, maintains prominence in the absence of a viable alternative at the moment.

Secondly, the research was able to investigate deeper whether the HPMA model had become well established in Uganda. New case studies were researched that revealed that HPMA are only

partially operational and lack the benefits that could be gained from a strong enabling environment. Without this in place it could be surmised that at the present trajectory HPMA's will not be fully operational in the near future as per the original vision of the model.

Thirdly, data from the case studies revealed that to some extent HPMA's are fulfilling their mandate of providing technical support to communities on O&M, however, the sustainability of the model in its present form is questionable. As such it may provide an improved corrective O&M service but falls short of anything more comprehensive that will start to address some of the recurring challenges of CBMS.

1.6 Lesson learnt and future studies

Some of the main lessons learnt in legal, technical, business, and governance categories are

- Having the formalised structure in place does not necessarily lead to better results but does provide guidance and focus for the HPMA.
- Where the PPDA waiver and HPMA guidelines are clearly understood HPMA's have clearly been able to provide technical O&M support to CBMS through contracts from the DLG.
- The HPMA has worked well from the 'shared learning' experience of bringing together individuals with different skill-sets and providing them with opportunities to learn new skills on the job.
- HPMA's do possess the capacity to take on new skills, but may just need some additional guidance from support structures of where to find these opportunities.
- When faced with technical challenges HPMA's have demonstrated the capacity to find innovative solutions to these challenges.
- The relationship between the HPMA and the DWO is one of the most significant factors in ensuring the level of operationalisation of the HPMA model.
- Although it takes time for systems and practices to develop, the fact that four of the HPMA's are not reinvesting any funds back into the association is a worrying trend for future sustainability.
- The poor performance in financial management is perhaps a result of the lack of motivation to perform the day to day financial tasks given the level of business the HPMA have achieved so far.

1.7 Suggestions for further research

One area of further study that emerges from this research is the level of attribution of improvements in functionality as a result of the HPMA model. The extent of this relationship is still unknown

especially in relation to the reduced emphasis placed on preventive maintenance by HPMA's. Secondly, to understand the potential for greater professionalisation of CBMS, further research needs to be done on the potential synergistic relationship between the HPMA and Whave PPP model. With the Whave model now planning to work with the HPMA in several more districts of Uganda this should be possible over the next two or three years.

2 Introduction

2.1 Background to the problem

Despite the ambition to achieve the sustainability of rural water supplies this has not yet been achieved. With 35% of global rural water supplies non-operational at any one time (Harvey, Uno, and Reed; 2006) there is scope to suggest that the prevailing paradigm of CBMS has not delivered what it set out to deliver on in terms of functional and reliable safe water supply in rural areas.

In Uganda, there has been a continued improvement in the functionality of rural water supplies from 84% in 2013 to 88% 2015, and a marginal increase in access from 64% to 65% in the same period. This, however, is still below the expected targets set by the MWE of 90% functionality and 77% access in rural areas. (MWE: 2016a). Furthermore, although functionality levels are better than the global picture, only 53% are fully functional in that they provide adequate and reliable yield throughout the day. (MWE: 2011b). This suggests that the CBMS model is not fully delivering in its current form and requires further unpacking to reveal the underlying causes of its underachievement so far.

Operation & Maintenance is considered to be a key area in the search for sustainable rural water supplies. In line with the scepticism about the sustainability of rural water supplies and questions over the ability of the CBMS model in its present form to address the sustainability gap, O&M has emerged as an important area of research and development, with various models designed and implemented in response to the myriad of challenges with CBMS. Although O&M is not the panacea to addressing the sustainability gap, it is a fundamental component that if effective can provide a much needed boost to the sustainability of rural water supplies.

Due to the limited success of the CBMS, a number of complementary and alternative models have emerged that offer different approaches to addressing the problems with the CBMS model. Some of these models are borrowed from the successes in urban areas with Public Private Partnerships and some are purely private sector driven. In Uganda one new O&M model that has come to prominence since 2012 is the Hand Pump Mechanic Association (HPMA) model which has become adopted into government policy under the HPMA Framework and is the standard model to be adopted by districts throughout the country. Despite the intentions of the GoU to roll out the model nationwide it is yet unclear what has been achieved on the ground. The MWE sector performance review for 2015 for example has little information on HPMA's beyond some trainings that have been conducted, and there is a gap in understanding on how this model should actually be working on ground. This

suggests the need for further research into understanding how the HPMA model works in practice and how it can be improved on an operational level.

2.2 Aims, objectives and research questions

The aim of this research is to investigate *the effectiveness of Hand Pump Mechanics Associations in improving the operation and maintenance of Community Based Management Systems in Uganda.*

In relation to the above background and problem statement the research has three main research objectives and six research questions.

- I. **To investigate the current status of Community Based Management Systems in Uganda**
 - i. What is the current status of CBMS in Uganda in terms of achievements and challenges?
 - ii. What variations of or alternatives/ to CBMS management models exist in Uganda and what does the literature point to in terms of their effectiveness so far?

- II. **To investigate HPMA as the main Public Private Partnership (PPP) model in rural water supplies in Uganda**
 - iii. What is the current status of the HPMA model and what are the other complementary approaches/models being used in Uganda?
 - iv. To what extent do local government, Non-Governmental Organisations (NGOs) and the private sector provide an adequate enabling environment for HPMA?

- III. **To establish to what extent HPMA is an improvement on CBMS and represent a shift towards 'Community Management Plus' in rural water supplies**
 - v. What has been the success in terms of operationalising the HPMA model so far?
 - vi. What are the challenges, factors and key lessons for HPMA in moving towards operationalisation and professionalisation of the model in the future

2.3 Scope of research

The research is an investigation into the status and future sustainability of the HPMA model, the main O&M model being promoted for rural water supplies in Uganda. This will be done through a case study approach which will focus on three key areas in relation to the three main objectives of

the research. Firstly, the research will establish what the current status of the overall CBMS approach is in Uganda which has been (and still is) the preferred O&M model. The achievements and challenges will be drawn out and the alternative models to traditional CBMS explained in rural water supplies in general and in the specific context of Uganda. It is not within the scope of the research to examine each of these models in detail, but, a review of the available literature will be carried out in sufficient depth to establish the developments, trends and include some examples of each model.

Secondly, the research will investigate the status of HPMA in Uganda and determine whether the enabling environment is in place to promote the HPMA agenda effectively. The status of HPMA will be investigated using several capacity criteria including management/leadership, operational/business, technical and financial aspects. The enabling environment will be defined along the political, cultural, legal, fiscal and economic conditions that are in place that influence the HPMA's capacity to operate effectively and are considered as critical to the success or not of any approach or model.

Thirdly, the research will seek to understand and analyse the success of the HPMA model so far in terms of its level of operationalisation and achievements on the ground. This is a relatively new model therefore it is important to understand what is working and not working and what positive examples have emerged.

While there are many other factors which influence O&M such as availability of spare parts, access to finance etc. this research will focus on one aspect of O&M which is the management model. The research however recognises that there is a strong overlap with the management model and should be considered when analysing its success so far.

This research is not a full inventory of HPMA in Uganda, as this has already been conducted through a national survey by MWE/SNV in 2015 and provides a very useful starting point. Instead, this research will draw on findings from the nationwide survey, and attempt to engage deeper on the status of the model with a handful of case research associations. At the same time the research is focused primarily on the HPMA itself rather than the end user or household level. While this would have provided another perspective of the effectiveness of the HPMA model so far, time and resources were not available to do a household level questionnaire.

It should also be noted that the technology scope has been limited primarily to O&M on handpump systems with the occasional reference to small piped schemes where there is some linkage with the HPMA model. This is because handpumps are still the predominate technology option for rural water

supplies in Uganda and small piped schemes fall under the remit of the Urban Water Supply Department (UWSD) rather than the rural funding mechanism.

2.4 Knowledge gaps that will be filled by the research

Although the HPMA model has been piloted in Uganda for a number of years (since 1997), limited research has been conducted on its overall effectiveness beyond the pockets of success from agencies such as Water Aid and SNV. The research will draw on findings from the recent nationwide survey, and attempt to engage deeper on the status on the model with a handful of case study associations. The MWE/SNV 2015 survey aims to establish the level of functionality of HPMA's focusing on three areas formation, functionality and local support systems. This research will attempt to go beyond this level by producing findings on how operational and effective the associations are on ground. Secondly, the research will consider some of the other 'new' O&M models that are being piloted in Uganda, and how they might complement and improve the HPMA model in the future.

2.5 How the research will be of use

The research is a timely reflection of the status of the HPMA model in Uganda which is a relatively new approach to O&M in country, and has not been studied extensively thus far. As such, this research remains relevant to a number of key stakeholders in the Water and Sanitation Sector and primarily the Directorate of Water Development who are looking for continuous improvement in the sustainability of rural water supplies and see the HPMA model as contributing strongly towards this. At the same time it is useful to DLG structures in Uganda who are influential and active in the roll out and continuous improvement of the model at the local level. Finally, other key stakeholders in the WASH sector such as SNV, IRC Triple-S and Whave Solutions who are directly supporting and strengthening the HPMA model through research and capacity building will find this a relevant analysis of where the model has reached, what the gaps are and how it can be improved in future interventions. The findings are also of use to stakeholders interested in HPMA's in the wider African region.

2.6 Description of the approach to the research

The approach to this research was both desk and field based. The desk work was conducted from 2014 through to 2016 and involved reviewing secondary literature and interviewing key stakeholders in Kampala. The fieldwork was conducted in two phases across three different regions of Uganda for comparative purposes. The first stage of the research was conducted in northern Uganda in September 2015 and the second phase in eastern and western Uganda in May and June 2016.

For the fieldwork a mixed methods approach was adopted, based on the rationale of using different methods to comparatively investigate the same subject. The research methods used were mainly qualitative, though some quantitative data was required when assessing the performance of the different case study HPMAAs.

2.7 Overall structure of the report

Chapter three is the literature review which will categorise, compare and evaluate the literature on CBMS, alternative management models and Hand Pump Mechanics Associations. In chapter four the researcher will explain what methods were used for collecting and analysing the data, the challenges encountered and how they were addressed. This will be followed by chapter five 'case studies' which will present the results from the five case studies that were researched. This will be done both on an individual and a comparative basis and will present information in response to several of the research questions including the current status of the HPMA model (research question III), the enabling environment (research question IV), and the success in operationalising the HPMA model so far (research question V). In chapter six the researcher will discuss all research questions and analyse the extent to which the findings presented can answer the six research questions. This will be followed by the concluding chapter which will provide conclusions on the three objectives and of the research and the six research questions. It will also propose recommendations for the HPMA model in Uganda and any further research that is required in the field.

3 Literature review

The aim of this chapter is to gain an understanding of the current literature regarding community management of rural water supplies, which will then be followed by a more specific discussion of alternative models to traditional CBMS, including the Hand Pump Mechanics Association (HPMA) model. The first section of the chapter will look at the historical evolution of the community based management approach for rural water supplies, from Village Level Operation and Maintenance (VLOM) to CBMS and where it has reached in the context of Uganda. The second section will introduce and discuss the main 'alternative' models to CBMS, which have emerged in the last ten or so years. These include the private sector service delivery (PSSD), Public-Private Operation and Maintenance (PPOM) and Private Ownership and Operation Maintenance (POOM) models. These will be discussed at both a water sector level and within the Ugandan context. The third section will discuss the existing literature on the HPMA model as the central focus of this dissertation. This will be both from a general standpoint in the water sector and specifically on the achievements and challenges of the approach in Uganda. Lastly, two alternative models to CBMS have been piloted in Uganda will be introduced and discussed.

3.1 Methodology for literature search

3.1.1 Purpose

The review of literature focused on the three research objectives:

1. To investigate the current status of Community Based Management Systems with a specific focus on Uganda
2. To investigate HPMA as the main Public Private Partnership (PPP) model in rural water supplies in Uganda
3. To establish to what extent HPMA is an improvement on CBMS and represent a shift towards 'Community Management Plus' in rural water supplies

3.1.2 Methodology for literature search

The literature search was focused on four main research questions in order to address the three research objectives of the study:

- What is the background of sustainability of rural water supplies and what role did O&M management models have in improving the sustainability of rural water supplies?

- What is the current status of the CBMS approach in terms of achievements, challenges, and improvements?
- What alternative O&M models to CBMS are there, and what is their status in Uganda?
- What is the current status of the HPMA model both in Uganda and the wider context?

Initially, the researcher searched the websites of a number of relevant projects, programmes, organisations and institutions that were prominent in the areas of O&M in general and in the country context of Uganda. Both urban and rural systems were explored as it was expected that the lessons learnt under urban systems would be useful pointers for rural systems. These included international institutions such as the World Bank Water Sanitation Program, organisations such as Swiss Centre for Appropriate Technology (SKAT) and Uganda based stakeholders such as Uganda Water and Sanitation NGO Network (UWASNET), WaterAid, the IRC Triple-S project, the EU funded Umbrella program, and resources and data from MWE (both at national level and through the Technical Support Units) and UNICEF. This yielded some very useful literature which provided an up to date situation of research and findings on numerous subjects including the sustainability of rural water supplies, models for O&M models, and Hand Pump Mechanics Associations in Uganda. Other sources of information emerged from discussions with key stakeholders. For example, the Association of Private Water Operators (APWO) a key player in small town and rural growth centres was previously unknown to the researcher until a meeting with the Ministry of Water and Environment (MWE) Directorate of Water Development (DWD) during this research.

For the formal literature, the researcher used mainly a logical search approach using the same (or slightly modified) key word searches for each search method used. The 'snowball' approach was also used where relevant and key texts that were cited in some of the literature but had not appeared in the initial searches were also accessed. Some of the key sources of information that were considered relevant to start the search were academic institutions (WEDC), databases (IRCDOC, WELL), journals (International Journal of Water Sanitation and Hygiene, Waterlines), organisations (World Bank WSP, SNV, Rural Water Supply Network, IRC International Water and Sanitation Centre), projects (IRC Triple-S, The Water Trust) and technical briefs (WHO, WELL).

The University of Loughborough Library Catalogue Plus (LCP) was used to get further information on 'O&M', 'water' and 'management models' which yielded several useful articles. The researcher also searched for useful water journals in the LCP which bought up a number of important journals including Water and Environment Journal, Water and Environment International, and Water International. The Water and Environment Journal had online access and revealed a large number of results on O&M in Uganda using the advanced search option.

As the available academic literature on HPMAAs was limited, the advanced search function in Google Scholar was used to access some non-academic or 'grey literature'. A number of refined searches yielded three specific articles on HPMAAs in Uganda. This search was also used to get information on other countries such as Kenya, Tanzania and Zambia that would be used for comparative purposes with the situation in Uganda.

3.2 Community Based Management Systems

3.2.1 Sustainability of Rural Water Supplies

At an overall level, there remains the key question of sustainability of rural water supplies and why this is an issue. For this paper, a working definition of sustainability is required. For Harvey and Reed (2003) a water supply is sustainable when:

The water sources are not over-exploited but naturally replenished, facilities are maintained in a condition which ensures a reliable and adequate water supply, the benefits of the supply continue to be realised by all users over a prolonged period of time, and the service delivery process demonstrates a cost-effective use of resources that can be replicated.

According to Carter, Tyrell and Howsam (1999) sustainability is 'constancy in water (and sanitation) services'. Sustainability (of rural water supplies) is influenced by a number of critical factors which can be thought of as the 'building blocks' for making the shift to sustainable service delivery (IRC Triple-S: 2012a). Operation and Maintenance is one of the three critical factors in ensuring sustainability of rural water supplies, the other two being local financing and cost recovery, and effective community demand (Montgomery, Bartram, and Elimelech: 2009). Similarly, sustainability can also be thought of as containing four critical elements that make a chain; including motivation, maintenance, cost recovery and continued support (Carter et al: 1999). Harvey, Skinner and Reed (2002) have expanded on this definition and identified six critical sustainability factors including 'maintenance systems', institutional and policy environment, community social aspects, technology, spare parts supply, and finance and cost recovery.

Despite the ambition to achieve sustainable rural water supplies, this has not yet been achieved. In Sub Saharan Africa 35% of rural water supplies are not operational (Harvey, Uno, and Reed: 2006). In Uganda currently 85% of rural water supplies are functional (MWE: 2015), however, only 53% of all water supplies are fully functional, namely that they provide regular and adequate yield throughout the day (MWE: 2011b). In recent years a more nuanced understanding of performance of water supplies has emerged, that goes beyond the basic level of functionality at time of spot check.

Other parameters such as quality, reliability and distance to travel are considered which provide a more balanced picture of performance.

For the goal of sustainability of rural water supplies to be achieved effective O&M is essential (Harvey: 2009) and a key factor in improvement (Montgomery, Bartram, and Elimelech: 2009). Although O&M are generally grouped together it should be noted that they are in fact two different activities. Operation is about the direct access to the system from the user or operational staff, and maintenance is about the technical activities that are required to keep the system working (Carter: 2009).

In rural water supplies maintenance is divided into preventive and corrective maintenance. Preventive maintenance can be defined as the regular inspection and servicing to preserve assets and minimize breakdowns, whereas corrective maintenance is the minor repair and replacement of broken and worn out parts to sustain reliable facilities. (MWE: 2011a). In Uganda corrective maintenance is broken down in 'minor' and 'major' repairs as per the table below.

Table 1: Preventive and corrective maintenance in O&M

Preventive maintenance	Minor repairs (corrective)	Major repairs (corrective)
Clearing drains and surroundings Maintaining fence Periodical checking and service of handpump Periodical replacement of fast wearing parts (buckets, valves etc.)	Repair of damaged parts outside routine service Replacement of damaged slow wearing parts (handle, chain, few pipes and/or rods, cylinder) Repair of cracks to platform or drain.	Fishing of dropped pipes and rods De-silting of borehole Repairs to borehole casing and screens Replacement of platform and drain Replacement of rising mains.

Adapted from MWE, 2011a

The management of O&M of rural water supplies involves a range of approaches or models and a multitude of actors including community, government, civil society and increasingly the private sector. Since the 1980's, the prevailing trend in the management of rural water supplies has been community or village level management, with some support from the government. This was based on the rationale that communities could best manage their own resources which would be the most cost effective approach. Although some trends such as greater participation from the private sector have emerged, the community based model has remained the foundation of O&M and as such requires further discussion on why this is and where it has reached.

3.2.2 Current status of Community Based Management Systems

Since the 1980's the dominant approach to tackling the challenge of sustainability of rural water supplies has been the community management model. This approach emerged from the failure of a centralised government service delivery system and the 'project approach' of development actors (Moriarty, Smits, Butterworth and Franceys: 2013). At the lowest level the community management model involved the use of appropriate technology such as the handpump at the village level, therefore CBMS became synonymous with VLOM. In broader terms VLOM refers to maintenance systems that are community or user managed. In a sense VLOM has been the predecessor to Community Based Management (CBM). There are some slight differences that should be noted before the researcher goes into further explanation of CBMS. VLOM is a concept built around technology (in this case the handpump). As the concept gained ground it was extended to include management, with a broader aim of keeping the technology working or operating once installed (Colin: 1999). VLOM management was essentially a project approach involving several stages including formation and training of a user committee; community contribution; signing of contract between implementing agency and users; system for repair and maintenance; and organization of spare parts supply chain. In comparison although CBM contains some of these elements, it is arguably less prescriptive with community preference and willingness to pay taken into consideration in programme design. (Colin: 1999).

This research will assume VLOM as the predecessor of CBM. It will also consider CBMS as the management component of CBM concerned with keeping the technology working as the primary focus.² The question is therefore what happened to VLOM and where has its successor CBM reached?

Despite some early successes there is an overwhelming trend in the literature critiquing the effectiveness of VLOM. In summary VLOM has not reached the 'unrealistic expectations' placed on it and effective maintenance not been achieved (Colin: 1999). With over one third of handpumps in Sub Saharan Africa not working at any one time, the approach has not delivered on sustainability. (Harvey: 2009). In his critique of VLOM Harvey (2009) argues the need for a paradigm shift in thinking away from the prevailing project approach which viewed communities as 'isolated entities'.

Although VLOM has been critiqued in depth, the wider approach of CBMS has remained the prevailing norm, as evidenced by the enabling environment that still supports this approach. Under the United Nations Sustainable Development Goals (SDGs), Goal 6 emphasizes to 'support and

² Aspects such as willingness to pay, community preference, joint appraisal etc. are important components of CBM, however, the research objective is to look at the effectiveness of management models therefore the wider components of CBM will not be covered in detail.

strengthen the participation of local communities in improving water (and sanitation) management' (UNDP: 2015). Moreover, community based management has also not remained static in its approach. For example by the late 1990s community management had become embedded with the Demand Responsive Approach (DRA) which allowed for communities to decide on the type of technology used based upon economic demand or willingness to pay.

Furthermore, some of the literature suggests that community based management has worked. At a macro level access to water in rural areas improved from 62% to 81% globally between 1990 and 2010 (Moriarty et al: 2013). The literature also points to some success in improving functionality under specific conditions. Where the (sustainability) 'building blocks'³ are in place handpump functionality rates appear high (Foster, 2013). Other authors have noted numerous successes of communities managing their own water sources over a long period of time (Schouten, Moriarty and Leonie: 2003). According to Carter et al (1999) community participation (in water supply) works because it has to, due to the inability of the central government to provide the necessary support or services.

On the other hand, the prevailing school of thought in the literature is that the community management model has failed to deliver expected levels of sustainability (Harvey and Reed: 2004) (Lockwood: 2004) and sustainable, community based managed rural water supplies, continues to remain an elusive goal (Foster: 2013). This is evidenced by the non-functionality of rural water supplies where an estimated 35% of systems are out of operation (Harvey, Uno, and Reed; 2006). Moreover, even when improvements such as 'demand responsive approaches' and 'community participation' in planning and construction have been integrated into CBMS, there have been improved outcomes but sustainability is still disappointingly low (Foster: 2013).

On a broader level, there is a school of literature that suggests the approach of community management has flaws. In his critique of 'community management', Harvey (2009) has termed the prevailing community management project approach as 'business as usual' despite its failings in terms of the constant need for rehabilitation and replacement. For Carter et al (1999) community participation can work in the short and medium term, but for the long term new models of service provision are needed. Similarly, community management may have reached its limits in terms of what can be achieved on the principles of 'volunteerism' and 'informality' (Moriarty et al: 2013). Other reasons for the lack of success of the CBMS model may be attributed to the lack of stakeholder incentives such as payment and secondly, that reliance on volunteerism cannot be sustained in the long run (Harvey et al: 2006). Authors such as Carter (2009) have looked at three critical issues in the success of community based O&M which are: a strong user perception of need; strong

³ By 'building blocks' the author is referring to the six sustainability factors above

community institutions; proactive and responsive support organisations. The same author notes, however, that these factors rarely coincide

New directions for CBMS

For CBMS to succeed most authors seem to agree that it cannot deliver in isolation from support structures. There is need for intermediate or 'linchpin' actors (Lockwood: 2004. Schouten et al: 2003) to be involved, and secondly, for communities to receive ongoing support (Fisher: 2005). Schouten et al (2003) argue that community management needs an enabling framework of technical support, policies and regulations in which to be implemented. For countries in Sub Saharan Africa this enabling environment is often weak. Even if appropriate policies are in place then often the support mechanism - governmental or civil society - is not there to implement or enforce them to the level of the end user.

It is also apparent from the literature that CBMS needs to be improved beyond the 'one size fits all approach'. At a broader level the 'service delivery approach' suggests a more holistic approach to improving rural water supplies which emphasizes the entire life-cycle of a service, including the hardware and software elements (Lockwood and Smits: 2011). Similarly, professionalisation implies a shift towards utilisation of professional service providers that can be held to account against predetermined performance indicators, which has had some success in middle-income countries in Latin America where certain factors such as public finance and higher coverage levels are already in place (Moriarty et al: 2013).

Secondly, there has been a movement towards what is termed 'community management plus' (Lockwood and Smits: 2011) whereby some positive aspects (of CBM) are retained such as community cohesion but other aspects such as financial accountability are improved. This research will look at some of these proposed improvements to CBMS but with a focus on the O&M component only.

CBMS in Uganda

The researcher agrees that CBMS in its present form may not be fully delivering and that other approaches need to be explored that can build on and improve CBMS. In Uganda the CBMS experience draws parallels with some of the general literature cited above. Overall, CBMS is strongly promoted in the policy documentation available. The national framework for O&M of rural water supplies (MLWE: 2004) emphasises CBMS as the preferred option for O&M given the advantages of sustainability, empowerment of communities and low cost nature. In the later version (MWE: 2011a) CBMS is still described as the preferred option although it notes that traditional CBMS may not be appropriate for all circumstances. Other models such as Water and Sanitation Boards, centralisation,

decentralisation, big corporations, NGO centred, are also mentioned for different/extenuating circumstances.

Despite this policy level support, a study on effectiveness of CBMS (MWE: 2011b) notes several challenges that are still affecting the O&M of rural water supplies in Uganda including low functionality where 53% are fully functional and poor maintenance with only 32% of facilities well maintained. In agreement with the literature, there are however ‘islands of success’, which tend to be project centric and have benefited from the presence of key sustainability factors. A recent study of community managed handpumps in Uganda found that 19% of the sample 15,133 handpumps were not functional, and higher functionality was achieved when a trained, active and gender sensitive management committee was in place. (Foster: 2013).

There are also a number of challenges in relation to CBMS in Uganda that are similar to the sustainability building blocks identified above. It would appear that these challenges are recurring and are not being addressed by CBMS in its present or traditional form. These challenges are explained in the table below.

Table 2: Challenges of CBMS in Uganda

Issue	Explanation/finding
Ownership	Loose nature of community; community do not assume responsibility
Technology choice	O&M requirements of technology choice need to be emphasised at planning stage
Community mobilization and training	Mobilisation and training is often not targeted and is hurried
Replacement of non-functional committees	1 in every 4 water sources does not have an active WSC, elections are not held.
Supply of inputs (spare parts)	Spare parts dealers are non- existent in rural areas. Efforts to establish spare parts dealers have not worked.
Financing	Most communities do not collect funds for preventive maintenance and repairs. Only when there is a major breakdown.
Gender	Many communities have low literacy levels and women particularly lack skills to adequately perform their roles
Follow up and back-up support	Repairing water sources reported by communities is often beyond district capacity to repair due to the budgeted cap on how much can be spent on rehabilitation

Source: adapted from MWE (2004 and 2011a)

In the national assessment of CBMS it was noted that all stakeholders needed to play their roles, including central and local governments “who need to effectively increase their visibility in the O&M of rural water facilities” (MWE: 2011b). From the handpump survey noted above a multitude of specific variables associated with functionality, with the main three being system age, distance from

capital/district headquarters, and absence of user fee collection. (Foster: 2013). This is nothing new and would suggest that a more in-depth exploration of how CBMS can be improved is necessary at this stage.

3.3 Alternative management models to CBMS and their effectiveness so far

3.3.1 Current paradigm shifts

There is an increasing body of literature that suggests a shift towards other alternative O&M models some which incorporate CBMS and others which replace it. For the purposes of this research an alternative model is an approach that either seeks to improve CMBS or seeks to replace it. Before discussing the alternative models in depth it is first relevant to look at some of the overarching or paradigm shifts taking place on the sustainability of rural water supplies including the 'project versus programme' approach, the shift towards a service delivery approach, and the increasing involvement of the private sector. It is noted that these paradigm shifts are in fact closely related and complementary, suggesting that all three need to be considered when trying to tackle the multitude of challenges with CBMS.

Firstly, on the project versus programme paradigm there is an increasing voice in the literature (and in wider development circles) that the project approach (although enjoying some success in putting systems on ground) does not contribute towards sustainability of the systems (see Schouten et al: 2003). Some authors suggest that it could be replaced by a more holistic programmatic service based approach that is service rather than facility based, partnership based between multiple stakeholders, and does not have a definite timeframe. (Harvey: 2009). Furthermore, it should be about long-term provision of water services at scale rather than one-off projects. (IRC Triple-S: 2012 a). Secondly, taking this 'service' concept a step further there is a call for more stringent benchmarks on service delivery including institutional, technical and resource sustainability and equity. (Schouten et al: 2003) Thirdly, there is a paradigm shift in thinking towards the increased involvement of the private sector. This means getting away from 'one size fits all approach' of CBMS and looking towards private operator options in the future (Carter and Kidega: 2013). The potential implications of these three paradigm shifts on O&M are considered in table 3 below.

Table 3: Current paradigm shifts in Rural Water Supplies

Paradigm shift	Potential implications for O&M
Transition from project to programme	O&M is tackled in a holistic manner, involving a multitude of stakeholders in a long-term sustained approach
Shift towards service delivery approach	Professional service providers (with support of 'linchpins') provide an improved service and are accountable to set targets right through to post construction support, capital repairs and maintenance.
Increasing involvement of private sector	Incentive driven can provide choice and efficiency in O&M, and therefore sustainability in the right context.

Source: adapted from IRC Triple-S: 2012a, Schouten et al: 2003, Carter and Kidega: 2013

Although it is not within the scope of this research to go into detail on these paradigm shifts, it is clear that some of these trends are influencing practice in the field (and vice versa) and should be kept in mind in the analysis and conclusions sections. The next sub section will discuss the alternative O&M models that are reflective of the emerging trends in rural water supplies.

3.3.2 Current operation and maintenance models and approaches

The current CBMS model which is the prevailing norm for rural water supplies, is a 'tiered' approach involving the community, the private sector and the government. The community is the 'O&M manager', the government the 'enabler' and the private sector the 'service provider' for construction and spare parts. Due to the limited success of the CBMS, a number of complementary and alternative models have emerged, including Private Sector Service Delivery (PSSD), Public Private Operation and Maintenance (PPOM), and Private Ownership Operation and Maintenance (POOM). A brief explanation of the three models is provided in table 4 below. These will be discussed further in the sub sections below.

Table 4: Main O&M management models and examples/variations in Uganda

Model	Explanation	Current examples	Examples in Uganda
Current model of service provision (essentially community based management)	Community finances and manages the facility, private sector involved in construction and spare parts, while government plays a monitoring and regulation role.	Still the prevailing approach throughout Sub Saharan Africa, but shift away from this model in middle income countries, urban areas, small towns, and piped schemes.	CBMS common throughout most Rural Water Supplies and promoted strongly.
Public Private Operation and Maintenance	Government plays a more prominent role in creating the enabling environment in partnership with the private sector. Community pays for service through to O&M	Total Warranty Schemes (e.g. Vergnet, Burkina Faso). Water Assurance Schemes e.g. Government maintenance contracts	On a larger scale Public Private Partnerships (PPPs) in small towns Partnership between Government and Private Operators under Association of Private Water Operators
			On a smaller scale Hand Pump Mechanics Associations (HPMAs) which are a legal association of hand pump mechanics registered at district level and mandated to carry out minor repairs
			The pilot model of Sub-county Water and Sanitation Board (SWSSB) which are intermediate' structures that can provide local support for the improvement of CBMS
Private Sector Service Delivery	Tripartite approach where local government is 'the enabler', the community as primarily 'the financier' (with some O&M responsibility) and the private sector the service provider.	Exclusive contract agreement with a private individual or firm to handle preventative maintenance e.g. AFD project in Burkina Faso	Limited private sector involvement in rural water supplies in Uganda beyond construction. The Whave model is a service delivery approach with a specific focus on preventive maintenance through incentives to Water Service Operators & Providers.
Private Ownership Operation and Maintenance	The water supply facility is owned and maintained by an individual or a private organisation that generates revenue from its operation.	Individual ownership Lease concept (e.g. Lubango, Angola)	Limited to isolated examples and self-supply options.

Source: adapted from Harvey and Reed (2004) plus author examples

3.3.3 Private sector service delivery

It is perhaps relevant to first start with the private sector service delivery approach, as this seems to be part of a broader debate about relevance and role of the private sector in rural water supplies. A substantial body of literature seems to be of the opinion that greater private sector involvement is the way forward. Specifically authors such as Carter (2013) argue the need for a 'paradigm shift' in

thinking with more private sector involvement. Similarly, Harvey and Reed (2004) suggest that more attention needs to be placed on new and innovative maintenance systems, especially those that encourage private sector participation. There is also an increasing shift in policy recognition towards more private sector involvement in rural water supplies in African countries (Foster: 2012).

In the case of Uganda some transition in thinking has taken place towards greater private sector involvement as provided in the 2011a MWE O&M framework although it is not clear how this will happen. The question is how this private sector involvement can be generated and in what form? In acknowledgement of the trend of both decentralization and greater involvement of the private sector Smet and van Wijk, (2002) suggest that that private sector is playing a role in service provision or under a time bound management contract. In the last ten years arguably the level of private sector involvement has increased, however, this has perhaps been in urban areas rather than for rural water supplies where there are few large-scale examples of private sector provision especially in the management of handpumps (Foster: 2012). For Harvey, Uno and Reed (2006) the private sector – represented by small and medium sized enterprises – provides a viable alternative to community based organisations (CBOs) in service delivery including construction, operation and maintenance, and provision of spare parts and technical services.

The private sector service delivery model is essentially built on the same three pillars as CBMS. This tripartite approach includes the local government as ‘the enabler’, however, the difference (from CBMS) is that the community - rather than ‘the manager’ of O&M - is now the ‘financer’, with the private sector the ‘service provider’ in several areas including O&M.

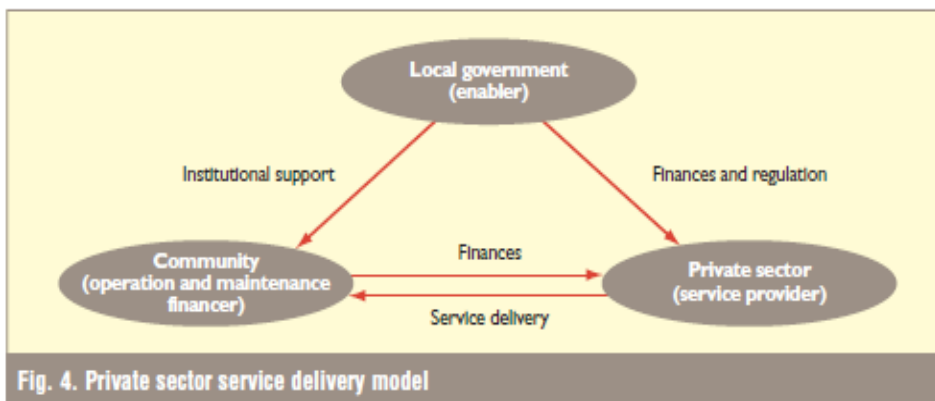


Figure 1: Three components of private sector service delivery model: Source, Harvey and Reed: 2006

Overall, there has been a lot of enthusiasm towards the private sector service delivery model. This may be in some way due to some of the failings of CBMS and the desire for something new, however, there are many potential advantages of this model including the creation of incentive through profit, community choice, and easier access to spare parts. On the other hand there are also

a number of disadvantages or challenges including a higher cost, the need to build capacity of private sector and the need for active government regulation. (Harvey, Uno and Reed: 2006). Also, the limited profitability of infrastructure O&M activities may not be sufficient to ensure private sector participation (SANDEC: 2009). It is not within the scope of this research to go into further detail on the pros and cons of this approach, however, it is relevant to explore further whether this model has proven successful on ground and what challenges have emerged.

In rural water supplies the phenomenon of private sector investment (in handpumps and piped systems) has emerged although it is difficult to quantify (SANDEC: 2009). Examples of private sector provision on a large scale in rural water supplies are few, which makes it difficult to confidently measure the prevalence and potential of private sector operated models (Foster: 2012). Moreover, if a distinction is made between handpumps and piped systems, most of the success has been in piped schemes where there are more incentives in place. There has, however, been some success of the private sector service delivery model in the context of Sub Saharan Africa. A study in western Kenya found the performance of privately operated handpumps on O&M favourable compared with those that were community and government run with quicker response times and cost recovery (Adams: 2013). Other evidence suggests that privately operated handpumps have been no better in providing a sustainable water supply in rural areas than those that are community managed. (Foster: 2012).

In Uganda, often at the forefront of macro-economic policies that are pro-private sector, it is recognised that there may be multiple roles for the private sector in water services including in design, construction, operation, maintenance, training, and capacity building (Water Aid: 2003). The MWE (2004) also points to the increasing role that the private sector can play in the management of rural water supplies on behalf of water users. Despite the increased push for private sector involvement, however, it has not significantly materialized in rural water supplies and the available data is very limited. Overall, 74% of water schemes are community managed and only 13% privately managed (either individual or private operators) (MWE: 2011a).

Some research in Uganda reveals that private sector entities already involved in other water related functions such as spares and installation would be interested in water service delivery (Harvey, Uno and Reed: 2006). At the same time the predominant mode of intervention by the private sector so far, has been in small schemes rather than dispersed handpumps. Some 'pockets of success' in rural areas have emerged in small pipes schemes in rural growth centres (RGCs). For example 'contracting out' has resulted in 72 systems that are run by local private operators, representing 8.5% of the national total of piped schemes (Lockwood and Smits: 2011). For handpumps in rural

Uganda, individual (and now associations of hand pump mechanics), have been the most widespread example of private sector involvement, however, this has mainly been in 'corrective' maintenance and will be discussed further in the sections below. On a cautionary note, in Uganda the emphasis on contracting out to private sector in areas where it may not have the capacity such as in community mobilisation, has led to underutilisation of NGOs in such core skillsets. (Harvey and Reed: 2003).

The more notable results in private service delivery in Uganda have been made in delivery in larger towns (under National Water and Sewerage Corporation) and in small towns (5,000 to 30,000 people) under the Association of Private Water Operators (APWO). However, these are essentially through public-private partnerships and will be discussed in more detail under the PPOM section. There may also be greater private sector involvement on an informal basis. Koestler (2008) makes the distinction between the formal and informal private sector, with the informal sector becoming increasingly involved in the management of rural water supplies through non-contractual payments by water boards or committees.

For rural water supplies there are a number of constraints to the private service delivery model. Most literature seems to suggest that in the context of rural water supplies the role of the private sector is minimal and the operating environment weak. Although bringing in the private sector into service delivery is well documented in MWE literature, the actual 'nuts and bolts' on how this will be done is limited. One study found that less support for the private sector at the government level, with 75% of government officials seeing no advantage in the participation of the private sector (in rural water supplies) (Harvey, Uno and Reed: 2006). Moreover, it is apparent that despite the general acceptance of private sector involvement in O&M, the actual policy and frameworks that can take this forward are not in place (Koestler: 2008). The private sector itself recognizes the need for support from the public sector or government and need for training to encourage further participation. (Harvey, Uno and Reed: 2006). At present, however, the Government of Uganda (GoU) has not yet been able to nurture this involvement (MWE: 2011a).

There are other related challenges in Uganda. The lack of a 'business environment' including the need for infrastructural improvement, access to finance and other support services, and capacity building are key components that are not in place in rural areas (Koestler: 2008). Kimanzi (2003) also notes the 'severe lag' in the private sectors capacity, especially in remote border districts. Finally, on the quality of private sector service delivery in Uganda authors such as Gooluba-Matebi (2012) note that where close supervision has been lacking the quality of service delivery by the private sector has been poor. This suggests the need for regulation, guidance and enforcement policies for private sector actors to adhere to.

3.3.4 Public Private Operation and Maintenance (PPOM)

In essence PPOM is similar to the private sector service delivery model with the government as the enabler, the private sector as the service provider responsible for the maintenance, and the community as the owner and financier. Under PPOM, however, the government plays a more prominent role in creating the enabling environment and partnership with the private sector.

At the heart of PPOM is the concept of Public Private Partnership (PPP). In the water sector while international PPPs were common in the 1990s, there has been an emerging trend towards partnerships with local private operators, of which there are 'formal' and 'informal' non-state providers (NSP's) (Sansom: 2006). PPPs – especially for piped schemes – are advantageous as they potentially 'harness market incentives' and leverage capital for much needed investment costs (IRC Triple-S: 2012b). In terms of delivery of rural water services at scale, more data is required over the long term on cost and profitability of PPPs.

In rural water supplies the most typical PPP model is where management contracts are awarded for one or two piped schemes to an individual or local firm. (IRC Triple-S: 2012b). In Uganda for small towns the conventional model is private operator management of piped water schemes under contracts with local authorities. Installation and extension of systems is done by government financing and water users pay a fee for operation which is partly subsidized. In 2010-2011 there were 95 Water Authorities in existence and 83 had hired a PO under the Private Sector Participation (PSP) model. (Hirn: 2013). The main achievements noted were improved tariff collection, the average system recording a positive operational balance, and the unit cost of water remaining affordable (Hirn: 2013). On the other hand some of the challenges noted were lack of private sector finance in the subsector, weak regulatory control, disincentives for POs for long term maintenance, and non-clustering of contracts. (Ibid)

In another study Kayaga and Sansom (2003) looked at a sample area of six small towns in Uganda and found drastic improvements in service, improved water quality, and routine preventive maintenance due to company flexibility etc. Challenges such as collection fees and capital funds from central government were noted. Garvey and Kayaga (2005) also found that services improved under private sector management, however, many users still perceived the water to be too expensive and connection unaffordable. From the researchers discussions with the Association of Private Water Operators (APWO) the PO's receive 5% of revenue collected for O&M which is used to carry out minor repairs. Some of the limitations of this approach are: the three year contract cycle which is too short to attract investment into systems; staff turnover and capacity in POs; and the encroaching nature of the National Water and Sewerage Corporation which is also taking on more

small towns which are formally identified as the best opportunities for PPPs and support programmes to develop. (Interview with Sarah Rubereti Omodi, APWO Coordinator, July, 2014).

Some of the recommendations from PPPs in pipes schemes are provided in the text box below:

Recommendations for rural water PPPs in piped schemes

- Subsidies: subsidies from central government or other external sources should be part of the PPP.
- Information sharing: information about costs, tariffs, and performance should be made available to encourage analysis and understanding of the profitability and sustainability of rural water PPPs under differing conditions.
- Capacity building: link efforts to support PPPs with broader public administration reform and capacity building, especially for local government.
- Policy/legislation: provide more support for regulation and adaptation of urban regulations to rural conditions, to ensure that contract obligations are being met and the quality of service provision remains high.

Source IRC Triple-S (2012b)

Box 1: Recommendations for rural water PPPs in piped schemes

There is some expectation that PPPs would expand to rural areas for improved rural water supplies (Kleemeier and Narkovic: 2010). In West Africa, PPP arrangements are now in place for about a quarter of all (urban and rural) piped schemes (Lockwood and Smits: 2011). In Uganda this has not yet amounted to much in rural areas due to some of the constraints mentioned in the above section. In rural water supplies the most typical PPP has been the management contract awarded for small piped schemes, however, there are a number of weak points in rural PPPs including water regulation, contract compliance monitoring, tariff adjustment, and water quality monitoring. (IRC Triple-S: 2012).

For handpumps there are several PPP approaches including handing over responsibility to Private Service Operators, manufacturer's warranty or total warranty scheme, and contracting maintenance to one or two companies. Success of PPPs in handpumps so far is limited although some approaches such as total warranty schemes and government outsourcing of maintenance have been tried. In Burkina Faso Vergnet Hydro partnered with Faso Hydro in taking over operation of handpumps (besides piped schemes) although the usage/sales was difficult to monitor (Kleemeier and Narkovic: 2010). Another relevant experience of Vergnet in Côte d'Ivoire was that success in contracting out maintenance requires village committees that have the capacity to carry out some tasks such as collection of user payments, pump upkeep and manage the funds responsibly (ibid). In Mauritania the total warranty scheme was introduced by the handpump manufacturer Vergnet and has had some success so far with 60% of users paying the annual contract fee which covers all aspects of pump maintenance. (Parry-Jones, Reed and Skinner: 2001).

In Kenya the Lifelink 'pay as you fetch' model has been developed by Grundfos, and has generated a myriad of businesses although there is no performance data available (Foster: 2012). Another interesting approach in rural water supplies is forming rural utility groups and leases (FRUGAL) coined by the WSP of the World Bank, which is based on a more comprehensive approach to PPP in rural areas. Some of the characteristics of FRUGAL include an aggregated service delivery area including villages, legal ownership by either government or communities, and investment funds channelled through local operator. (Kleemeier and Narkovic: 2010).

In Uganda, evidence of PPOM beyond the Water Board/PO model in small towns is limited. One interesting development is the inclusion of some rural growth centres (RGCs) into this model, if they are considered to fulfil the criteria such as willingness to pay. This allows more 'informal' scheme operators the opportunity to provide O&M services on piped schemes, where they may have a vested interest in improving the scheme due to their own business interests. Secondly, a number of handpump centred models have come up in the last two years including the HPMA, SWSSB, and the Whave PPP incentive model that are based on the PPP approach, and will form the basis of this research going forward.

3.3.5 Private Ownership Operation and Maintenance (POOM)

POOM is essentially the continuation of private sector service delivery whereby the water supply facility is owned and maintained by an individual or a private organisation. (Harvey and Reed: 2004). The major difference between POOM and the broader concept of the private service delivery model is that the facility is owned by a private entity which derives revenue from its operation (Harvey and Reed: 2004). In private sector service delivery the ownership is still with the community, therefore POOM represents the most radical departure from the traditional CBMS model and has been questioned on issues of ownership. The major advantages of the POOM approach are that private operators may offer flexibility and cost effectiveness. (WELL: 2006)

POOM is a relatively new concept and there is limited literature available on its success so far. There is some evidence of a trend towards POOM in certain areas. For example in Kenya, a mapping exercise conducted in Kyusa District, eastern Kenya revealed that 27% of handpumps were owned and managed by individuals (Foster, 2012). As with the private sector service delivery model, it relies on a strong private sector presence at the local level. An example of POOM is the handpump lease concept, where the water company owns and leases out handpumps under maintenance contracts. Although this removes responsibility from the community, the approach has proven profitable in Lubango, Angola where the maintenance cost is only \$US30 and revenue is \$US120 per handpump per year (Harvey and Reed: 2004). In Tanzania, in Mpwapwa District a private ownership management initiative has sprung up in the absence of public services. The

initiative is reported to be working when the entrepreneur can make a living from the service and at the same time is willing to provide a service to the community. (SANDEC: 2009)

In Uganda the private ownership model has been limited to number of pilot projects. Of the estimated 45,000 handpumps in Uganda only 2.9% are privately run (Foster, 2012). Self-supply initiatives are promoted and recognised, but are not formally stated in any policy statement (Lockwood: 2011). Although there are no figures on the type of technology used, for individual household level supply 8.4% of water supplies are self-funded (MWE: 2013b). Some community self-supply options have been explored in areas of spring protection and rain water harvesting.

3.4 Hand Pump Mechanic Associations (HPMAs)

3.4.1 HPMAs as a Public-Private Model

Although the O&M of rural water supplies is still rooted in CBMS, there is an increasing emphasis on other options and particularly what role the private sector can play in improving service delivery. Of the three alternative maintenance models/approaches mentioned above PSSD and PPOM have received more attention. Greater emphasis is now being placed on public-private partnership in rural water supplies, under which there are three models under consideration. Firstly, the main government intervention on the ground has been the formation of and support to district level HPMAs on a nationwide scale. Secondly, the umbrella model approach at the regional level covers both small towns and RGCs through a ‘contracting out’ approach, in which the umbrella provides technical assistance to the establishment and operation of the piped schemes. Thirdly, the SWSSB model has been piloted from 2014 in some sub counties in Uganda. This is a similar approach to contracting out of POs in small towns that uses an autonomous board to oversee the O&M function in the entire sub county.

This research will mainly focus on the HPMAs as they have been recently integrated into MWE policy, with a nationwide rollout of the model beginning in 2013. The Sub County WSSB or ‘Board’ model has only been piloted in two districts of the country since 2013, although plans for its further roll out are in place. As such there are limited results available, however, the ‘Board’ model is a complementary approach to the HPMA model and will have some bearing on its effectiveness in the future. While the umbrella model is focused mainly on small towns where there is some convergence in rural growth centres, which will be briefly explored in parts of the research.

Although the HPMA concept has been in existence in Uganda since the 1980s, it was only recently adopted into MWE policy in 2013. The main objective of the HPMA is to create a mechanism through which CBMS can be technically supported (Sentumbwe, 2014). This ‘technical support’ is

mainly in the form of monitoring of water points for functionality and repair needs. There is no role foreseen in other aspects of O&M such as training and water user fee collection. The HPMA model shares similarities with the Area Pump Menders (APM) model, which has been used in several countries across Africa, in that HPMs are trained by the DWO and hired by the community to carry out corrective maintenance, however, the HPMA has taken this a step further by forming the HPMs into an association which has a legally binding partnership with the DLG. Although the APM model has been categorised as a VLOM model (Harvey and Reed: 2004), the researcher would suggest that the HPMA is more of a partnership approach and therefore also has similarities with PPOM. The HPMA is also comparable with the 'outsourcing' or 'contract maintenance' approach that was used in Burkina Faso, though, in the Burkina model the local government or commune signs an agreement with the Water User Association (WUA) which obligates the association to pay a firm directly for repairs.

The HPMA model in Uganda is a tiered approach involving a series of legally binding Memorandum of Understanding (MoU), frameworks and at the lowest level contracts as per figure 2 below. The community (represented here) by the Water User Committee⁴ is the owner that 'contracts out' to the private sector which in this case is Sub County HPM, who is also a member of HPMA. The HPMA has a legally binding MoU and framework contract with the DLG, and also with NGOs at district level. The sub county may also have a similar arrangement with the HPMA (as per the pilot SWSSB or 'Board' model already mentioned). At the central government level, the MWE has a MoU with the local government stating its relationship with the DLG. In essence this is the recommended approach from the MWE to tackling the O&M problem with CBMS. The government is still the 'enabler', the private sector the 'service provider' and the community (to some degree) the 'financer'.

⁴ Water User Committee (WUC) is the community elected management committee. In Uganda it is often used interchangeably with the Water Source Committee (WSC)

the 'artisan association' model was established which incorporates APMs into a wider association with a range of skills and was able to reduce pump downtime by 50% (Sansom and Koestler: 2009). The 'artisan association' supports the APMs in areas such as training and marketing their services, which are similar responsibilities of the HPMAs in Uganda.

In Uganda one study for UNICEF by Sansom and Koestler (2009) found training of HPMs led to some success in areas with a high density of handpumps and other types of water sources. However, refusal to pay, long distances and lack of tools were major challenges. One innovative approach being pioneered by Whave in Uganda is an incentive based model whereby pump mechanics receive payment in relation to the water litres pumped – the incentive being less breakdowns would equal higher payment received. This model will be explored further under section 3.5.2.

There have also been some 'islands of success' found under the 'Association' model in Uganda, particularly where the support of NGOs is present. In Katakwi District for example the Association of Hand Pump Mechanics was formed and supported by WaterAid to improve credibility and quality assurance. The districts are involved in monitoring the association and price regulation. The impact of the association has been improvements in functionality and HPMs are able to make a living (Sansom and Koestler: 2009). Between 2008 and 2010 SNV established five district HPMA's and provided capacity building support in several technical and institutional areas. There were some successes, for example where the association in Kasese District received two contracts from the District Water Office for borehole rehabilitation and undertook four repairs for the community. In Kibaale District, the association managed to establish its own spare parts supply shop. (Nekesa and Kulanyi: 2012). From an earlier study, Mommen and Nekesa (2010) also found that the success of the model in their study areas was determined by the strength of leadership (at both association and district level) and commitment from members. Wandera et al, 2011 (in Foster 2012) reports functionality levels of 96% with the introduction of an association in some districts although no baseline information is available.

The literature also points to some success especially in terms of improved **coverage** of the model. Under the Joint Sector Review of 2011 there was an undertaking in support of O&M of CBMS to form HPMAs in 80% of districts by 2010/11 and operationalise them in 30% of districts by 2012/13. According the Water and Environment Sector Performance Report (SPR) HPMAs were reported to be formed in 92% of districts (MWE: 2013b). Furthermore, the HPMA assessment conducted jointly by MWE and SNV in 2014/15 found that over 80% of districts had properly registered HPMAs as CBOs or in some cases limited companies (MWE and SNV: 2015). When measured against the

second indicator of 30% operational, the study found that against some of the parameters of functionality, generally HPMAAs had weak internal governance and coordination structures for example only 47% had receipt books, 27% had cashbooks and 14% have voucher books. Moreover, only three DLGs reported a full complement of sub counties having complete toolkits to carry out repairs (MWE and SNV: 2015).

On **service delivery** it is noted that most studies have been geographically localized and are more focused on the capacity and functionality of the HPMAAs, rather than their effectiveness and impact in terms of service delivery. According to Nekesa and Kulanyi (2012) the HPMA is a useful approach to improving service delivery as mechanics are better organized and services are regulated. As a result of this national rollout of the HPMA model in Uganda, some authors such as Sentumbwe (2014) point to a reported reduction in the cost of major repairs and timely response to handpump breakdowns. According to Triple-S the HPMA has also had a positive influence on the performance of water user committees, and to a lesser extent users' satisfaction (Abisa, Bey and Magara: 2014). This suggests the HPMA model may be making some progress, though, the actual evidence to support this finding is rather limited.

For the HPMA model to work a **viable business model** needs to be in place. The success of the model has been firmly grounded in the Ugandan Public Procurement and Disposal of Public Assets Authority (PPDA) waiver which will allow HPMAAs to be eligible to receive district contracts for repairs and other work. At this stage only nine HPMAAs have so far signed MoUs with their districts and only three have been given contract work for maintenance or repairs. (MWE and SNV: 2015). For some technical gaps still remain, denying ability to undertake the more complex and potentially more lucrative repairs such as fishing out lost pipes. For example only 50% of the HPMAAs can carry out rehabilitation works including fishing out parts if availed with the right tools, the rest still need training (Ibid).

According to MWE **functionality** has improved by 1% in a period of one year from June 2013 when the HPMA model was rolled out. (Interview with Dr Nyeko, MWE, 7th September, 2014). This however cannot be attributed solely to the HPMA model but the wider efforts of the sector. In Kasese District where the HPMAAs has been used for a number of years it has contributed to improved functionality i.e. 77% in 2009/10 compared to 59% in FY 2007/08, though, again it is not clear how much this can be attributed solely to O&M improvements under the HPMA model. (Nekesa and Kulanyi: 2012). In Katakwi District, there was a reported improvement in the number of handpumps functioning regularly following the establishment of the HPMA. (Water Aid: 2013)

There are other positive gains that have come from the HPMA model. Firstly, HPMAAs have strengthened accountability structures from the water users to the association and from the association to the district (Nekesa and Kulanyi: 2012). In the IRC Triple-S survey from 2014, some improvements were noted in the spare parts supply, and information flow between Water User Committees (WUCs) and HPMAAs among others, which according to the SPR (2010) has led to improved functionality in four selected districts. (Abisa et al: 2014). Secondly, there are also some successful examples of 'scaling up' of the HPM model into a more diversified business model. In Soroti District 10 Hand Pump Mechanics have formed a registered company Orgestone Technical Services which provides a variety of services including digging shallow wells, spring protection, installation of pumps, fabrication of windlasses and supply of spares (MWE: 2011c). The company customers include private individuals, districts and NGOs and in FY 2010/11, the company had installed 30 pumps (Ibid). Similarly, the 2014 HPMA country survey points to similar diversification strategies, for instance the establishment of a 'spare parts' shop under the HPMA in Kibaale District, western Uganda, which also serves the neighbouring district of Kyenjojo (MWE and SNV: 2015).

3.4.3 Challenges of the HPMA model

One of the earlier studies (prior to the HPMA roll-out in 2013) by SNV identified a number of performance gaps with HPMs including: working as individuals rather than together; lack of representation at district level; limited bargaining power to access tools and spare parts; and no legal identity which prevents them from competing for formal contracts (Mommen and Nekesa: 2010).

One of the major issues with HPMs (as individuals) is the **quality of service delivery**. In an early study of the private sector in water and sanitation in Uganda, Bwengye (1999) found numerous problems with HPMs, including overcharging for repair and preventive maintenance, low capacity to handle major repairs, and low/insufficient number of boreholes per mechanic. In addition, as with rural water supplies in general, one of the biggest challenges of the HPMA model is the lack of access to and poor quality of spare parts. (MWE and SNV: 2015). This is part of a broader issue of the inefficiency and ineffectiveness of spare parts service delivery in rural areas, in which a last mile delivery system is clearly lacking.

Another issue is the **economic viability** of the HPMA model. Besides the number of boreholes or point sources it is also unclear whether just the repair of handpumps provides enough financial incentive or other revenue sources are necessary. In Uganda, revenue from routine repair and maintenance may not be sufficient to sustain the HPMA (IRC Triple-S: 2013b). Furthermore, in the case of Lira District HPMA, the chairperson was unsure whether the repair of boreholes is sufficient to sustain the entity (<http://www.ircwash.org>). This suggests that HPMAAs may eventually need to

look for alternative revenue sources such as piped schemes in RGCs. This will be discussed in more detail under the WSSB model below. Moreover, under the PPDA waiver, HPMAAs are eligible to be contracted for corrective maintenance, however, this has not been the case with HPMAAs lacking skills in contract management and DLGs still working out how to engage them (IRC Triple-S: 2013b).

Other constraining factors are **limited funding** and **lack of structures** at sub county level. (Sentumbwe: 2014). The limited funds and capacity at a local level is one of the major failings of the decentralisation model in Uganda, where funds generally do not trickle down to the lowest tiers of government nor is there sufficient technical capacity in place to provide adequate support. Though the PPDA conditional grant can provide funds to be used to contract O&M out to HPMAAs, experience has proven so far that this vacuum in funds has tended to result in difficulties in getting the HPMA started.

Another initial challenge with the model was **the framework** for the support the district was to provide to associations (Nekesa: 2011). This may have been cleared up by the provision of the PPDA waiver that relieves the districts of a competitive tendering process and provides potential access to conditional funds. This is supported by the MWE and SNV survey results which found that 66% of DLGs were willing to support the PPDA waiver. In practice, however, this has not been done as the survey revealed that none of the districts had yet signed a MoU with an HPMA. According to interviews with MWE (July, 2014) most districts are still using HPMAAs as individuals rather than going through the associations. There is lack of proper understanding of the HPMA concept by different stakeholders especially the DLG. Secondly, there was an initial concern with the legal entity for registration as CBOs as opposed to a company which would be an advantage in competitive tendering. (IRC Triple-S: 2013b). Other challenges noted from interviews with MWE are the weak institutional structure, and lack of management and administration capacity of the executives in the HPMA.

3.4.4 Lessons learnt and recommendations

The first key lesson from the literature is that (as with anything new) the HPMA model needs support. The 2014 HPMA survey found that the HPMAAs work better where partner support is provided (MWE and SNV: 2015). Areas in which linkages are needed with other organisations can include start-up capital and spare parts (Nekesa and Kulanyi (2012). Furthermore, HPMAAs also need strong support from the district in terms of basic management and administrative strategies. In Kabarole region the District Water Office supported the HPMA registration as a Community Based Organisation (CBO) and as a company, constitution development and election of the committee and estimates it will need another year of support before going it alone (IRC Triple-S: 2012c). Secondly,

associations have been able to improve information flow between the three key stakeholders namely the community, the local authorities, and the private sector. (Nekesa and Kulanyi: 2012)

The particular example of Lira District HPMA also puts forward success factors that need to be considered in the course of this research. These include the level of commitment from the HPMA which has been a key effort of the HPMA so far; the need to engage well and have relevance in the community; and the good will and support of the DLG (<http://www.ircwash.org/>).

More recently the MWE/SNV HPMA survey of 2015 suggests a number of recommendations. The most critical in relation to this research are:

- Develop a growth trajectory for the associations to become viable HPMA in the future.
- HPMA to (further) diversify their business into other related areas e.g. latrine construction.
- Identify and document for wider sharing the unique strategies that exist across the country regarding HPMA.
- Document successes of HPMA in Hoima, Kibaale and Sembabule Districts that have managed to overcome the challenge of access to spare parts.
- Strengthen HPMA umbrella linkages that are weak or non-existent.

3.4.5 Variations/improvements of the HPMA model

The question that also needs to be asked is ‘what is really new with the HPMA model in Uganda?’ There are a number of new elements at play. The main development is the HPMA framework that makes provision for DLGs to directly engage HPMA in the O&M of rural water supplies. This is in effect new ground as under the PPDA Act all procurement (water and sanitation included) would have to go through a formal tendering process. Under this framework the normal procurement process is now waived, meaning the services of the HPMA can be procured directly. Secondly, in terms of financing (and therefore sustainability) this means that HPMA can access and benefit from conditional grants at the district level and in theory, also at the lower tier of government; the sub county. Thirdly, the HPMA will be registered as CBOs meaning that they are recognized as a legal entity that is able to conduct business.

Prior to the standardisation of the HPMA approach, various International Organisations such as SNV, WaterAid, Oxfam, The Water Trust and Triple-S have given support to the HPMA model which led to slight variations in the implementation of the model. One approach has been to try and tackle the issue of access to finance for communities to support their O&M. Under SNV, the Improving Water Supply Sustainability (IWAS) project in northern Uganda, provides technical support to an HPMA in areas such as business planning but is aiming to strengthen the collection and utilisation of

funds for repairs, and promote a culture of savings and investment through the Yahura Yehoza (YY) or 'save and borrow' approach. Similarly, a pilot project conducted by The Water Trust in Kiryandongo District is trying to generate a safe savings culture by linking Water User Committees to SACCOs, with an agreement in place with local entrepreneurs responsible for managing and ensuring provision of O&M services.

For HPMA to become sustainable in the future there is need for business improvement and diversification. The MWE and SNV survey of 2015 provides a number of examples of HPMA diversification strategies from latrine construction in Lira District, to spare parts shops/depots in Kibaale and Apac Districts. Under the improvement of the core business HPMA in several districts have developed their own fishing tools which has been a long standing barrier for conducting thorough repairs. Secondly, there are opportunities for HPMA to engage with 'other' technologies such as demonstrated by the HPMA in Kabarole District that has been given the opportunity to take up the O&M responsibilities for the piped gravity flow system and expanding the HPMA reach beyond handpumps.

3.5 Alternative and complementary models to the HPMA

3.5.1 The Sub County Water Supply and Sanitation Board model

The other MWE supported model that is still at pilot level but is likely to be expanded in the future is the SWSSB or 'Board' model. In a move towards professionalism rather than voluntarism Abisa, Bey and Magara (2014) point to SWSSBs as one of the three options in Uganda – the others being privatization of management of water points and sub county Water User Associations. So far the SWSSB has been piloted in only a few locations. It is intended to provide support for communities on O&M in areas such as collection and management of user fees, helping communities to implement by-laws, reporting and responding to facility breakdowns. As this is a relatively new model, there is a scarcity of literature available in terms of its effectiveness.

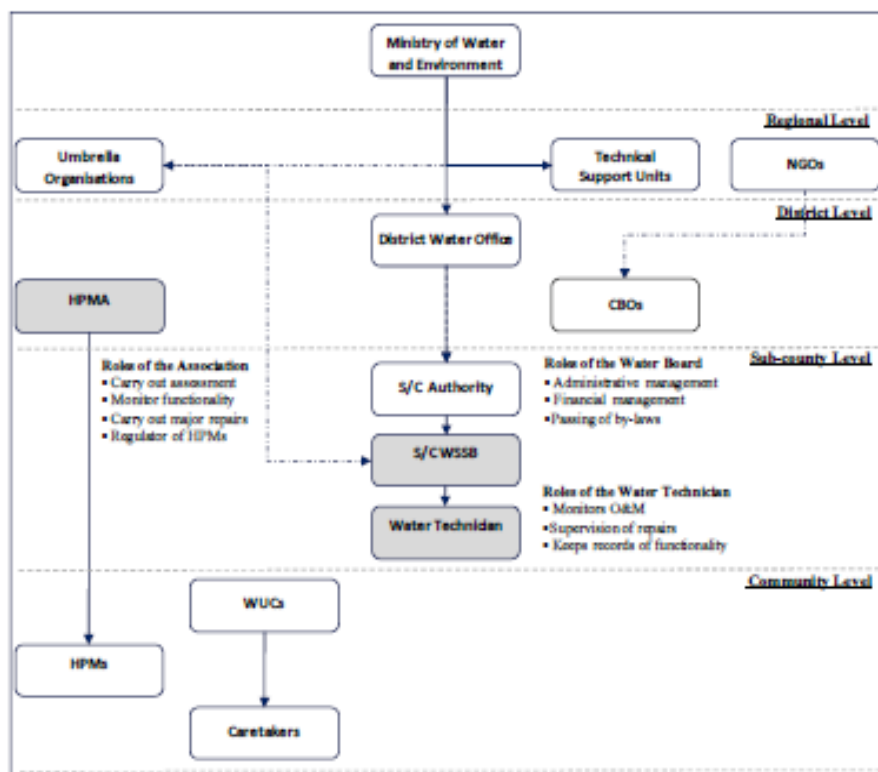


Figure 3: Roles and responsibilities of Sub County WSSB. Source, MWE 2013

In the HPMA guidelines the main objective of the SWSSB is to fill the gap that exists between the district and WSC (MWE: 2013a). Some of the gaps it will fill are administrative management, financial management and passing of by-laws (MWE: 2013a) It is therefore one of the ‘intermediate’ structures that can provide local support for the improvement of CBMS not a replacement of CBMS and will work in conjunction with the HPMA model. The HPMA will be a client of the SWSSB (MWE: 2013a).

There is more research on the role of the water supply and sanitation boards (WSSBs) in relation to rural growth centres that are relevant to SWSSBs. The WSSB approach is based on the model used for the management of small town supplies, whereby the town councils contract out to private sector companies through competitive tenders. The successes of the WSSB model have been documented above. The SPR reports a 73% functionality of management boards in small towns in 2012/13 up from 71% last financial year. (MWE: 2013b)

Authors such as Koestler (2012) have come up with a number of important findings on the WSSB model which is relevant for discussion on the proposed SWSSB. Some of the issues noted were the limited accountability (how to apply, spending and political interference); distinction between SC and WSSB; lack of separation of leadership roles, and independence of the board from the local

government structure (in this case the sub county). Similarly, in Lira and Kabarole Districts (the two Triple-S pilot districts) where the SWSSB has been piloted some additional challenges to the model have emerged in terms of funding, status and legal provision. While the Sector Performance Review noted gaps in the technical, financial, administrative and monitoring functions of the WSSB model (MWE: 2013b), Koestler suggests that there is the opportunity for the SWSSBs to take on other technologies not just one scheme, but all water services in a sub county (Koestler: 2012).

The actual mechanism of how the SWSSB model will work is lacking in some detail. A similar approach to the small towns is proposed where the board will take 5% from available finance (conditional grant funds and water user fees) for O&M however, the board is purely based upon O&M. The Sub County Water and Sanitation Steering Committee (SWSSC) will still remain as the water and sanitation coordination body at the sub county level. One recommendation is that funds for post construction activities (from the conditional grant) should be sent to the sub county to top up funds collected by Water User Committees. According to the MWE in the larger RGCs funding is also obtained through an Urban Grant. (Interview with Dr Nyeko, MWE, 7th September, 2014). These strategies all seem to be plausible, however, given the lack of legal provision it means that the SWSSB is not officially recognised as a service delivery model, without this, other stakeholders (such as the HPMA) may not work with them. This legal provision gap needs to be recognised by MWE for both the operation of the SWSSB and the recognition of its status by other stakeholders. (IRC Triple-S, 2013a).

Other recommendations based on a study by IRC Triple-S by Biteete, L, Jangeyanga P, and Barigye, G (2013a) include the need to establish benchmarks for boards to carry out adequate monitoring and preventive maintenance of all sources in the sub-county, as well as putting aside savings for large repairs. Secondly, for large repairs or as capacity building issues, other external actors are required to provide follow up and direct support to the SWSSB.

3.5.2 The Whave PPP 'incentive' based model

An alternative approach that has been pioneered in Uganda with some results includes the incentive based model developed by Whave Uganda. The Whave model 'contracts out' to local water service entrepreneurs to establish and maintain improved water sources through a results based financing approach. The contractors are paid according to performance on key indicators. This is a public-private partnership with the GoU that emphasises the importance of 'preventive maintenance' and 'life-cycle cost optimization' that suggests a shift away from the reliance on corrective maintenance which is the current modus operandi in Uganda. The use of private sector contractors for preventive

maintenance is in line with the argument that it reduces costs and therefore increases profit margins (Harvey and Reed: 2003).

The Whave PPP model, has been piloted in 155 communities in 5 districts of Uganda between 2012 and 2014. (Harvey, Mukanaga, and Waibi: 2015). Technicians or local Water Service Providers (WSPs) are contracted by a local Water Service Operator (WSO) to carry out technical maintenance together with promotion of hygiene and water quality (Ibid). Performance of the WSPs is monitored against three key indicators (including water quality, number days the source is operational and hygiene grade of each community. The community still pays for the O&M service (through a service agreement with the WSO) that is supported with a part subsidy designed to gradually phase out over a number of years. So far the reliability of water supply in the pilot locations is at 99% with 'promising' results on the incremental pricing strategy in terms of willingness to pay. (Ibid). The paper also notes the potential link with the HPMA model for learning and competitive bidding. This linkage will be studied further in the case study section of this dissertation.

3.6 Chapter summary

The literature review has brought to the fore the current status of CBMS and the challenges associated with it. Overall, the prevailing discourse is that CBMS, despite some success, has not been able to achieve the levels of sustainability of rural water supplies it promised. In Uganda there has been some progress on key indicators such as functionality and sustainability, however, figures are still below the national targets.

The literature contains several paradigm shifts including the shift towards and service delivery approach and community management plus. Two prominent models – PSSD and PPOM - are representative of these shifts, and also build on some of the lessons learnt from urban water supplies such as 'small towns' in Uganda.

What is not clear in the literature is the achievements of the alternative models to CBMS beyond a few examples of PPP successes with handpumps in other areas of Africa. Furthermore, in Uganda there is also a scarcity of information on alternative models given the prominence placed on CBMS at policy level and their short lifespan so far.

The key knowledge gaps identified are:

- 1) Only a few Uganda specific academic texts are available on O&M in rural water supplies and alternative private sector models such as Harvey (2006) on Public Private Operation and

Maintenance. There is more literature available on public private partnership in small towns in Uganda and here the success stories of private sector involvement have been well documented. (See Kayaga and Sansom: 2003, Garvey and Kayaga: 2005) and World Bank Water and Sanitation Program (WSP) review of small town systems (Hirn: 2013). This research will therefore draw on the experiences of water service provision from small towns and bring forward some of the common elements that can be used as lessons learnt for rural water supplies.

- 2) The limited availability of academic literature on the success of different O&M models and involvement of the private sector in rural water supplies prompted the need to focus primarily on 'grey literature' available from projects such as IRC Triple-S, organisations such as Fontes and Whave on private incentive based models.
- 3) Due the nascent nature of the private sector in rural areas, there is very limited evidence of the POOM model in Uganda. In addition, models such as handpump lease contracts which may be relevant in other countries are not considered realistic at present in Uganda.
- 4) The specific area of HPMA has also found to be under researched in general and in the Ugandan context. It was therefore necessary to look at comparative case studies from other countries where similar structures have been developed such as the APM model in Zambia. In Uganda, there has been little research beyond the efforts of support organisations such as SNV, WaterAid, and IRC Triple-S. During this research period, however, SNV and MWE have completed a nationwide survey on HPMA which is very timely in the context of this research. This survey focuses on the formation, functionality and local support systems of the HPMA, upon which this research intends to complement by looking at the effectiveness of the HPMA and how the model might be improved.
- 5) The alternatives to the nationwide HPMA model are mainly at pilot stage at present. While this has the advantage that these are potentially 'new' and 'innovative' approaches, these are not yet tried and tested to the extent that findings have been generated on a wider scale. The literature is therefore limited at present, and is essentially from the same organisations that are supporting the pilots, namely IRC Triple-S and Whave. Although not the primary focus of the research, it does point to the need to understand these models a bit further in terms of how they may complement the HPMA model now and in the future.

4 Methodology

4.1 Overview

The aim of this research is to investigate the effectiveness of Hand Pump Mechanics Associations in improving the O&M of CBMS in Uganda. Although the HPMA model has been evident on a small scale in Uganda for a number of years, this is a timely study given the recent adoption of the HPMA under GoU policy in 2013. This research will help to contribute to filling the gap in the literature so far, in terms of achievement and challenges of the model, while at the same time recognising future areas of improvement going forward.

The three objectives of the research are:

- I. To investigate the current status of Community Based Management Systems in Uganda
- II. To investigate HPMA as the main Public Private Partnership (PPP) model for rural water supplies in Uganda.
- III. To establish to what extent HPMA are an improvement on CBMS and represent a shift towards 'Community Management Plus' in rural water supplies

4.2 Background of research objective and choice of research location

The choice of Uganda as the location of for this research was based upon the researcher's first hand working experiences with O&M in northern Uganda between 2008 and 2012. The traditional community based approach to O&M was often not working in communities, and Water User Committees (WUCs) whom form the lowest tier of the community based management system, were left to perform their roles with minimal supervision from the Government. As a result the challenges of willingness to pay, access to spare parts, governance and transparency, and record keeping were common place within the WUCs. Furthermore, there was often a disconnect with the local technicians or Hand Pump Mechanics (HPMs) that were supported by individual projects to address O&M challenges. The HPMs were often unregulated in what they charged the community, not paid in a timely manner for either preventive or corrective maintenance, resulting in lack of incentive to continue their efforts. Some of these issues were partially addressed under a project type approach, whereby support was given to the WUCs and HPMs, however, it was clear that this was not a sustainable solution over the long term.

The selection of research locations in Uganda was also carefully considered against several criteria including: availability of data, presence and years of HPMA operation, presence of alternative O&M

models, and lastly travel time in relation to length of fieldwork. The research has built on some of the basic data already captured under the MWE/SNV nationwide survey in 2015. This could be interpreted as showing some bias towards certain locations where more data is available, however, the research is limited in scope and it is expected more definitive results can be found where there is a history of data to build upon rather than engaging with new and data scarce locations.

Secondly, the choice of the two locations of Lango sub region (Lira and Alebtong Districts) and Busoga sub region (Kamuli and Luuka Districts) were based on the presence of support organisations and other pilot O&M models. Lira and Alebtong Districts have been supported by organisations such as IRC Triple-S and SNV, and Lira District was also one of the pilot locations for the Sub County WSSB model. The Whave mode had been piloted in Kamuli and Luuka Districts, which presented an interesting sub text on whether the two models were complementary or competing.

Thirdly, after the research was conducted in the initial two sub regions, similar trends emerged in challenges and weaknesses across the four districts. Subsequently, a fifth case study area of Kasese District was included to investigate what similarities and differences were present in a historically more established HPMA. Fourthly, travel time to and from the locations was considered in relation to the expected length of fieldwork and scope of the assignment.

4.3 Research scope and limitations

The research was able to research the effectiveness of the HPMA model in five districts, across three regions of Uganda. The research, however, is still limited versus the geographical scope of the HPMA model, where at least 85 out of 108 districts surveyed now have registered HPMA's (MWE and SNV: 2015). This limitation has been overcome by drawing on the wider findings of the countrywide MWE/SNV HPMA inventory survey conducted in 2015, and available research findings of IRC Triple-S in one of the research districts in northern Uganda. Furthermore, findings on effectiveness are limited and should be put in the context of the short life-span of the model as the roll out of the HPMA model was only initiated in the 2013. This provides the rationale for this piece of research, which has endeavoured to increase the knowledge on the subject, and see where HPMA's model may evolve in the future.

Although the research is focused mainly on handpumps it does acknowledge the other technologies prevalent in rural water supplies including small piped systems, gravity flow schemes (GFS), protected springs etc. Small piped systems are a particularly interesting development as the MWE's provision of the Water and Sanitation Development Facility (WSDF) includes a focus on rural growth centres that are considered viable for such systems. The source of funding for this facility, however,

falls under the Urban Water Supply Department (UWSD) and is therefore not considered as part of rural water supplies. For this reason and the fact that handpumps are by far the predominate technology in rural areas, the scope has been limited primarily to O&M on handpump systems only with occasional reference to small piped schemes where there is some linkage with the HPMA model.

On a broader note it is also apparent that maintenance systems/models within O&M, are just one component of the question of sustainability of rural water supplies. It would have been relevant to look at the six other sustainability components as mentioned in the literature review, which also contribute significantly to the success of the O&M model. Where possible some of these related components, such as the enabling environment, spare parts supply, and finance/cost recovery are touched upon, however, to establish the level of influence of each component vis a vis O&M would need further research which is beyond the scope of this current research.

On a similar note, the management model studied is not the panacea to improving O&M. As the literature review notes community strong user perception of need, strong local institutions, proactive and responsive support organisations should be in place for CBMS or CBMS 'plus' to succeed. Without these the effectiveness of any new approach or model is significantly reduced.

The other alternative models to CBMS, have only been piloted in a few locations in Uganda to date. This means that there is limited data available to ascertain their effectiveness and impact, and thus findings should be treated with caution given the pilot nature that may not be replicable elsewhere.

Finally, the research is more focused on the HPMA and its support structures than the end users that will benefit from the effectiveness of the model. The research gives in depth insight into the effectiveness of the model so far as the point of view of the HPMA and the support structures such as the DLG, the private sector and the MWE. Due to time constraints and logistical difficulties of reaching the water users in remote areas there is less focus on the opinions and perceptions of Water User Committees and water users themselves. This issue was observed at the initial stage of the field research, and in two districts the researcher managed to conduct interviews with Water User Committees which provided some insight into the end user perspective of the HPMA model.

4.4 Methods and tools used for similar research

The literature review revealed a range of appropriate methods for data collection and analysis. The Triple-S report by Abisa, Bey, and Magara (2014) for example looked at the performance of WSCs against key Service Delivery Indicators (SDIs). Several methods were adopted including household interviews, Focus Group Discussions (FGDs), and Key Informant Interviews (KIIs), for the analysis of WSCs and other innovative approaches within service delivery models (including HPMA and

savings and credit initiatives). This research used a similar approach but on a smaller scale and scope and also focused more on some of the more 'innovative' variations within HPMA's and the different dynamics within the HPMA's that are contributing to their success or not.

Other useful research papers such as Harvey, Uno, and Reed, (2006) used a combination of FGDs and informal interviews to look at the potential for private sector involvement in service delivery. Carter and Kidega (2013) used mainly conversation style interviews/discussions (both participatory and open) with key informants and attempted to triangulate the different views from a variety of stakeholders. In this research a triangulation approach was used on two levels - variety of stakeholders interviewed and use of several different research tools - to get a better understanding of the subject and to ensure there was sufficient questioning of the data.

On how to analyse the operationalisation of a model or approach, IRC Triple-S (2013) developed a list of criteria that are used as determining factors for the sustainability of Water Source Committees (WSCs). WSCs are the key structures in the community based management model and therefore of utmost relevance to HPMA's. The criteria developed by Triple-S includes: financial and management autonomy; demand responsiveness; incentives for expansion; professional support; regulation; transparency and accountability. These criteria were also considered appropriate for looking at the key elements of operationalising the HPMA's or other management models as they were critical factors that need to be in place to ensure sustainability. Other studies such as Adams (2013) have developed similar sustainability criterion including service level, O&M, financial management and cost recovery and then used a scoring and weighting system to compare in total 27 handpumps and 25 motorized pumps in Nyanza province, Kenya. The four criteria were broken down into specific sub areas which allowed for mainly yes/no responses and some with numerical data provided.

Another important method that was evident in the literature was the use of case studies. In accordance with Yin (2010) it is incorrect to assume that case studies only are the suitable approach for the exploratory phase, the other approaches being surveys and experiments. The case study approach is, however, relevant due in part to the lack of available academic literature on the subject area and also the difficulties and constraints of conducting a comprehensive survey that will require more time and resources than are available.

The literature reviewed was full of case study examples. For instance, Nekesa and Kulyani (2012) use the case study approach to compare findings of the HPMA approach in five different districts of Uganda. Another study by Garvey and Kayaga (2005) employs a case study approach for two small towns.

4.5 Research methods

Small scale studies such as this tend to be associated with qualitative rather than quantitative research (Denscombe: 2010). The research methods used were mainly qualitative, however, some quantitative data was required when assessing the performance of the different HPMA's. A mixed methods approach adopted, based on the rationale of using different methods to investigate the same subject. The use of mixed methods allows the researcher to feel more confident in assuming that the findings are accurate (Denscombe: 2010).

4.5.1 Sources and types of data

The data required for this research is broken down into the specific research questions in the table below.

Table 5: Research questions and data requirements. Source researcher, 2015

	Research question	Data required	Study type
Objective 1	i. What is the current status of CBMS in Uganda in terms of achievements and challenges?	<ul style="list-style-type: none"> - General literature on CBMS and specifically in Uganda - Literature on overall achievements and challenges of CBMS - Interviews with experts on the same 	Mainly desk study, some fieldwork on RQ I
	ii. What variations of or alternatives/ to CBMS management models exist in Uganda and what does the literature point to in terms of their effectiveness so far?	<ul style="list-style-type: none"> - General and specific Uganda literature on alternatives models - Journals and research articles - Uganda based studies and surveys from development actors 	
Objective 2	iii. What is the current status of the HPMA model and what are the other complementary approaches/models been used in Uganda?	<ul style="list-style-type: none"> - Policy documents - Statistical data on implementation of HPMA - Uganda based studies and surveys from development actors 	Part desk study, part fieldwork
	iv. To what extent do local government, NGOs and the private sector provide an adequate enabling environment for HPMA's?	<ul style="list-style-type: none"> - Specific literature on private sector participation - Policy documentation and frameworks - Interviews with experts in from the specific enablers 	
Objective 3	v. What has been the success in terms of operationalising the HPMA model so far?	<ul style="list-style-type: none"> - Field case studies - Project and program reports - View and opinions of Key informants - View and opinions of HPMA's 	Fieldwork
	vi. What are the challenges, factors and key lessons for HPMA's in moving towards operationalisation and professionalisation of the model in the future?		

The data collected under this research responds to the three research objectives in the table above. Information in response to research objective 1 'the status of community based managements systems in Uganda' was captured mainly from the desk based research of database and website searches and documentation review. Some of the information was also captured under the field research through a range of methods including the structured interview questionnaire, semi structured interviews and FGDs. Research objective 2 to 'investigate HPMA as the main Public Private Partnership (PPP) model in Uganda was captured from a mix of the desk based research and fieldwork and involves all five of the methods mentioned above. Finally, research objective 3 'to establish to what extent HPMA are an improvement on CBMS and represent a shift towards 'Community Management Plus' was captured predominantly through the fieldwork phase using the three methods mentioned above, with the addition of the Strengths, Weakness, Opportunities and Threats (SWOT) analysis which provides a framework for self-analysis by the HPMA members themselves, and a capacity assessment tool assessing the HPMA against several criteria including business development; governance and transparency; human capital skills etc.

4.5.2 Methods

Based on the literature reviewed and the sources and type of data required a number of research tools or methods were employed for the collection of data including semi structured Key Informant Interviews (KII), FGDs, the HPMA assessment tool, documentation review, and database and website searches. The formats used for the FGDs, semi structured interviews, and the HPMA assessment tool are provided in appendix one.

A justification for the selection of each method is provided in the table below.

Table 6: Methods, sources and justification for research. Source researcher, 2015

Type of data collection method	Details	What sources it will collect	Research questions covered	Justification
Database and website search	Review of grey literature	Published literature	i, ii, iii, iv, v, vi	Provides access to a large amount of data and is efficient
Documentation review	Review of relevant policy documentation available	Official government policies and frameworks on rural water supplies and O&M	i, ii, iii, iv,	Provides access to official statistics and relevant framework that provide the grounding for the research
Semi structured interview	Interviews of key informants/experts with a clear list of issues/topics	Opinions and perceptions on specific components of the research	i, ii, iii, iv, v, vi	Will allow key stakeholders to develop their ideas on management models, what is working and what can be done in the future.
Focus Group Discussions	Attitudes, perceptions and feelings of specific interest groups such as Water Management Committees, HPMA's, private sector.	Opinions and perceptions on CBMS and alternative models and some of the challenges	i, iii, iv, v, vi	Provides depth and insight into why particular management model are successful/unsuccessful and the challenges particular interest groups may experience.
Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis	Opinions and Perceptions	Opinions on the Strengths and Weaknesses of HPMA's and the opportunities HPMA's could develop, plus threats to the existence and sustainability.	iii, iv, v, vi	Will provide a framework for HPMA members to analyse their performance so far and what internal and external threats and opportunities exist for HPMA's now and in the future.
HPMA assessment tool/checklist	A snapshot of level of operationalisation of HPMA's	Data on key performance areas	v, vi	Will provide an additional method to view the effectiveness of the HPMA's in several critical areas.

The **database** and **website search** and **documentation review** have been covered in the methodology for the literature review under section 2.

Semi structured interviews were conducted with key informants during the fieldwork and experts at the national or central level at the main offices in Kampala. The semi structured interviews were

tailored according to the category of interviewee, as not all research questions were relevant to each key informant. At the field level each semi structured interview with the District Water Officers was standardised, and covered all six research questions. There were also a number of questions that were closed questions, and some where the respondents requested to rank their answers using a Likert scale. This generated some numerical data that could be used for comparative purposes during data compilation and analysis. The other key informant interviews were with a wide range of stakeholders, therefore the semi structured interviews focused on the research questions that was most relevant.

The **Focus Group Discussion** tool was designed to generate data on the current situation of the HPMA on the ground. The thematic areas of the discussion were on the enabling environment and 'support structure' (research question 4); the success in operationalising the HPMA model (research question 5); and the challenges and future sustainability of the model (research question 6). Again a standardised tool was used with several categorisation and ranking type questions, which would provide useful data for comparative purposes.

The HPMA **assessment tool/checklist** was used for triangulation of the FGDs in relation to research questions 5 and 6. The checklist was used to score and weight the different HPMA on six key components. The checklist also provided opportunity to verify the physical records that the HPMA had available. Where possible grading was based on the availability of documentation, as well as the response of the participants to the different statements. The six components of the checklist were:

1. Financial and management autonomy;
2. Governance, transparency and accountability;
3. Demand responsiveness;
4. Level and type of business/contracts;
5. Professional support available;
6. Human capital/skills.

The **Strengths, Weaknesses, Opportunities and Threats (SWOT)** tool provided a different point of analysis on the successes, challenges, and future prospects of the HPMA model in relation to research questions 5 and 6. A SWOT analysis was conducted with each of the HPMA, and was used to triangulate the thematic areas from the other methods, particularly on the strengths and weaknesses. It was also used to provide additional information on the future prospects of the HPMA that may not have come out clearly from the FGDs or the checklist.

4.5.3 Data collection and how it was done

4.5.3.1 Field visits to HPMA districts

The fieldwork was conducted in two phases in three different locations of Uganda. The first stage of the research was conducted in northern Uganda in September, 2015. The research was jointly planned with SNV in two districts where HPMA had been formed since 2012. Lira District has been one of the focus districts of the IRC Triple-S research project and the SNV IWAS project, and in the literature was perceived as one of the more successful HPMA. It was also a pilot district for the SC WSSB, also supported by SNV and IRC Triple-S. In the second district of Alebtong there was much less literature or research results available, therefore, it was expected that it would provide an interesting contrast with Lira. An example of the field timetable used is provided in Appendix two.

The second phase of the fieldwork was conducted in May and June, 2016, in two districts in eastern Uganda, and one district in western Uganda. The research in eastern Uganda was organised with the support of Whave Solutions, a non-profit social enterprise, which has piloted an alternative PPP model in several districts of Busoga Sub Region between 2012 and 2014. For Kasese District in western Uganda, the researcher organised the field research directly through the District Water Office.

Research on HPMA

The fieldwork involved travel to the specific region coupled with brief meetings on logistics with the agency making the local arrangements. As HPMA were the main focus of the research the majority of the time was used to meet with them. As English was not a first language for most of the members of the HPMA a local translator was hired. This was necessary to ensure participants felt at ease with the discussions and to avoid exclusion of some of the HPMA members. It was critical to ensure that the translator was not linked to any of the assisting agencies in order to remove bias and maintain the independence of the research. Also, at the beginning of each FGD the researcher explained that the research was independent and not linked to the agencies or institutions that had assisted in setting up the research. With the HPMA sessions the three key methods used were as follows:

- Focus Group Discussions were held with each HPMA focusing on several key areas including the status of CBMS; operationalisation of the HPMA (achievements from formation to present); enabling environment; challenges and future plans. These sessions involved key thematic questions for discussion and further probing of the groups to elaborate on their answers.

- The HPMAs were assessed using a checklist which focused on several key areas that were critical to the sustainability of the HPMAs. The checklist was based on ranking the HPMA performance as either good, average or poor. This ranking was based on participant's knowledge of the subject areas, combined with a physical check of the records available.
- A Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis was conducted with each HPMA, with a SWOT table developed on a flip chart during the session.

Semi structured interviews with key stakeholders

To get a broader perspective interviews were conducted with other key informants in the research districts. Firstly, a semi structured interview was held with the District Water Officer (DWO) or in some cases the Assistant District Water Officer (ADWO), who are the main support structure/focal point for the HPMA at DLG level. This permitted key areas such as the current status of CBMS and the enabling environment (including policy) to be captured from a wider perspective. In addition it provided a different perspective on the achievements, challenges and future direction of the HPMA.

Where possible, appointments were made with other water and sanitation support structures that were influential in the effectiveness of the HPMA model. In northern Uganda a semi structured interview was conducted with the northern Umbrella, which has the mandate for water supply in small towns and RGCs. The aim of this interview was to understand the successes of the Board model as a PPP approach in small towns, and to see if there were any lessons that could be taken forward for the HPMA model. Semi structured interviews were also held with one private operator (PO) in Kamdini Town and one Scheme Operator (SO) from Minakulu (Oyam District), which fell under the supervision of the northern Umbrella.

Where other models had been piloted in the three research areas, the researcher also thought it relevant to understand their achievements so far and how they might improve PPPs in the rural water sector in future. In northern Uganda a semi structured interview was held with Lira Sub County WSSB, one of the few pilot sub counties of the Triple-S supported model. In eastern Uganda where the Whave PPP model had been piloted in two districts, semi structured interviews were conducted with several Water Service Provider (WSPs). This provided greater understanding of the successes and challenges of this alternative model, and insight into the shift towards a service delivery approach in rural water supplies, and the implications this would have for the HPMA model.

Finally, semi structured interviews were held with WUCs/WSCs in Lira and Kasese Districts respectively. The interviews were conducted at the water point to allow participants to explain and demonstrate some of the O&M issues that had occurred, and to also include the participation of

water users. These interviews provided some insight into the water users understanding of the HPMA model and if they had seen any benefit from it.

4.5.3.2 Desk study

In addition to the formal literature review several other sources of information were used that were locally available in Uganda. These included the MWE/SNV survey of HPMA's from 2015 and the most recent version of the Uganda Water Supply Atlas 2015/16. The MWE/SNV HPMA survey was a full inventory of HPMA's in Uganda and therefore valuable starting point for this research. The survey revolved around three main components formation, functionality and local support systems across 108 of the 111 districts in Uganda. The draft survey report provided findings on the evolution of HPMA's in terms of formation and functionality, which could be verified and explored further in this research looking in more detail at a smaller number of HPMA's. The Uganda Water Supply Atlas was also useful to develop the case studies for each research district. Relevant statistical data was found such as water source functionality, number of water sources, number of water user committees, and socio-economic data.

4.5.3.3 Expert interviews

Initial meetings were held in 2014 with a number of stakeholders when developing the research proposal for this study. The researcher met several key stakeholders including several representatives of the Directorate of Water Development under the MWE, and key agencies in the sector such as Fontes foundation and SNV. This helped narrow down the focus of this research from the initial wider issue of private sector participation in rural water supplies, to investigating the HPMA model. This was the primary model of focus for the GoU and some agencies, although it had not been thoroughly mapped and researched by 2014.

Once the research objectives were finalised several semi structured interviews were conducted between 2015 and 2016. These were used to generate further information in relation to all six research questions, with particular focus on the enabling environment (research question 4) and the current status of CBMS (research question 1). For the HPMA related research questions some opinions were provided, however, there was limited data available in 2014 as a result of the short lifespan of the model at that stage.

Semi structured interviews were held with Dr Nyeko, Principal Engineer, Rural Water and Sanitation Planning and Development of the DWD; and representatives of several key agencies in the O&M sector including IRC Triple-S, Whave Solutions, SNV, and the Association of Private Water Operators Most of the interviews were held in Kampala at the offices of the respective

intuitions/agencies which ensured that the opinions and perspectives of the key decision makers in the sector were provided.

4.6 Limitations of methods described

The type of case study approach that is relevant to the research questions in this research (which are all 'what' questions) is an exploratory study. One of the challenges of the approach is that it may not provide sufficient basis of scientific generalization – especially if just one case study is used (Yin: 2010). To overcome this three locations have been researched for comparative purposes. The researcher will be cautious in providing generalisations, and seek to back this up with secondary data where possible.

The quantitative data generated from the field research may not be statistically significant and therefore it may be difficult to draw definitive conclusions based on data available. Although it would be ideal to be able to generate sound statistical evidence from a sample size of HPMA's 10% of the 111 HPMA's formed, this is not feasible given the scope of the research. The quantitative data will be supplemented by data and findings from the SNV/MWE survey and also compared with the qualitative data so that commonalities and differences can be drawn out.

The methods used relied on a number of factors in place in each district, given the limited time available in each research location. Firstly, to go through the full complement of tools required each session to start on time, however time-keeping is often not prioritised by community members which means that keeping to schedule is difficult. To overcome this some flexibility in the schedule was allowed with the rescheduling of other interview sessions on the following days. Secondly, the HPMA checklist required HPMA's to bring their physical records to the field meetings so verification of documentation can be done. In reality record keeping is poor in Uganda and is often left to the one person who has some knowledge and experience. In some of the interviews conducted, however, the responsible persons in the HPMA – the secretary and the treasurer – were not always present. To overcome this the researcher requested the local support agencies to help follow up on the gathering of these records, which were later sent to the researcher in hard copy This allowed for some further verification of the reported competencies by the HPMA.

4.7 Procedures for collating and analysing data

4.7.1 Qualitative data analysis

As the majority of data collected was qualitative mainly qualitative analysis was used. The qualitative data analysis involved identifying recurring themes, coding the data into categories and then comparing the different categories. The data generated from the three main tools has been recorded

in excel worksheets under each research question and sub question, then categorised into common thematic responses. Common thematic areas from the HPMA FGDs, were then be compared with the SWOT analysis and the checklist. This was then further triangulated with the data generated from the key informant interviews in the field including the DWO and key agencies.

4.7.2 Quantitative data analysis

In addition some quantitative data was generated from the HPMA checklist, and the ranking and categorisation questions from the FGDs and semi structured interviews. For the HPMA checklist data was compiled in tables and presented both as an overall ranking of the HPMA studies, but also trends in high and low scoring areas/components were highlighted. For the quantitative data captured from the other methods, simple comparison tables were generated and presented in the analysis section to further highlight the commonalties and differences of the HPMA in terms of their challenges and achievements.

4.7.3 Case study

In accordance with Yin (2010) the case study was chosen as an appropriate method for data analysis and presentation. This was based on the scope of the research which determined that a full scale survey could not be accomplished given the time and resources available. The case study approach would allow some contextualisation and background of the particular HPMA districts, which was important given the different regional scenarios in terms of development indicators. The effectiveness of the HPMA model cannot be analysed in isolation from the history of the particular case study area and the socio-economic situation of the particular region/district. These have considerable bearing on the strength of the supportive or enabling environment in that locality through the key governmental and civil society institutions, and the vibrancy of the private sector. The policy environment in each region is also slightly different and requires some consideration.

In reflection of the above enabling environment, the specific situation on key water performance indicators varies by region and district. This needs to be established as a baseline from where progress under the HPMA model can be measured. In addition the HPMA model is not the only O&M approach contributing to the performance of the water sector in each district. Other alternative approaches such as the Whave PPP model are being tested in specific districts, which are important to include in the case studies as they offer interesting insights into the future of the HPMA model and the O&M sector in general.

4.8 Potential bias and error in data collection

The researcher is aware of the potential for bias, whereby the view or description presented is not balanced. One of the major challenges in data collection is subjectivity, whereby the approach is based on personal opinion rather than a balanced account of all the facts. This challenge was addressed by triangulation in data collection with a number of different sources and methods used. Cross checking was also used to help reduce the number of errors or outliers in the data.

Another potential area of bias is the interviewer effect, where the response to questions from participants is based on what they perceived to be the interviewer's background and personality. This was overcome by emphasising the independence of the researcher from any organisation or institution. In northern and eastern Uganda, assistance with the organisation of the field research was provided by SNV and Whave Solutions respectively. To ensure the independent nature of the study, however, the researcher ensured the respective organisations did not participate in this research. Furthermore at the beginning of each interview, the researcher was polite but explicit as to why the research was being conducted and that he was interested not in critiquing how individuals were performing within the model but how the model could be improved. Therefore individuals were not personally identified and it was made clear to respondents that there was no advantage to exaggerating their responses one way or another.

Also, some focus group respondents and interviewees (of all types) may overstate actual changes, or talk about isolated instances in a way that sound like the norm. The researcher was very conscious of such bias, and found the best approach was to probe the issue through a logical chain of thought to bring out the full story including reasons for the change and the extent of the change. This qualitative data was also triangulated with the views of other participants/interviewees.

Another potential area of bias is the accuracy and reliability of the secondary data. This applies particularly to the data from the respective DLGs on performance in the water sector. The data may not be fully reflective of the situation as abandoned sources are often not included by districts when presenting their water source functionality data. The data provided should therefore be compared with other sources such as Uganda Bureau of Statistics (UBOS), MWE Sector Performance Reports and The Uganda Water Supply Atlas where possible.

4.9 Chapter summary

In line with Denscombe (2010) the mixed methods approach was adopted, based on the rationale of using different methods to investigate the same subject. Several methods were used to collect the mix of qualitative and quantitative data including semi structured Key Informant Interviews (KII), FGDs, the HPMA assessment tool, documentation review, and database and website searches.

These collection methods were employed under an overall case study approach which was considered relevant due to the time and resources that were available. This approach was able to provide data from five case studies across three geographical regions of Uganda, that could be used for both comparative purposes and to determine the overall status of the HPMA model.

It is important to note the limitations of the case study approach such as avoiding scientific generalisation based on one or a limited number of case studies. As such the researcher will proceed with caution and try and support findings with secondary data.

5 Case studies

5.1 Introduction

The aim of this chapter is to present and further understand the HPMA approach in the five research districts. This chapter will mainly cover research question 1 ‘the current status of CBMS in Uganda in terms of achievements and challenges’ and research question 3 ‘the current status of the HPMA model’. It will also briefly remark on research question 4 ‘to what extent do local government, NGOs and the private sector provide an adequate enabling environment for HPMA?’ The five case research districts are Lira and Alebtong Districts in northern Uganda, Kamuli and Luuka Districts in eastern Uganda, and Kasese District in western Uganda.

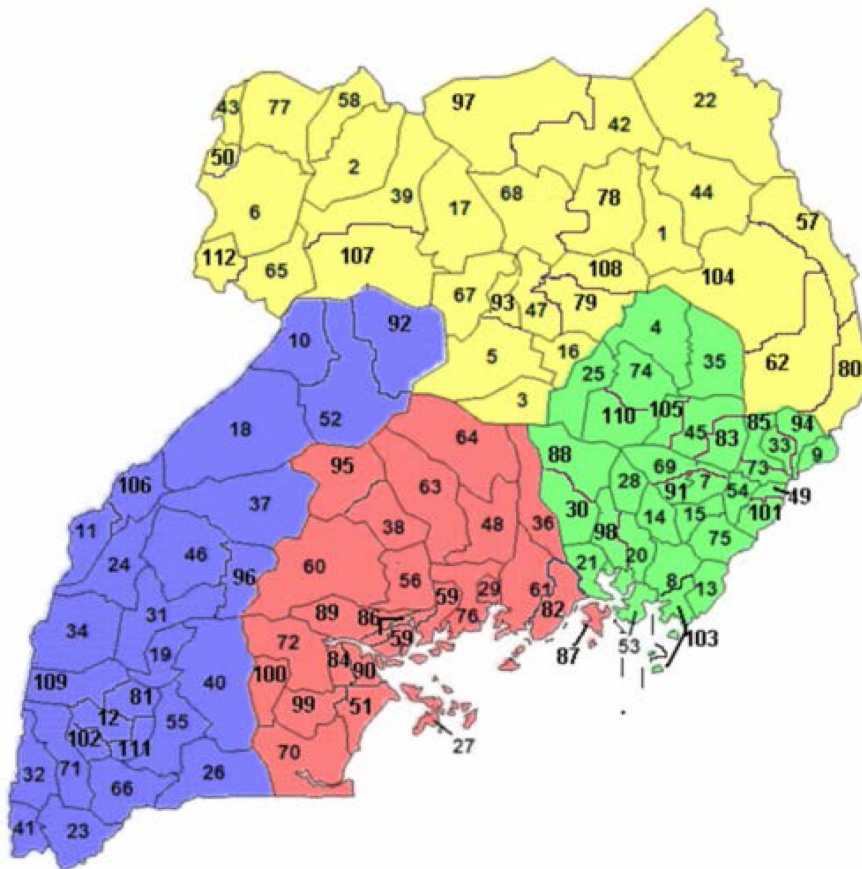


Figure 4: Map of Uganda divided into regions and districts. Source: Wikipedia

Lira District	47
Alebtong District	79
Kamuli District	30
Luuka District	98
Kasese District	34

The chapter will be divided into three sections. The first part will be an introduction to each case study, which will include regional and district profiles, the water sector profile, the background of CBMS and a profile of the HPMA. The second part will be a comparison of the case study findings in four specific areas: HPMA status, achievements, Strengths Weaknesses Opportunities and Threats (SWOT) and challenges. The third part will introduce and discuss the complementarity of the alternative O&M models where they are present in the case study districts.

5.2 Case studies

5.2.1 Lira District Hand Pump Mechanic Association

Regional profile

The northern region of Uganda consists of 30 districts, and has its regional capital located in Gulu District. This region covers a total area of approximately 85,391.7 km² and an estimated regional population of 7,188,139 people (UBOS: 2016). Northern Uganda is still largely characterised by small scale farming, some agribusiness, off farm enterprises and waged labour in the informal sector. (MoFPED: 2014).

The region remains the poorest in the country due to a history of conflict. However, through improved security and the introduction of targeted development programs such as PRDP and NUSAF, there has been a reduction of poverty levels in the rural north by 19% points over the last 10 years.

District profile

Lira District is located in Lango sub-region, is approximately 375 km north of Kampala and is bordered by the districts of Pader and Otuke in the north and north east, Alebtong in the east, Dokolo in the south and Kole and Apac in the west. From the early 2000s the district was affected by the Lord Resistance Army insurgency which led to the forced displacement of the population into Internally Displaced Person (IDP) camps, and the influx of IDPs from neighbouring districts in northern Uganda. (unocha.org). Following cessation of hostilities in 2006 and the fleeing of the LRA to neighbouring Southern Sudan, approximately 350,000 IDPs started returning to their homes and by 2009 the district was relatively peaceful. The estimated population of the district, as of 2011 was 389,300 (liradistrict.com) however, it is now projected to be 408,043 with an annual population growth rate of 4.5%. (UBOS: 2016).

The economy of Lira district is agricultural focused and is in transition from a food subsistence crops such as beans, sweet potatoes, millet and cassava to cash crop farming in rice, sorghum, simsim, maize, cotton and sunflower. (MoFPED: 2014). There are also small scale manufacturing enterprises such as grain milling; brick making; metal fabrication, woodwork, and wholesale/ retail trade and food vending (Wikipedia and liradistrict.com).

Water sector profile

Lira District has high groundwater potential and number of swamps that feed into Lake Kwania. There are a high number of naturally occurring springs, many of which have been protected. The number of water points is very high with 1,489 domestic water points in 2015. Shallow wells are the main water supply technology at 36%, followed closely by boreholes and protected springs. Safe water access²¹ was at 94%, and functionality at 75% in rural areas of Lira District (MWE: 2016b). Figures from the District Water Office report the level of functionality at 80% with a reduced number of water points to 1,400²². Over 85% of the water points are community managed with the main reason for non-functionality reported as technical breakdowns. The district also has 14 piped systems of which only three are functional, and most of which are community managed. (MWE: 2016b).

CBMS background

CBMS of rural water supplies in Lira District started way back in 1999 and is still the main approach to O&M of rural water supplies. Initially, the community was taking the role of owning and managing the facilities, with support from the District Water Office and civil society in the form of NGOs. In some cases there was a sense of ownership, however, the performance of CBMS was low, in that it worked in some areas and in others it didn't (Assistant District Water Officer, Lira, 2016). The reasons for this were:

- Lack of proper planning of facilities as a result of the funding mechanism. The District Water Office received grants which were often not timely, therefore prioritisation of locations/technologies for water sources was often not planned properly.
- Some facilities were beyond community management. In a number of locations deep boreholes were required for which the community contribution is limited, and O&M is difficult i.e. high number of pipes to repair.
- Political interference by politicians making promises to communities of 'free water'.

²¹ The % of people within sd1 km of an improved water sources

²² The reduction from 2,423 to 1,400 water points is due to the splitting of Lira District in 2010 and the creation of Alebtong District out of the old Lira District.

- The period of LRA insurgency resulted in the displacement of communities into IDP camps. A large number of relief NGOs came in to provide water and sanitation services, with a tendency to give money/incentives to Water User Committees to operate. As a result of this the spirit of volunteerism 'died off'.

Most of the standard challenges of CBMS are ranked highly in Lira District. The supply of inputs, the lack of targeting in mobilisation and training, the non-replacement of non-functional user committees, the level of financing (especially for preventive maintenance, and the lack of skills to perform roles for women are all significant challenges according to the Lira ADWO.

HPMA background and formation, legal status, and enabling environment

The Lira HPMA was formed in 2012. The main reasons for the formation were the need to bring all the individual HPMS together, and to ensure a continuous supply of safe water to the population of Lira District. They are now motivated by the PPDA waiver which they hope will give them contract work on annual basis. The Lira District HPMA has a membership of 22 HPMS, although originally there were 32 members. According to the HPMA they have representatives from all sub counties in Lira District, and are operational across the entire district.

The Lira HPMA has two legal registrations, one as a CBO, and the other as a private company. The CBO registration is the minimum legal status for registration of a formal entity at the district level. The private company or company Ltd is the 'business wing' of the association, the registration of which was encouraged by the DLG so the HPMA could source for more business.

The association has a constitution in place which has the standard clauses as set by the MWE. There is an executive committee in place consisting of the Chairperson, Vice Chairperson, General Secretary, Treasurer, Secretary for Publicity and one member. As per the design of the HPMA model, the HPMA is advised to have a binding arrangement with the district through the MoU. In Lira although the MoU has been passed, it has not been signed by the district. The HPMA expected this to be signed in the 2015-16 financial year. The association has a number of financing streams, including their own subscription fees, local government work, and external (non-governmental) contracts.

Enabling environment

In terms of the local enabling environment, there are a number of institutions and organisations that have/are providing support to the association. The DLG provides support on two main levels, contracts or business, and technical training on operational/systems training and contract management. Similarly, several NGOs including IRC-Triple S, WelthungerHilfe, SNV, Plan International and faith based organisations such as Divine Waters have provided training to the

HPMA. No institution or organisation has trained the association on monitoring and evaluation or gives backstopping support to their work in the field. The support from both DLG and NGOs is rated as average by the HPMA. The average rating given to the DLG is due to the lack of work they have given to the HPMA since their inception. The reported reason often cited by the district for not awarding contracts to the HPMA is the lack of experience the HPMA has in handling contracts.

Lira District is also a pilot location for the SWSSB model which has been supported by both SNV and IRC Triple-S. More details of this model are provided in section 5.7 at the foot of this chapter.

5.2.2 Alebtong District Hand Pump Mechanic Association

District profile

Alebtong District was originally part of greater Lira District but was given its own district status in 2010. The district lies between 2.2546° N, 33.3486° E and is 1,100 m above sea level. The district covers a total area of approximately 1,820 square kilometres and is 285 km north of Kampala. This district is bordered by the districts of Otuke in the north, Amuria in the east, Dokolo in the south and Lira to the west (Wikipedia) (alebtong.go.ug). The estimated population of the district, as of 2014 was 227,541 people with an annual population growth of 2.8% (UBOS: 2016). Alebtong economy is similar to Lira District in terms of agriculture being the dominant livelihood activity. Small hold farmers engaged in food crop production of maize, sweet potatoes, beans, cassava and groundnuts and cash crop production of cotton, coffee, and sunflower seeds. This is followed by small scale trade, manufacturing and service sector. (alebtong.go.ug) (UBOS: 2016).

Water sector profile

The district has a total of 995 domestic water points which serve a total of 216,323 people. Access to clean and safe water is at 92% and functionality is lower at 68%. The majority of water supply technology (42%) is from boreholes, followed by protected springs and shallow wells. (MWE: 2016b). Over 80% of water points are community managed and 46% have been funded by NGOs.

CBMS background

According to the ADWO CBMS is partially working and is still considered the best approach as it encourages ownership. The issues have been commitment from water user committees; lack capacity of HPMS; and lack of transport for supervising structures to be able to follow effectively with transport.

Under CBMS the HPMS in Alebtong District were scattered across the district and were working as individuals. There was little financial benefit from working as individuals. They were also not

recognised and therefore did not have access to tool kits to carry out their work successfully. (Interview with Moses Okidi, ADWO, Alebtong District, September, 2015).

HPMA background and formation, legal status, and enabling environment

The HPMA was initially formed when Alebtong was created from greater Lira District in 2010. The HPMA was given autonomy to establish the HPMA, however, there was a coordination gap between the HPMA and the district and the HPMA collapsed. The current HPMA was formed in 2013. The District Water Office trained them and wrote concept papers to partners to solicit for further support. The MoU between the district and the HPMA for 'outsourcing O&M activities to the HPMA' was signed in July 2015 but is not yet operational. The HPMA did not have their registration certificate or the MoU with them at the time of the field visit, however, had reported that they were registered as a CBO.

The HPMA consists of 25 members from 9 Sub Counties. There are a number of individual HPMA who dropped out of the association who still operate as individual mechanics outside the association. Their initial motivation for coming together was the initiative from the MWE to come up with the HPMA model. They expect this will yield them some contracts for data collection and repair in the current financial year as they "now have the authority to repair all boreholes in Alebtong". The most relevant reasons for having a HPMA is firstly, the support they can give each other in doing difficult repairs or in managing workloads, and secondly the associations ability to market the services of the HPMA to key stakeholders to increase their business. Also, access to training and improved knowledge, and the marketing of HPMA to other stakeholders are considered very relevant benefits of having the HPMA.

Enabling environment

The HPMA is knowledgeable about the PPDA waiver and its implications in terms of potential work/contracts from the DLG. The association has received technical training from both the DLG and several partners including Plan International, IRC, and SNV, however, they have not received any operational or contract management training. The District also supports them through the borehole maintenance technician. The DWO has also trained the HPMA in June 2015 but could only facilitate them for three days rather than the entire week. The HPMA rates the support provided so far as average.

5.2.3 Luuka District Water and Sanitation Association (LUDWASA)

Regional (eastern Uganda)

The eastern region of Uganda consists of 32 districts, and has its regional capital located in Jinja District. This region covers a total area of approximately 39,478.8 km² with an estimated regional

population of 9,042,422 people (UBOS: 2016). Socio economically the region is mainly engaged in commercial farming as out-growers of sugarcane production and coffee. Other main income sources are cross border trade with Kenya and South Sudan, cattle ranching and waged labour in the informal sector. (MoFPED: 2014).

District profile

Luuka District was established in 2010 and forms part of the Busoga sub-region. The district lies between 0.7251° N, 33.3037° E and is 1,200m above sea level. Luuka is approximately 127 km east of Kampala and is bordered by Buyende District in the north, Kaliro District to the northeast, Iganga District to the southeast, Mayuge District to the south, Jinja District to the southwest and Kamuli District to the northwest (Wikipedia). The estimated population of the district, as of 2014 was 238,020 people with an annual population growth of 2.1% (UBOS: 2016). Luuka District is dependent upon sugarcane production, and food crops such as cassava, maize, beans, yams potatoes and animal husbandry. (MoFPED: 2014) (Wikipedia).

Water sector profile

Luuka District has a total of 714 domestic water points which serve a total of 188,706 people. Access rates are at 75%, which is above the national average of 65% in rural areas (MWE: 2016a&b). Similarly, functionality is high at 97% of water points functional, which is again above the national average in rural areas of 88%. (MWE: 2016b). The reason for the high functionality level according to the District Water Office is the type of technology used on boreholes. Under the Rural Water Supply and Sanitation Eastern Uganda (RUWASA) project supported by Danida from 1996, all boreholes were installed with stainless steel pipes that do not corrode easily.

Reliability (or functionality over time) is at 99% in several sub counties where the Whave PPP model is in operation. (Harvey, Mukanaga, and Waibi: 2015). The majority (57%) of water points are deep boreholes, and 80% are community managed. (MWE: 2016b).

CBMS background

According to the District Water Office CBMS has been working to some extent in Luuka District. This is attributed to support received from the RUWASA project and other partners since 1996, and more recently the establishment of the HPMA. Communities participate in several pre construction and construction components of installation of water points including a contribution of UGX 200,000, siting of the location, and monitoring the quantities on site. The WUCs have a 50% gender balance and functionality and access has been improving on an incremental basis.

Prior to the HPMA there was a problem with access to tools in all sub counties, information flow was poor, and migration of HPMS out of the district had left some sub counties vacant. Moreover, the

community would sometimes bring in other HPMS from neighbouring districts as the HPMS were not legally recognised in their own district. (Interview with Yahaha Lukwitira, DWO, Luuka District, May, 2016).

Luuka HPMA background and formation, legal status, and enabling environment

The Luuka District Water and Sanitation Association (LUDWASA) was officially formed in 2011 and is registered as a CBO. The formation was done after the individual HPMS were mobilised for a meeting in neighbouring Iganga District in 2010 by the regional Technical Support Unit (TSU) of MWE, where the concept of the model was explained. The association has a total of 21 members covering all eight sub counties in the district and one member is female.

According to the HPMA the main motivation for coming together as an association was to work as a team which has enabled them to achieve better results. Coming together as a larger number of mechanics enabled them to share tools, knowledge and ideas on how to solve their problems. One recent example was a deep borehole where the pipes were lost down the well, and the HPMS came together to fish out the pipes. Moreover, when they work as an association they are paid for the work they do by the district. Prior to the association this was not the case. The most relevant reasons for having an association besides the above are the ability of the association to market the skills of its members, and receive support from the DLG and other development partners. LUDWASA feels that they still cannot get a forum with the DLG and 'they are called when their bosses call them'.

LUDWASA has a constitution in place that was developed in 2011. Although the constitution is for a wider water and sanitation association, rather than a HPMA, the objectives are still focused primarily on the O&M of water points. The activities of the association are wide ranging and cover several areas including construction, installation, repair, and rehabilitation of water points; supply of spare parts; construction of piped schemes and latrines etc. There is no MoU in place with the DLG, however, this is not seen as an issue by the HPMA, due to the fact that they have kept receiving repair contracts from the District Water Office.

Enabling environment

The association is aware of the PPDA waiver which has enabled them to benefit from district contracts, which they have been awarded outside the normal procurement guidelines. There are several partners that are operational in Luuka District including Plan International, VEDCO, Busoga Trust, and Whave Solutions. Plan International have provided them with technical training on borehole maintenance and repair, and VEDCO on O&M.

They have not received training as an association from the Government apart from the training by the TSU in 2011. The training and report received from the DLG and partners so far is rated as poor.

According to the HPMA, it can be improved by better equipping and resourcing of the sub county level staffing capacity in the water sector, the provision of major tools /toolbox to each sub county and a motorcycle for the association.

5.2.4 Kamuli District Borehole Operation and Maintenance Association (KDBOMA)

District profile

Kamuli District forms part of the Busoga sub-region and lies between 0.9187° N, 33.1239° E and is 1,100m above sea level. The district covers approximately a land area of 1,557 km² and is approximately 143 km east of Kampala. Kamuli District is bordered by Buyende District to the north, Luuka District to the east, Jinja District to the south and Kayunga District to the west with the district headquarters at Kamuli town. (Wikipedia). The estimated population of the district, as of 2014 was 486,319 people and an annual population growth of 2.5% (UBOS: 2016). In terms of socio economic status of Kamuli District is dependent upon food crop production, fishing, ranching, quarrying, small scale enterprises and retail trade. (Wikipedia)

Water sector profile

Kamuli has 1,321 domestic water points which serve a total of 369,363 people (MWE: 2016b). According to DLG data the functionality level of water points has reached 88% (Kamuli DLG: 2016). Access levels are much lower at 72% and the majority of water points are deep boreholes (58%) with shallow wells at 40%. (MWE: 2016b) The management of water points is 80% by the community and the major reasons for non-functionality are technical breakdowns at 47%. (MWE: 2016b).

CBMS background

Community based managed began back in the mid-1990s and has been supported by the GoU and a number of development partners. Some communities were able to mobilize water user fees, however, the general trend was that the community only tended to contribute fees when a breakdown occurred and WUCs have not been accountable to their members on use of funds. Other challenges with traditional community based management were the difficulty of accessing spares (particularly for U3 pumps), lack of access to toolkits, and even the vandalism of some water points. (Interview with Saeed Abdallah Baghothi, DWO, Kamuli District, May 2016).

HPMA background and formation, legal status, and enabling environment

The Kamuli District Borehole Operation and Maintenance Association (KDBOMA) was formed in 2011 and officially registered as a CBO in December, 2012. The association has a constitution in place, with a mission that outlines clearly the water related areas the association can legally engage in with Kamuli District including O&M, construction of new water points, and maintenance of the safe

water chain. KDBOMA does not yet have a MoU with the DLG but has received work for repairs and installation since 2013/14. KDBOMA reported having a work plan in place although the last one provided was from 2012/13.

One of the main reasons that KDBOMA was established was to act as a quality control measure as other (non-qualified) mechanics has previously interfered with their work often conducting substandard work. Secondly, they wanted to gain more knowledge and skills on their profession, remove wrangles on different prices charged in different sub counties, and get closer to the DLG. This is backed up by the most relevant standard reasons given for having an association which were support for each other in doing difficult repairs, or in managing workloads, a means for training and improved knowledge, and providing a means quality assurance of HPMs.

5.2.5 Kasese Wash Artisans and Technicians Association (KAWATA)

Regional profile western Uganda

The western region of Uganda consist of a total of 26 districts with Mbarara District serving as its regional capital (Wikipedia). This region covers a total area of approximately 55,276 km² and an estimated regional population of 8,874,862 people (UBOS). This region is one of the more successful as it produces both food and cash crops for local and cross border trade with neighbouring Rwanda and Congo, tea, dairy farming, and cattle ranching. (MoFPED: 2014) (Wikipedia)

District profile

Kasese District forms part of the Rwenzururu sub region along with the districts of Bundibugyo, and Ntoroko. This sub- region is located in the Rwenzori Mountains of Uganda on the border of the Democratic Republic of the Congo. Kasese District is located along the equator and is bordered by Kabarole District to the north, Kamwenge District to the east, Rubirizi District to the south, and the Democratic Republic of the Congo to the west.

Kasese District lies between 0.0646° N, 30.0665° E and is 1,481m above sea level. The district covers approximately a total area of 2,724 km² and is approximately 359 km west of Kampala. The estimated population of the district, as of 2014 was 694,992 people with an annual population growth of 2.4% (MoFPED: 2014). Socio-economic activities include food crop production, fishing and fish farming, and livestock rearing.

Water sector profile

Access to water is relatively low in Kasese District at only 55%, with the sub county range from only 8% to high of 95%. (MWE: 2016b) The functionality levels are high at 94% in rural areas (Ibid).

According to the DWO functionality is actually much lower at only 53% in 2015/16 due to a number of schemes that have been damaged during road construction. The district has over 2,869 water points with most people (55%) served by public taps and only 6% by deep boreholes. Kasese has over 40 piped schemes which are predominantly Gravity Flow Schemes (GFS) due to the mountainous nature of the district and the presence of a high number of streams. (Ibid)

CBMS background

In the 1990s functionality was poor as most boreholes had broken down and technical services were handled from the main division (Technical Support Unit) in Fort Portal which was far (75km) from Kasese town. It took years for repairs to be made and people opted to use open sources until there were outbreaks such as Cholera in the community. The district started to investigate these outbreaks and sat down with other leaders with the aim of strengthening coordination and community involvement in rural water supplies. At that point, some HPMs had given up their work leaving a few HPMs to cover the entire O&M of the county.²³ (Interview with Muhido Asha, ADWO, Kasese District, June, 2016).

HPMA background and formation, legal status, and enabling environment

To overcome the challenges with CBMS the HPMs came up with the idea to form an association. In 2004 the association was formed as Kasese Hand Pump Mechanics Association

KAHAMA and KAWATA

In Kasese the company (KAHAMA) and the association (KAWATA) were formed at different times in relation to the contracting situation. The company was formed to bid for tenders, however, it was realised that the company requirements for a tender were difficult to sustain. Once the PPDA waiver came in it was no longer a requirement to go through the normal procurement guidelines and the advantage of having a company was reduced. As a result of this the association is now more active and the company has had to branch out into other areas such as plumbing, sale of fried fish, and brick making. Also as a company there is the assumption that a kick back may be given to those in procurement in order to win a tender. The company and the association have different management and leadership structures.

Source: Focus Group Discussion, KAWATA, June 2016

Box 2: The evolution of KAHAMA & KAWATA

(KAHAMA) as formed. In the first two years the HPMs were unable to get work as they were not recognised, therefore companies were favoured over HPMs when it came to contracts for O&M (repairs). In 2006 the association decided to form a company under the same name of KAHAMA in order to qualify for bids/tenders. In 2014, they recognised the need to diversify their work and incorporated piped water scheme attendants into the association. As a result of this the name was

²³ The county is the political unit below the district which is often only nominal and doesn't have structures in place.

changed to Kasese WASH Technicians Association (KAWATA) which was registered as a CBO. The total membership of the association today stands at 19 but only 15 members are active. The one female member they had recently moved to the Kasese municipality which has a separate governance structure to the HPMA. KAWATA CBO has a MoU with Kasese DLG which is updated on an annual basis. The last one was signed in 2015 and provides guidance on the relationship between the DLG and the association, commissioning and remuneration to the HPMA, payment terms etc. The MoU also provides the avenue through which an annual work plan for the association can be developed and implemented. According to the ADWO this overrides the need for a formal contract.

Enabling environment

Kasese DLG and KAWATA are both aware of the PPDA Waiver which is evidenced by the formal MoU in place. The association is supported by the DLG have provided training on installation and maintenance and several NGOs including SNV who trained them on good governance and data collection and Karambi Action for Life Improvement (KALI) who provided training on finance. In addition Save the Children have trained them on M&E. They have also received support from the Umbrella for mid-western Uganda in Kyenjojo on water quality testing – especially for the GFS.

5.3 Comparison of HPMA

This section will discuss the HPMA status in relation to four key categories namely financial management, management/leadership, operational/business, and technical capacity. Similarities, differences, and interesting examples will be drawn out from the data.

5.3.1 Financial management capacity

This sub section looks at the financial management capacity of the five HPMA using data from the checklist which had five sub categories. The HPMA were scored (one to three marks) on each sub category basing on their response to statements and the evidence provided in the form of records and document. On a national level there has been some modest progress with HPMA in putting management systems and practices in place including organized financial management/book keeping. At present 9% of HPMA are using cash books, payment books and receipt books (MWE and SNV: 2015).

Overall the financial capacity of each HPMA was scored as average with KDBOMA and KAWATA scoring slightly above the other three associations as per the table below.

Table 7: Comparison of financial management capacity of case study HPMAs

Financial management criteria	Lira HPMA	Alebtong HPMA	LUDWASA	KDBOMA	KAWATA
Qualified/experience financial personnel are in place	1	1	1 ²⁴	1	1
Financial records are in existence					
Cash flow statement	1	1	1	2	2 ²⁵
Profit and loss account	1	1	1	1	1
Balance sheet	1	1	1	1	1
Fee structure is in place and is reflected in financial records ²⁶	2 ²⁷	2	2	2	1 ²⁸
Bank statement is provided	2	1	1	1	2
HPMA is profitable on an annual basis	1	1	1	1	2
Subtotal (out of 21)	9	8	8	10	10

Source: HPMA checklist, 2015&2016

Two of the associations – Lira and Alebtong – had one qualified finance person (certificate level) in place while the other association were relying on a member without a financial background. For all the associations the treasurer was responsible for all financial transactions. The practice of keeping financial records was however quite varied across the five associations. Three of the associations were able to keep a basic cash book, although it should be noted that this practice was done more rigorously in the early years of the association. In Alebtong, the financial records kept by the HPMA are basic, with a list of membership contributions and running costs although no receipts were provided. Similarly, KDBOMA manages to maintain some basic financial records. Initially a cash book was used to record daily transactions, and there are records of subscriptions in place and payouts to members in place. KAWATA has managed to keep some basic financial records including a cash book. They also have their own association receipt book and leave some money on the account at the end of each financial year. For Lira however no financial records were provided due to recent shifting of their office, and the misplacement of the financial records, and in LUDWASA the association were trained by the TSU but have not yet installed basic financial management practices.

All five HPMAs reported having an operational bank account, with four able to provide evidence through a bank statement. In Alebtong, the HPMA reported to have a bank account although evidence of this was not provided at the time of field research, and the HPMA acknowledged not to

²⁴ Treasurer or records were not available. Records were collected after the interview.

²⁵ Kept only when they have a contract

²⁶ There are variations across the districts.

²⁷ 60,000 repair (max) for a deep well. Charge per pipe 4,000, cylinder 15,000 etc. If more pipes 10 pipes still repair at 60,000. 40,000 shallow well.

²⁸ Is done on a negotiation basis but labour based not task based

have not deposited any funds yet. In Lira, a statement was provided for an account with Post Bank listing some transactions that had been done in relation to work carried out. Of the four associations that did provide a bank statement none of them collect regular bank statements and generally only get a statement at the end of a year or when they have received a payment. KAWATA have their own association receipt book and payment voucher book, although they are only using the receipt book at present.

KAWATA was the most progressive association in terms of saving some funds. They have been able to leave some funds on the account at the end of each year which provided for incidentals to keep the association running. None of the associations have been able to save sufficient funds to be able to reinvest in growing the association. In LUDWASA for example the association had planned to have an office and toolbox purchased from payments under one of the contracts. In the end however other pressing financial issues emerged and the balance was shared amongst the members. Due to work received from the DLG members can reportedly earn between UGX 70,000 and UGX 300,000 per year in a typical year.

Four of the five HPMA's have a standardised tariff in place for both minor and major repairs under O&M. Preventive maintenance is generally done on a negotiation basis with the community. This is understood by both leadership and members, and to some degree established in consultation with the DWO and the community. Interestingly only KAWATA has no fixed tariff system for repairs in place and operate on a task negotiation basis (for

Alebtong District HPMA repair tariff	
<i>Minor</i> (replacing chain, water bucket, bearings etc.)	
<i>Shallow well</i>	<i>UGX 15,000-20,000</i>
<i>Deep well</i>	<i>UGX 30,000</i>
<i>Major</i> (fishing, blowing, reconstructing apron)	
<i>Shallow well</i>	<i>UGX 30,000</i>
<i>Deep well</i>	<i>UGX 45,000-60,000</i>
<i>Source: Focus Group Discussion, Alebtong, 2015</i>	

minor repairs) taking into to account labour and transport costs.

Box 3: Repair tariff Alebtong District HPMA

5.3.2 Management/leadership capacity

This sub section presents a comparison of the management and leadership capacities of each association. The checklist was used to collect data on the governance structure, and levels of transparency and accountability within each association. The results of this are presented in the table below.

Table 8: Comparison of management and leadership capacity of case study HPMAs

Governance, transparency and accountability criteria	Lira HPMA	Alebtong HPMA	LUDWASA	KDBOMA	KAWATA
Leadership structure is in place and is gender sensitive (out of 3)	2	1	1	2	2
Leadership is aware of its roles and responsibilities (out of 3)	2	2	3	3	3
Meeting are held frequently with members (out of 3)	2 ²⁹	2	1	2	2 ³⁰
Minutes of meetings are in place (out of 3)	2	2	1	2	2 ³¹
Members are aware of legal registration and its significance (out of 3)	2 ³²	2	1	2	2 ³³
Members are aware of financial position of organisation (out of 3)	2	2	2	2	2
Subtotal (out of 18)	12	11	9	13	13

Source: HPMA checklist, 2015&2016

Overall the associations scored average on governance, transparency and accountability. All associations were knowledgeable about their roles and responsibilities and demonstrated some degree of transparency. The associations were generally weaker on the frequency and documentation of meetings. Two of the associations – KDBOMA and KAWATA – were ranked as good while the other three were average. The reason for this was that these were two of the older associations which were able to demonstrate the importance of regular meetings and keeping meeting notes.

All five associations have the requisite organisational structure in place with a six member executive that are aware of their roles and responsibilities. It is noted in line with the MWE/SNV survey (2015) no distinction is made between the executive and the general assembly. This is also not catered for clearly in the HPMA constitutions. Most also have member representatives from all sub counties in the district, although in three of the five cases membership is reducing which means that some HPMA have to cover more than one sub county. Some associations such as Lira had recently been trained on governance by SNV.

One general area of weakness is on female representation in the association, despite this being strongly encouraged at policy level. In Alebtong, KAWATA, and KDBOMA there is no female representative on the executive or in the wider association. On a positive note Lira has an active female treasurer and LUDWASA has a female member. All HPMA noted that the difficulty in

²⁹ Yes but reduced frequency due to transport costs.

³⁰ Only every 6 months.

³¹ Only some notes provided (not all meetings).

³² Said it was registered as an association.

³³ Allows them to get the work

attracting female members into the association was the perception that this was a male dominated profession.

The majority of HPMA members were aware of the legal position of their association and to some degree the financial position. In four of the five associations, members were aware of both its legal and financial position, which is generally reported as not making a profit. Only members of LUDWASA were not really aware of its registration status as a CBO, and only knew their financial position after the award of a contract rather than their overall level of profitability.

At the national level the majority of HPMA (72%) reported to hold AGMs, however, some associations only hold executive meetings (MWE and SNV: 2015). From the field research the occurrence of meetings varies between the associations. This could be due to the different constitutions, however, the standard requirement is general at least one executive meeting per quarter and an annual general meeting. In Alebtong, they have two general meetings as an Association per year and the executive meets on a quarterly basis. Some minutes of meetings are kept by the general secretary with the most recent notes provided two months prior to the researcher's visit. KDBOMA report holding meetings with their members every quarter and do have records of meetings although these occurred every six months. Similarly, KAWATA keeps some meeting notes from meetings held every six months and Lira holds meetings however the regularity has dropped in the last year due to the transport costs involved. In LUDWASA meetings are not held regularly and are only called when there is the award of a contract. Furthermore the last meeting minutes provided were from 2011 which suggests record keeping is not a strong priority for the association.

5.3.3 Operational/business capacity

This sub section presents a comparison of the operational/business capacities of each association. The two categories that were researched were demand responsiveness and level and type of business contracts. The results of this are presented in the table below.

Table 9: Comparison of operational/business capacity of case study HPMAs

Demand responsiveness	Lira HPMA	Alebtong HPMA	LUDWASA	KDBOMA	KAWATA
System of purchase of spare parts is in evidence	2	1	1	2	1
Full range of O&M tasks are carried out ³⁴					
Preventive	2	3	1	2	1
Minor repairs	2	3	3	3	3
Major repairs	2	3	3	3	3
Association is able to cover all areas of district	3	3	3	3	2 ³⁵
A O&M work schedule/plan is in place for preventive maintenance	1	1	1	2 ³⁶	2 ³⁷
Subtotal (out of 18)	10	13	12	15	12
Level and type of business/contracts;					
Records of repairs/business carried out in place	2	1	1	1	1
Evidence of MoUs with district or other organisations	1 ³⁸	2	1 ³⁹	2	3
Evidence of contracts with district or other contractors.	2	1	2 ⁴⁰	1	1 (covered by MoU and WP)
Number of handpumps is sufficient to provide regular work	2	1 ⁴¹	2	2	2 ⁴²
Standardised price tariff is in place and followed	3	2	2	2	1 ⁴³
Feedback mechanism/communication from clients is in place	2	2	2	2	2
Subtotal (out of 18)	12	9	10	10	10

Source: HPMA checklist, 2015&2016

Overall the associations scored averagely on business capacity. Of the five KDBOMA ranked as good which is mainly due to its higher scoring in the category of demand responsiveness, and sub-category of spare parts and preventive maintenance. In the category of level and type of business all associations were scored as average.

All five associations conduct business on three principle levels. The first is with the community who hire them to carry out minor repairs. The second is with the DLG who in principle provide them with

³⁴ From preventive to corrective (minor and major)

³⁵ Some members covering several S/Cs

³⁶ Each individual in his/her SC does PM every 3 months

³⁷ As above

³⁸ No district MoU evident

³⁹ The was supposed to be an Mou in 2013-14

⁴⁰ District only but regular work for both repair and installation

⁴¹ Not sure. Weren't aware of number

⁴² Some don't have enough but have more tap stands

⁴³ Just labour/transport based not task

annual work for major repairs. Thirdly, the HPMA may be able to bid for work from other clients including NGOs.

The capacity of the associations to conduct business is quite varied. Four out of five associations have so far been engaged in work as an association, and three (KAWATA, LUDWASA, and Lira) have been engaged formally i.e. through a contract or a MoU. LUDWASA has benefited from three framework contracts with the DLG since the 2012/13 financial year.⁴⁴ This has provided them with significant technical and contractual experience and they are able to cover all areas of the district. The association feel that they do not get the full return from contracts with the DLG.⁴⁵ According to the Luuka District DWO, the association is given a contract price of UGX 500,000 for deep boreholes and UGX 250,000 for shallow wells. Interestingly, the HPMA is still required to submit a formal bid for the work with the water office and put down a non-refundable deposit as they would do under a formal tender process despite the waiver.

KAWATA has only been engaged in one contract with the DLG for the repair of 10 water sources. The MoU is in place and is updated on an annual basis which provides the facility for an annual work plan between Kasese DLG and KAWATA. The company arm KAHAMA had previously been awarded contracts, however, was now considered superfluous given that strict requirements of maintaining a company and the emergence of the PPDA waiver. Some members of the association are also Scheme Attendants for the GFS which does bring additional work for some individual HPMS on areas such as scheme extensions and when clearing a source. This income is retained by individuals rather than pooled into the HPMA fund. As reported by the DWO, KAWATA performs better compared to when a contractor is hired for repairs. Contractors tend to use trained on the job personnel, do not supervise properly, and are not timely in their implementation of the contract.

In Lira and Kamuli, there is no formal mechanism or contractual arrangement in place with the DLG. In Lira the HPM receives an allowance (from the District Water Office) to carry out the repair, and in Kamuli the formalised contracting process was not cleared by the DLG. In Lira each sub county receives repairs per year and the community also have to contribute, for example if it is a standpipe the community will have to give UGX 100,000. These funds go to the District rather than the HPMA. (Interview with Asha Muhido, ADWO Kasese, June, 2016)

In Alebtong, some mechanics have been engaged in work by the NGO Link to Progress that hires the individual HPMS directly rather than going through the association. Their main source of business is from minor repairs for which they are engaged in directly by the community. Payment from the community is variable and sometimes they are only provided with food for their labour.

⁴⁴ Both framework contracts and completion certificates were provided

⁴⁵ LUDWASA bitter with the District who they feel take some of their money as a favour for giving them the contracts in the first place

In Kamuli District, the association has benefited from annual repair and installation work with the DLG since the 2011/12 financial year. This has provided them with technical experience, however, this was done informally due to procurement guideline issues with the DLG, which according to the DWO is a result of the procurement unit of the DLG not clearly understanding the PPDA waiver.

Procurement challenges with Kamuli District Local Government

Following the PPDA waiver in 2013, Kamuli District Water Office wanted to enter into a more formal engagement with KDBOMA for work through a formal contract. The Water Office however met challenges with their Procurement Unit (PU) who rejected the contract format developed by the DWO on the basis that it was not within the PPDA guidelines. According to the DWO the district PU does not fully understand the Waiver that has been given. As a result no formal contract has been given to the association. The current basis of engagement is informal. The DWO and KDBOMA chairman agree on a standard rate for the work. The association then have to share out the work amongst themselves.

Source: Focus Group Discussion, Kamuli, 2016

Box 4: Procurement challenges with Kamuli DLG

As a result there is also no overarching MoU in place. They are able to cover all areas of the district and have expertise in a range of different pumps including U2, U3 and Consallen. KDBOMA reports there are over 1,200 handpumps in the district which is sufficient to share between the individual HPMS. The issue is that there are not enough funds (at the district) to pay for their repair. The DLG has only given them 14 repairs for FY 2015/16 yet according to the association there are many others that have broken down. A standardised price tariff is in place for major and minor repairs with a distinction in price between deep boreholes (11 or more pipes) and shallow well/boreholes (less than 11 pipes).

In terms of source of business, Lira HPMA is the only association that has been able to successfully win a contract from other (non DLG) clients including NGOs. LUDWASA has not benefited from contracts outside the DLG, and feel it is the district that needs to support them further and market their operations. Some individual HPMA's are benefiting from the presence of the Whave PPP model which has engaged them in service agreements as Water Service Providers (WSPs). These funds are retained by the individuals rather than contributing back into the association.

Annual subscriptions are another source of income for the HPMA's outside the formal and informal contract channels. For the majority of HPMA's the payment of annual subscription is still done, however, for some this practice has declined. In Luuka District, there is an annual subscription to LUDWASA although this is not paid regularly by each member annually. There were similar findings

in Kamuli and Alebtong. Some members have been discouraged from paying the subscription fees because they have not seen any benefit from their contribution so far.

5.3.4 Technical capacity

This sub section presents a comparison of the technical capacities of each association. The two categories that were researched were the level of professional support available and the human capital/skills. The results of this sub section are presented in the table below.

Table 10: Comparison of technical capacity of case study HPMAs

Professional support available	Lira HPMA	Alebtong HPMA	LUDWASA	KDBOMA	KAWATA
Support structure is in place	2	2	1	1	2
HPMA receives support where necessary	2	1	2	2	2
Subtotal (out of 6)	4	3	3	3	4
Human capital/skills.					
Technical positions are in place to perform work	3	3	3	2	3
Technical skills and knowledge is evident					
Knowledge of preventive maintenance with example	3	3	3	3	3 ⁴⁶
Knowledge of minor repairs with example	3	3	3	3	3
Knowledge of major repairs with example	3	2	3	3	3
Subtotal (out of 12)	12	11	12	11	12

Source: HPMA checklist, 2015&2016

Overall technical capacity is where HPMA's scored highest with all five associations ranking as good. This is especially the case with human capital and skills where four out of five associations were able to score maximum points.

All the HPMA's consist of various technical skillsets which places them in a good position for a range of jobs. For two of the associations – Kamuli and Luuka – the membership consists of only HPMA's and artisans. For the other three the majority of members are pump mechanics, however, they also have masons and plumbers who are members. KAWATA is well placed in diversity of skills as the members consist of both HPMA's and Scheme Attendants that operate the GFSs with occasional assistance from HPMA's. In Alebtong the work performed by the HPMA's is predominantly handpump repairs, although five members are plumbers and have some experience on small piped schemes.

⁴⁶ GFS: cleaning source (every year), replacing pipes, replacing taps, and cleaning reservoir tanks/pressure tanks.

All the associations are able to perform both minor and major repairs. In Lira some members can even do fishing in both shallow wells and even deep wells. They have a welder in the association who can manufacture the fishing tool. Secondly, in Lukka, Kamuli and Kasese the associations have been engaged in the installation of handpumps as well as repairs. As reported by all the DWO's/ADWO's interviewed there quality of the technical work performed by the Association is good and the majority of the water departments provide support to the associations for the major repairs conducted in the field.

The HPMA's are also knowledgeable on preventive maintenance requirements such as cleaning and dismantling pipes, greasing, checking loose nuts. For all associations this is reportedly done every three or four months, however, this is generally for a few sources only as many communities still wait for breakdowns to occur until they are willing to pay money. In Alebtong maintenance tasks such as greasing and tightening of bolts, is only done in some communities who understand and maintain their water points. In Luuka, however, the association has abandoned preventive maintenance as many communities will not pay (even transport refund) on the grounds that 'the handpump was working before'.⁴⁷

5.4 Achievements

This sub section presents the main achievements of the HPMA's in the areas of business, technical, financial, and governance and transparency.

5.4.1 Business achievements

The HPMA's rate their main achievement in business as sourcing work from either DLG or external organisations. Overall four of the five associations have managed to get work for major repairs, albeit mainly from one source (the DLG). In general the HPMA's are considered a cheaper and better use of resources by the District Water Office compared to hiring external contractors.

In Lira, although the bidding process is costly, the HPMA has been able to get two external contracts, one with Plan International and the other with SNV. They are also able to 'respond quickly' where there is work, and each sub county has a tool kit which the HPMA's have access to. The HPMA was also given the opportunity to manage public latrines by the DLG. Although this started satisfactorily it did not really take-off as people were not willing to pay for using the latrines.

Similarly, LUDWASA rates its biggest achievement as the contracts they have been given by the DLG (through the DWO) for rehabilitations (major repairs) and installation of handpumps (on shallow wells and boreholes). Since 2012, a total of 67 boreholes have been awarded to them by the district for

⁴⁷ sometimes the transport cost is sometimes higher than the preventative maintenance visit cost

installation and major repairs⁴⁸. In 2015/16 they expected to work on only four new boreholes which is a concern for them as their revenue will be reduced.

In Kamuli, KDBOMA has so far been able to get business from the district through government (some funded by development partners through the DLG) for installation and rehabilitation (including fishing). The work with the district has been done on an informal basis (non-contractual) due to difficulties encountered in the procurement process within Kamuli DLG. Ever since the HPMA have been on board all contracts for repair and installation now come through the HPMA. The work has been regular since financial year 2011/2012, however, as of 2015/16 financial year no work had been provided due to funding constraints at the DLG and according to the HPMA the quantity of work is insufficient.

Similarly for KAWATA, their main achievement in business is picking up contracts for major repairs from the DLG.⁴⁹ The process was non-competitive and some examples of major repairs included mending a pedestal and overhauling boreholes. The number of water points in each of the contracts were ten. They also get work from members who are private operators on an informal basis for gravity flow schemes e.g. extension of pipe work and fixing leakages. They have also bid for repair work on small schemes but have not been successful.

In Alebtong, where the association has not yet benefited from any work under the PPDA waiver, the HPMA rate their main achievement as skill development. Coming together they have learnt things that they could not do before. For example they could not fish-out lost pipes but now they have practised it as a group and have improved to perform it competently. They have also innovatively developed their local tools to clear the well of stones and pipes. The District Water Office has not formally engaged them, but expected to contract them for at least one water source in the 2016 financial year and see how they perform. Some of their good practices have been their commitment to work, efficient data collection, and follow up of WUCs.

5.4.2 Technical achievements

On technical work all associations rate their main achievement as being able to perform both minor and major repairs. These are timely and of good quality according to the District Water Office in four of the five districts. In Alebtong, according to the ADWO, the association's biggest achievement has been the quick response to assessing repairs, and the elimination of overcharging on repairs through the standardised tariff.

⁴⁸ 32 boreholes were installed and repaired in 2012/13., 25 in 2013/14, and 10 boreholes in 2014/15

⁴⁹ Some of the funds were from UNICEF but channelled through the DLG and some were from the Poverty Action Fund (PAF).

Another common achievement has been to learn new technical skills. In KAWATA by coming together they have improved their knowledge on how to fit pipes for GFSs. Another example is clearing of silted sources when they are flooded. In all five associations some members can even do fishing in both shallow wells and even deep wells and in Lira there is a welder in the association who has been able to manufacture a fishing tool. In Luuka, LUDWASA note their biggest achievement that they are even trusted with major repairs under the supervision of the District Borehole Technician. The only technical work the association cannot perform is when PVC pipes get stuck in the silt (from poor soil formation).

One association identified preventive maintenance as a key area. KDBOMA works together with the sub county health assistants to develop a regular program on preventive maintenance and inform the community when parts may break down such as bearings and pump buckets. Occasionally the communities pay in certain sub counties, however, in others politicians tend to undermine the efforts of the HPMS by telling the community that 'water should be free'.

5.4.3 Financial achievements

Four of the five association's rate their main achievement has been to open and maintain a bank account. The exception is Alebtong who rate their major achievement as providing funds for the registration and development of a constitution. In Luuka, LUDWASA have been paid on their account, and once they are paid they pay out the members according to the amount of work they have completed. In Kamuli, the small savings made by the association have helped them to rent an office in Kamuli town and purchase stationary items for running the office. Similarly, KAWATA has been able to leave some funds on the account for 'official operations'. On a personal level the payments they have received from membership of the HPMA has enabled them to send their children to school.

5.4.4 Governance and transparency achievements

The achievements in this area are quite varied. LUDASA rates its biggest achievement as coordination. They now get to hear about meetings and trainings which was not the case before. KDBOMA, report their main achievement as developing a standard tariff for their work with the community. In Kasese, KAWATA report that there is trust between the association and the members based on good communication. Each member also received what they expected when labour payments are made for work carried out.

5.5 Strengths, Weaknesses, Opportunities and Threats (SWOT)

A SWOT analysis was conducted in order to better understand what the HPMA's perceive as the strengths and weaknesses of their associations, and what areas they consider as opportunities or as threats to their existence.

Strengths

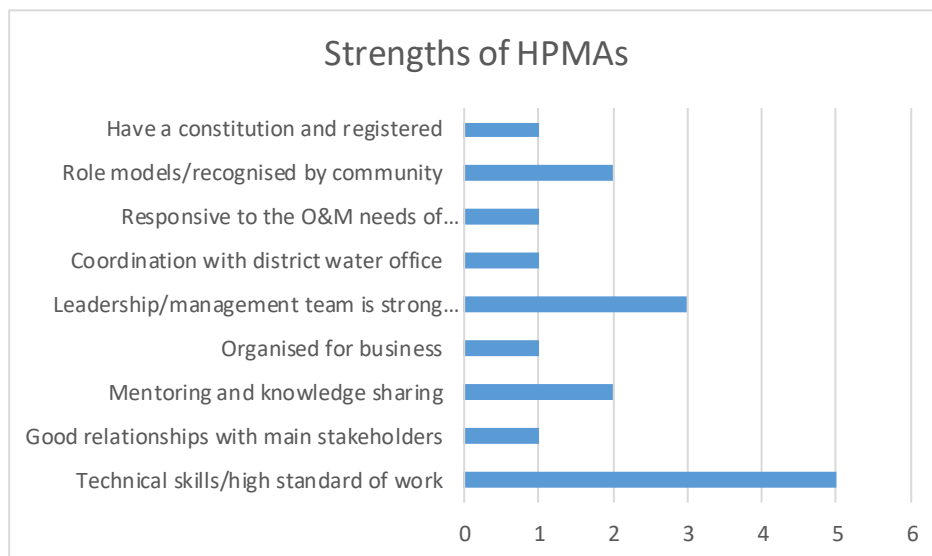


Figure 5: Presentation of different strengths of case study HPMA's. Source, SWOT analysis tool, 2015/2016

The two most common strengths as reported by HPMA's are their standard of technical work, and their leadership/management structures. Firstly, on technical skills all five associations feel that they have the required skillset to do their work efficiently and to a high standard. Four of the five associations have been able to demonstrate this through completing repair work assigned to them by the district or other partners within expected deadlines. This seems to be an improvement on the national level whereby about 50% of the HPMA's can carry out rehabilitation works including fishing out parts if availed with the right tools (MWE and SNV: 2015).

Secondly, three out the five associations reported that their leadership structures were a major strength as they were committed, gave regular communication, and willing to work for the association members. The only other strengths that were reported by more than one association was their ability to share of knowledge and mentor each other, and the reputation of the association's members within the community as disciplined and hard working.

Weaknesses

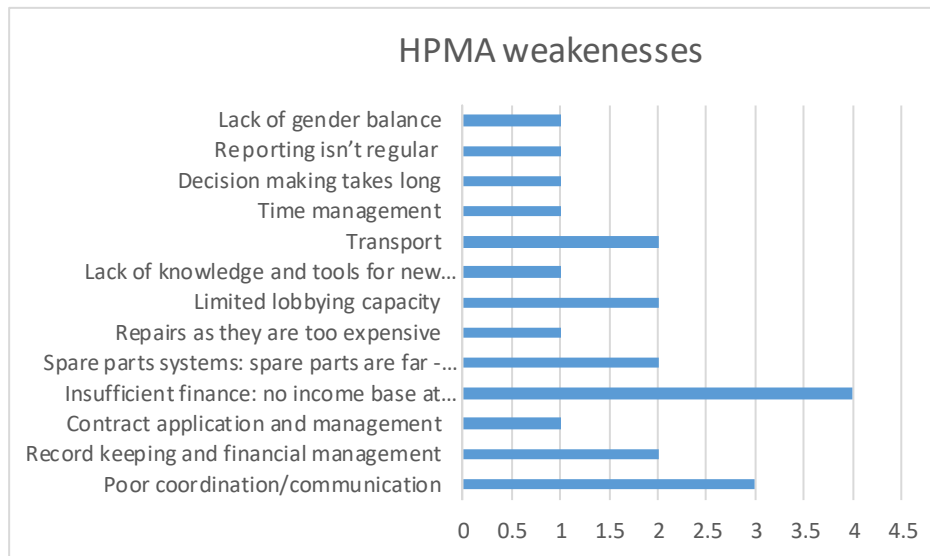


Figure 6: Presentation of different weaknesses of case study HPMA. Source, SWOT analysis tool, 2015/2016

The most prevalent weakness as reported by four of the five HPMA is the lack of finance. The explanations provided on why this was the most significant weakness were quite varied. For Lira HPMA the low funding base of the association prevented them from being able to compete for contracts as pre-finance is required. For Alebtong and KDBOMA the low finance base prevented them from kick-starting their business. In Kasese, KAWATA lacked funds to buy more modern/effective equipment. When repairing deep wells (over 16 pipes) they require a chain lift which at present they have to hire at an additional cost to the repair. This mirrors the situation at the national level where only three HPMA have access to complete tool kits with some sub counties having no kits at all (MWE and SNV: 2015)

The other major challenge, as reported by three of the five associations, was poor coordination and communication. In Lira there is poor coordination as members attend meetings only when there is money available. In KAWATA meetings are only held every six months, due to transportation and communication constraints. And in KDBOMA communication is not done in time for meetings. At least two associations noted transport, limited lobbying capacity, insufficient access to spare parts, and record keeping/financial management as areas of weakness. Interestingly only one association noted lack of gender balance as an area of weakness.

Opportunities

All five HPMA identified other technologies and systems as their biggest opportunity to develop their associations. For supply systems, KAWATA is the only association that has branched out into other supply systems beyond handpumps. So far they are covering minor repairs for nine Gravity Flow Schemes and would like to expand the number as there are many more GFS's in the district which HPMA could provide support to. The other four associations see piped schemes as an opportunity available to them to develop although they have not yet put this idea into practice.

The two other common areas of opportunity identified by the associations were funding/support from DLG and diversification of business/skills. Firstly, on funding/support from DLG, three of the associations saw this as an opportunity for either funding (through contracts) or other forms of support such as training.

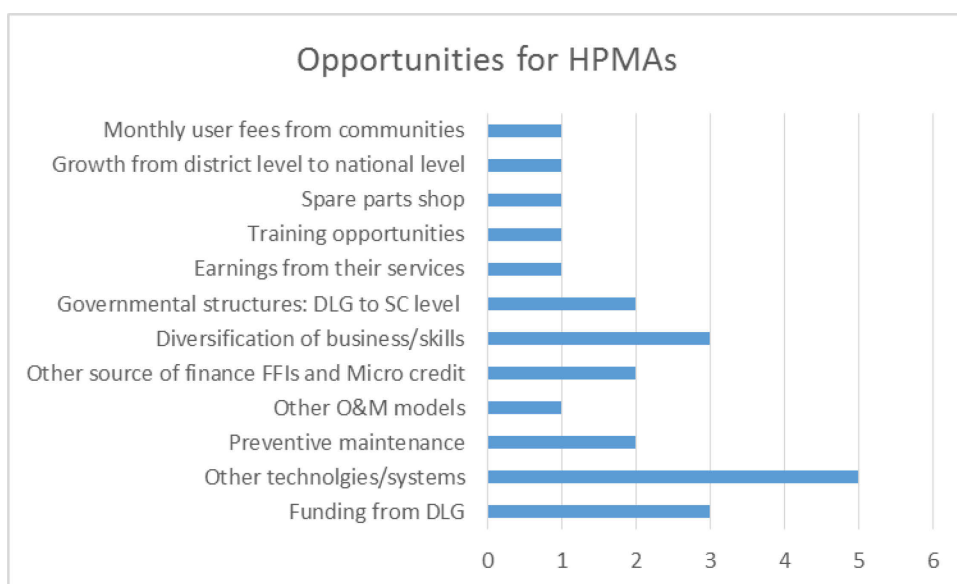


Figure 7: Presentation of different opportunities for case study HPMA. Source. SWOT analysis tool 2015/2016

Both Lira and Alebtong HPMA expected an increase in funding going to the lowest tier (sub county) of DLG in the immediate future. They were aware that potentially 13% of the O&M component of the conditional grant⁵⁰ may go to the sub county board which will be easier for them to engage with and get work. On the other hand KAWATA simply saw that their 'good' relationship with DLG would get them more contracts in future through the PPDA Waiver. Secondly, on diversification of business and skills, three of the associations saw this as an opportunity to either broaden their skills in and around handpumps or diversify into new areas completely. KDBOMA, whom have been given

⁵⁰ In accordance with the Decentralization Statute (2000), 65% of all grant funds must be allocated to Sub-County Local Government. Of the total grant funds 13% should be allocated for the rehabilitation of boreholes and piped water schemes in RWS (MWE: 2012)

multiple repairs by the DLG, would like to be also be given opportunities in installation (of pumps) and casting of slabs during the borehole construction phase. For Alebtong and KAWATA diversification of business would involve branching out into other activities such as school construction; motorcycle repairs, and agro-forestry.

Interestingly, only two associations saw an opportunity in preventive maintenance. According to Lira HPMA and KAWATA preventive maintenance could provide a regular income stream if functioning, at least on a quarterly basis. The fact that only two associations saw user fees as a potential opportunity is perhaps a good indicator that the association's faith in the community to support preventive maintenance has diminished. Also, despite the challenge of lack of access to finance only two of the associations felt there was an opportunity to access credit from financial institutions. Even if this was the case it was noted that they would need a strong guarantor (such as the DLG) to support their loan application which is not forthcoming at present.

Only one association saw 'other O&M models' as an opportunity to develop the HPMA. In Lira the association felt that in future, water user fees will be paid straight to the sub county water and sanitation board (SWSSB). In turn some of this revenue will be paid to the HPMA for preventive maintenance and repairs, although water users would need to be strongly sensitised first. Interestingly, in Luuka and Kamuli Districts where the Whave PPP model has been piloted, this was not mentioned as an opportunity for the association.

Threats

A wide range of threats were noted by the HPMA's with no unanimous threat identified. At least three out of the five associations mentioned the common threats of political interference, finance and negative attitudes of the district. The issue of lack of finance is a recurring theme and was also identified as a major weakness above. In Alebtong the lack of start-up capital is preventing them from starting activities, while for LUDWASA the lack of funds has prevented them from opening up a spare parts shop for which they had hoped to get funds from the district. For KAWATA some members were fearful that the lack of funds would lead to the collapse of the association.

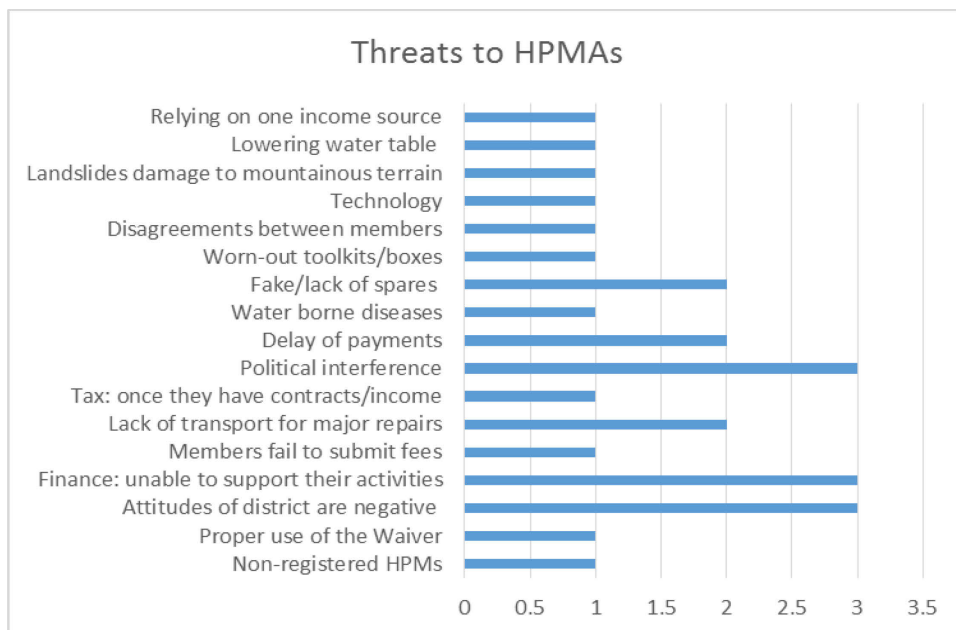


Figure 8: Presentation of different threats for case study HPMAs. Source, SWOT analysis tool 2015/2016

Political interference was identified as a threat in the three districts of western and eastern Uganda but not in northern Uganda. In Luuka, it was noted that politicians undermine the association’s efforts by telling communities ‘water is free’ to get votes. This was also the case in Kamuli and Kasese districts, although it was acknowledged that this is more prevalent in the run-up to elections. Once communities are told that water is free it is very difficult for the community to pay user fees for preventive maintenance. This has led to the situation in most of the sample districts where communities only pay money when there is a breakdown.

One revealing reported threat was that the attitude of the DLG towards the association. This ranged from a general perception of negativity of the district toward the association as reported in Alebtong, to more suggestions of challenges in the procurement process with the DLG in Luuka. In Alebtong, the association felt that the district was restricting their progress citing examples of not providing them with a copy of their MoU and constitutions through which they should receive work under the PPDA. In Lira where the HPMA were currently housed by the DWO, there was fear that the association was too close to its ‘bosses’.

Another interesting finding was that access to good quality spares was a concern for two of the associations. The situation is similar at the national level whereby poor quality spares (which have a short lifespan) used by HPMs has led to mistrust from WUCs and accusations of shoddy work. (MWE and SNV: 2015) For KAWATA the issues were proximity to a spare parts outlet, as there is no supplier in the entire district. For LUDWASA there is better access however fake pump parts which tend to breakdown easily are undermining their reputation with the community. In relation to this

transportation was cited as a weakness by two associations. Lack of access to appropriate transport prevented them from accessing spares (from town) and restricted them in the timeliness of repairs, given that heavy parts had to be carried by bicycle.

5.6 Challenges

To better understand the challenges facing the associations, data collection was done using both FGDs and a participatory ranking exercise. The results of the ranking exercise are provided in table 11 and are supplemented by findings from the FDGs.

Overall as the table shows the most significant challenge faced by HPMA is sourcing sufficient business. This corresponds with the findings at national level, whereby lack of funding and failure to attract contracts had led to reduced motivation after formation of HPMA (MWE and SNV: 2015). From the field research the main exception to this general trend was Lira District who ranked this as low as fifth (out of seven challenges). In Alebtong HPMA, the main reason for ranking this the highest is that they have not managed to source for any business either from the district or NGOs, and are at present relying on preventive maintenance and minor repairs from the community, which cannot sustain their livelihoods.

In Luuka the association has not managed to source for any business beyond what they have been provided through the DLG. According to the ADWO the biggest challenge is that they do not save the money they earn, which would allow them to increase on their capital base so that some more work such as such casting of platforms/slabs could be given. In Kasese it is difficult for the association to find other business (outside the DLG) that gives them sufficient 'yield'. The annual work from the district is not sufficient to keep them going as an association. It also results in them not being able to develop and fine-tune their skills as they are only practising new/more difficult skills once a year. In Lira District, according to the ADWO, although the HPMA has pooled people who are already doing well, their expectations are high in terms of the amount of business they can get from the district and other sources.

Table 11: Ranking of major challenges from case study HPMA

Challenge	Lira HPMA	Alebtong HPMA	Luuka HPMA	Kamuli HPMA	KAWATA	Total
Financial management/bookkeeping	3	6	7	3	6	25
Technical work ⁵¹	7	7	4	7	4 ⁵²	29
Contract management ⁵³	4	4	6	4	5 ⁵⁴	23
Organisation of work/business	1 ⁵⁵	2	5	6	7	21
Access to spare parts	6	5	3	5 ⁵⁶	2	22
Sourcing sufficient business	5	1	1	2	1	10
Operational/logistics	2	3	2	1	3	11

Source: Focus Group Discussions in five districts, 2015 & 2016

The second biggest challenge overall was the operational and logistical constraints that made work difficult for the associations. This was the most significant challenge for Kamuli association and the second ranked challenge for Lira and Luuka associations. For Kamuli the lack of access to proper transport (motorcycle) made it difficult to complete work on time. In Lira, the individual HPMA only have bicycles to move around an entire sub county which can mean cycling up to 15-20 kilometres to the furthest water point. This lack of mobility was confirmed by the DWO who reported that HPMA can often take some time to reach water points due to transport constraints.

Overall, the third biggest challenge is organisation of work/business. One of the outliers to the above trend is Lira HPMA who rate this as their biggest challenge. The main reason for this is the lack of start-up money to invest into the company. Because of the lack of finance the HPMA has not been able to kick start their business and find it a constraint to bid for work due to the cost of the bidding process, the strict criteria required (funds on account), and the need to pre-finance contractual work.

⁵¹ Technical work refers to human capacity/skills and technical support structures

⁵² Need more exposure to different technologies

⁵³ Received training but only topic covered was governance. Contract management wasn't gone through

⁵⁴ They know but they 'don't control the money'

⁵⁵ May have business but don't have startup money to invest into the company (finance is the main problem)

⁵⁶ German spare parts are scarce

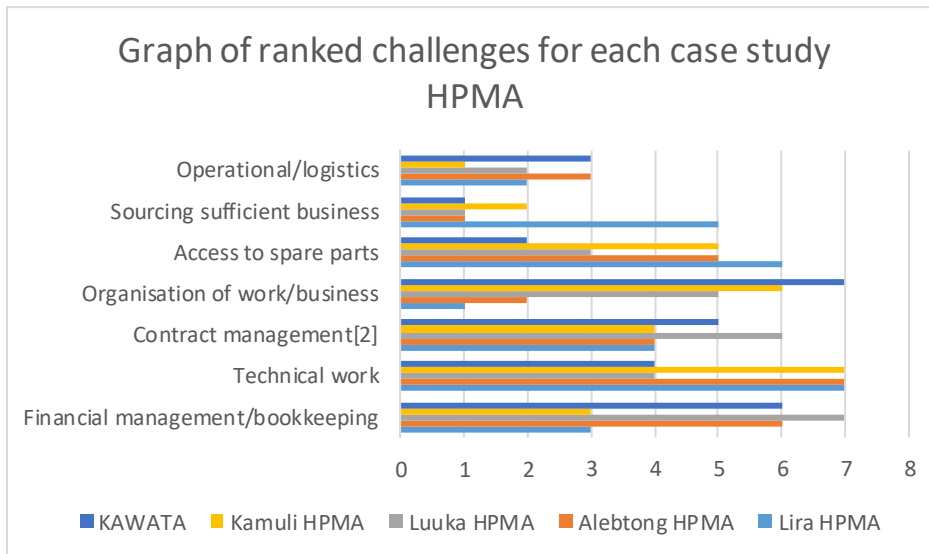


Figure 9: Presentation of ranked challenges for case study HPMA. Source, Focus Group Discussions 2015/2016

Interestingly, access to spare parts is only ranked as the fourth highest challenge despite being a major problem for O&M in rural water supplies nationwide. Kasese and Luuka ranked this as their second and third highest challenges respectively.

Spare parts challenges in Luuka District

Access to good quality spare parts is a significant challenge in Luuka district. For U2 and U3 parts the HPMA have to travel to Jinja or Iganga districts which has significant transport costs. Moreover, the spare parts are often poor quality and only last for a short period. The association recently procured a pump bucket that lasted only three months when they used to rely on them lasting two years. This often brings problems with the community who think the HPMA are cheating them. The association had expected that the district would help them establish as spare parts shop. This has not yet materialised and the district are still trying to find a way to get this financed. Previously under the RUWASA project tools were provided on loan and the Association paid back

Source: Focus Group Discussion, Luuka District, 2016

Box 5: Spare parts challenges in Luuka District

For Kasese District, the second biggest challenge is access to spare parts. The reason for this is that there is no spare parts outlet but only hardware stores through which spare parts can be ordered. Some items such as pipes and connectors (90mm) for GFS can only be ordered from Kampala which is around 350 km away. Spares are bought by the district but are sometimes duplicates (fakes). For work provided through the district so far the HPMA reports that it is not involved in the procurement process. The HPMA reported that most of the money is spent on spares (in the district contracts) which means the HPMA receives less money than expected.

Overall, financial management/bookkeeping and technical work are considered the least significant challenges. For the majority of HPMA financial management has not been a significant issue as they are not 'handling money'. Secondly, as observed through the section above, the association have the strongest capacity in technical skills and can carry out the range of O&M tasks including minor and major repairs. As a result of this only a lack of practice is sometimes the issue for the newer and more technical aspects of their work e.g. repairing pipes on a Gravity Flow Scheme.

5.7 Other complementary O&M models

This sub section will introduce and discuss the alternative O&M models where they are present in the case study districts. This includes the Whave PPP model which has been piloted in Luuka and Kamuli Districts, and the Sub County WSSB model which has piloted in Lira District.

5.7.1 Whave Public Private Partnership model

The Whave PPP model has been piloted in several districts in Uganda including Luuka and Kamuli, which are two of the study districts in the Busoga Sub Region of eastern Uganda. The PPP model was first piloted in Luuka District in 2013 and began in two sub counties with HPMA that had been trained under the Busoga Trust. According to the WSPs, the aim of the model is to have a continuous clean and safe water supply in the target communities. In Kamuli District the model started in 2014 and is operational in four sub counties (out of nine) on shallow well technology only.

How the model works

The model works through Water Service Providers (WSPs) who are contracted by the Water Operator (in this case Whave Solutions) to provide O&M services to a specific number of water points within their sub county. In Luuka District this ranges between 19 and 26 water points. This has reduced from the initial number as some communities have 'dropped out' of the model. According to the WSPs their duties under the performance contract are:

- Establish how many households use a source
- Work with community to collect money (water user fees) based on agreed contribution (with Whave)
- Ensure good hygiene around the water source e.g. free on animals, safe distance from latrine etc.
- Ensure good hygiene and sanitation at home. Some of the indicators used are presence of tippy taps, rubbish pits, drying racks, latrines etc.
- Undertake preventive and corrective maintenance

The model is performance based focusing on preventive maintenance rather than repair which has been the trend under CBMS in recent years. The WSPs earn money from a functioning water source rather than a broken down water source. As soon as a water point breaks down however the water source must be repaired in 24 hours. The WSP assesses the water point and in some cases where the repair needs are greater the 24 hours might be extended if the situation is reported early. Spare parts are procured from Busoga Trust as they are from a specialist pump manufacturer (Consallen) and not available on the local market. The cost of the spares are deducted from the monthly fee of the WSPs. According to the WSPs this is sufficient incentive for them engage in preventive maintenance. The WSPs have had some success in engage the community to collect fees. This is due to the training and sensitization that Whave does at the beginning where it also introduces and empowers the WSP as the focal point for that specific water source. Whave regularly monitors independently (up to five times per community per month) and check the conditions of the contracts are been met. A report is given to the WSP on the performance on the water source, on water quality, and the wider hygiene and sanitation situation at household and community level.

Linkage to the HPMA

According to the HPMA Whave works with individuals not the association. Some of the association members are also WSPs who are engaged in a performance contract, however, Whave does not work with all water sources in the district, and each WSP benefits as an individual rather than a member of the wider association. The HPMA in Luuka suggested that the Whave model should be extended to all sub counties in the district.

As reported by the District Water Offices in Luuka District and Kamuli District the HPMA and Whave model can co-exist and are not in competition. In Luuka District the Whave model is based on improving reliability and reducing down time. Some of the HPMA members are WSPs and have been encouraged to put money back into the association, but in practice they have not done this. According to the DWO, the community needs more understanding on preventive maintenance and the Whave model has had a lot more gains in this despite some of the communities feeling they are being overcharged (for preventive maintenance) because their water point hasn't broken down.

The WSPs feel that they still need the HPMA and suggested that if members of HPMA were also WSPs the earnings they could bring would really help the association save and grow. Secondly, the HPMA as an association has some lobbying power (with the district and other entities) on contracts/money which they may not have as individuals. On different technology in Kamuli District according to one WSP the HPMA deals with government sources and the WSP with Consallen and some U2 handpumps.

Achievements and challenges

The table below provides the main achievements of challenges of the Whave PPP model based on interviews with HPMA, WSPs, Whave Solutions, and the District Water Office.

Table 12: Achievements and challenges of Whave PPP model

Achievements	Challenges
<ul style="list-style-type: none"> • Functionality and reliability are at 100% in their communities. • Over 80% success in payments by communities as per service agreements. • Level of business is sufficient for WSPs to maintain a living at the moment. • Community appreciate the quick response to breakdowns. 'today its down, tomorrow water is back.' • WSPs benefit on a monthly basis. 	<ul style="list-style-type: none"> • Defaults on payment by community has reduced the number of water points • WSPs have capacity to take on more water points but dropout rate has not helped. • Mobilising funds⁵⁷ from community is difficult. • Transport across a big sub county is difficult • Tools are okay but have some technical issues with threading pipes for Consallen pumps which needs to be done in Jinja. • It calls for 'hard work'. Sometimes they have to sleep in a community to get them to do the work especially in the case of hygiene which takes up a lot of the HPMs time and transport in sensitization. • Sustainability (part subsidy). • Whave cannot 'spread out'. Not everyone can benefit at the moment, only some WSPs. Model should roll out to other S/Cs. • Some people think that water users shouldn't pay money (including NGOs)

Source: Focus Group Discussions and semi-structured interviews, Luuka and Kamuli Districts, 2016

5.7.2 Sub County Water and Sanitation Board (SWSSB)

The SWSSB model has been piloted in several sub counties in Lira District since 2013. It has been supported by Triple-S and SNV, and the MWE intends that the board model be fully functional by 2016/17. The model 'fell apart' in a number of sub counties but has worked better in Lira Sub County where it became operational in 2014. At present the Lira Sub County Board has no official legal status as there is no legal framework in place. The Board leadership consists of an 'interim' management team consisting of the SC Chief as the Chairperson, the Local Councillor III, Parish Chiefs, representatives of the technical departments including health and community development, and community representatives. The interim reports to the Sub County Council which consists of similar personnel, but is the Sub County Authority as envisaged in the structure below.

The Board is voluntary and has several key roles and responsibilities including: to coordinate the functionality of water points; train Water User Committees' in their roles and responsibilities; and handle the financial contribution of WUCs. So far 28 water points have registered onto the model,

⁵⁷ The WSP has a role in mobilizing funds from the Water users/communities

out of 91 boreholes and shallow wells in the sub county. (MWE: 2010). Each water point contributes water user fees, 60% of which stays with the community for preventive and minor repairs⁵⁸, and 40% is banked on the Boards account to cater for major repairs that the community (together with the HPM) cannot handle. For minor repairs the community engages the HPMS directly. At present there is no external funding mechanism, therefore the Board just integrates monitoring and supervision of water points into their usual programs. The Board does not have the resources to go to each water point on a daily basis but believes if all was working well (with collecting fees) preventive maintenance would be the best way forward. At present they do not engage the HPMS in preventive maintenance as communities willingness to pay for this is still lacking and would still require a lot more sensitisation (on the benefits of preventive maintenance) for the situation to improve.

Linkage to the HPMA

The Board engages with the HPMS at sub county level rather than with the association at district level. The board see themselves in a supervisory role of the HPMS in their sub county on corrective maintenance tasks. They have also provided them with toolkits and supported them to develop/regulate the standard tariff for repairs.⁵⁹ If the community reports a problem with a water point the HPM is engaged to go and do an assessment. If it is a minor repair the 60% of water user fees that are left with community is used to cater for HPMS fees. If it is a major repair the board can come in to engage a private contractor, which in this case is the HPMA. The Board so far rate the technical work done by the HPMA as above average for the three repairs that have been conducted through the Board funding and two rehabilitations that were funded by Divine Waters.

Achievements and challenges

According to the District Water Office the three main challenges of the SWSSB model are: accountability, whereby the Board takes a long time to account to water users on expenditure: low community contribution whereby neighbouring sub counties (where the model is not operational) can often influence them not to contribute; of mobilizing fees: and reporting whereby no one on the Board has taken charge for reports and records. The leadership of the Board also raised a number of challenges and achievements.

⁵⁸ For deep wells 40% is banked, shallow wells 30% banked, and protected springs 10% only.

⁵⁹ 60,000 for shallow well.

Table 13: Achievements and challenges of SWSSB model

Achievements	Challenges
<ul style="list-style-type: none"> • Installed a sense of ownership: this has led to improvement in functionality. Many water sources had broken down. • Training: of WUCs on their roles and responsibilities. • Organised quarterly board meeting. • Accountability meetings (twice). How money has been used. • Repair of sources: have repaired four sources, three shallow wells and 1 deep (using money from the Board account). • Monitoring: of sources and reporting on a monthly basis • Lobbied for major repairs: Divine waters helped them fund two major repairs after their lobbying efforts. 	<ul style="list-style-type: none"> • Funds: Have done this through teamwork. Do not have funds; “you are supposed to go and do activities but there is no money.” • Payment of fees: water users do not pay. There are often gaps of 2-3 months. • Registration: only one third of water sources are registered. • Non-functional WUCs: often only 2 out of 9 members of the committee are working/active. • Dependency: Other S/Cs do not have the board model which caused negative influence on user fee collection. • Efficiency of repair. Response time from Board is slow. WUCs are not consistent in their payments therefore Board may not be so fast in repair.

Source: Focus Group Discussions, Lira SWSSB, Lira District, 2015

6 Analysis and discussion

In this chapter the findings presented in chapter five will be discussed and analysed further. For the purposes of consistency and clarity, the analysis will be presented in the context of each of the six specific research question with some questions compartmentalised further for ease of analysis. This section will also include information from key stakeholder interviews, that were not presented under the case studies but which provide some relevant substance to the findings of the case studies.

6.1 Status of CBMS in Uganda

The status of CBMS can be understood from the literature review and to some extent the fieldwork conducted. At an overall level the prevailing discourse is that CBMS, despite some success, has not been able to achieve the levels of sustainability of rural water supplies it promised. Although, the level of access to safe water in rural areas has improved at a macro level the desired level of functionality of these systems has remained elusive.

6.1.1 Achievements

The literature in Uganda would mainly seem to reaffirm this position. On the one hand the strong policy level support for CBMS may well be a factor in the improved level of access to rural water supplies which has increased steadily over the last two decades. Similarly the increase in functionality at the time of spot checks has also improved. It should also be noted, that these figures are still below the Government of Uganda targets, and further investigation of the literature shows that only 53% of facilities are fully functional.

The findings from this research at the case study level are consistent with the policy environment of the GoU with CBMS remaining as the main approach in all five districts. In some cases such as Alebtong and Luuka it was described as 'partially working' and, and in Lira as 'installing a sense of ownership'. CBMS was also still considered the best approach in Alebtong, although this may have been due to the remoteness of the district and lack of exposure to other or alternative approaches/models. These opinions could also be supported by the district level data available which revealed that four of the five districts had access levels above the national average of 65%, and three out of five districts had functionality levels above the national average of 88%.

On the other hand only two (Kasese and Luuka) of the five districts were able to achieve the national targets of 90% functionality and 77% access. If these successful districts are analysed further the picture is perhaps less clear cut. For example in Kasese District although the official statistic for functionality is 94%, according to the ADWO this had now dropped to 53%, due to damage caused

to several schemes during road construction in 2016. In Luuka, the other district which is above the national functionality target, the impressive results may be due to the intensive efforts of the Whave PPP model, which while recognizing CMBS as an entry point, is more reliant on incentives to the private sector under a framework created in conjunction with the public sector. Secondly, the high levels of accessibility in Lira and Alebtong may also be attributed to the high presence of International agencies and NGOs in northern Uganda that responded to the humanitarian IDP crisis and later resettlement of displaced persons at the end of the Lord's Resistance Army (LRA) insurgency in 2006.

6.1.2 Challenges

Where districts are not meeting the national targets this may be due to some of the inherent challenges associated with CBMS. The highest ranked challenge (with CBMS) based on feedback from FGDs, was the lack of an effective spare parts system, followed by lack of ownership of water points (by the community), and thirdly the lack of financial mobilization by water users – particularly for preventive maintenance. These findings are consistent with some of the literature that critiques the traditional CBMS approach. It is also apparent that in line with authors such as Moriarty et al (2013) the traditional concept of volunteerism has now been eroded. Moreover, these are recurring challenges that most districts could not easily find solutions to given their level of resources versus the widespread and ubiquitous nature of the issues at the community level.

6.2 Variations of and alternatives to the CBMS management model in Uganda

In recognition that the CBMS model has not had the level of success that it set out to achieve, the literature points out a number of paradigm shifts that are taking place in rural water supplies. These are the project versus programme approach, the service delivery approach, and the increasing involvement of the private sector. Although there is limited academic literature available on these paradigm shifts in Uganda, some of the emerging themes such as community management plus, and improved service delivery through the private sector, are relevant to the Ugandan context given some of the shortfalls of CBMS in its current form.

The emergence of 'community management plus' in the literature is relevant to Uganda and would seem to be a part of the broader need to provide more professionalised service delivery, of which the models such as the HPMA are just one part. This may engage private sector service providers that can be held to account on service delivery indicators. The literature points out that this has had more success in middle income countries where some of the prerequisite conditions are already in place i.e. high coverage levels, state funding.

In rural water supplies in Uganda, some recent research conducted by IRC Triple-S on the level of service delivery through Service Delivery Indicators (level of quality, quantity, reliability, accessibility etc.) and the management system in place is particularly relevant but is still relatively new. On the involvement of professional service providers, the literature suggests that greater involvement of the private sector in small towns has led to improvement in water supplies as evidenced by a number of studies such as Hirn (2013) and Kayaga and Sansom (2003). The literature for rural water supplies is scarce beyond some small scheme success in private operation of 72 schemes in Uganda as noted by Lockwood and Smits (2011). For handpumps, the difficulty in quantification of the private sector involvement at a broader sector level is mirrored in Uganda. Although this may increase in future, it seems fair to summarise that alternatives to CBMS, that are private sector based such as Private Sector Service Delivery (PSSD) are at present limited which may well be due to the lack of incentives for private sector involvement in Uganda as noted by authors such as Harvey, Uno and Reed (2006) and Koestler (2008).

There is little academic evidence to suggest that the shift towards better service delivery through the private sector is firmly on the agenda in Uganda. Despite this all of the DWOs were positive about the involvement of private sector in O&M including preventive and corrective maintenance, and the spare parts supply chain. Conversely, most districts did not really have a grasp of how this would happen, beyond the recent introduction of the HPMA's or other approaches that had been tested by agencies or NGOs. This is unsurprising given the informality and unstructured nature of the private sector in many parts of rural Uganda. The exception to this rule was Kasese where the high number of gravity flow systems did provide some incentive for the private sector, albeit through individual Scheme Attendants rather than companies that employ more personnel and are more focused on service provision.

Findings from the literature review revealed two other alternatives to CBMS on a sectoral level, including Public Private Operation and Maintenance (PPOM), and Private Ownership Operation and Maintenance (POOM). Of the two PPOM has a little more traction at present given the emergence of models such as the HPMA, SWSSB and other PPP incentive based model. The most prominent research on PPOM type models in Uganda by IRC Triple-S points out some of the challenges with the private operator small piped scheme model, some of which (contract compliance monitoring, tariff adjustment, and water quality monitoring) are relevant to new innovative models such as the Whave PPP model (which will be discussed further below). For examples of effectiveness of the PPOM approach the literature does point to some success with wider case studies with handpump PPPs in Burkina Faso and Mauritania. Both of these required the presence of significant private sector actors such as Vergnet to achieve some success and a strong public sector which may not presently be the case in for rural water supplies in Uganda.

6.3 Status of HPMA model in Uganda

The HPMA is an approach that seeks to improve CBMS through technical support rather than replace it. Under the MWE guidelines it is a partnership approach whereby the government is the 'enabler', the private sector the 'service provider' and the community (to some degree) the 'financer'.

6.3.1 Legal establishment

According to the MWE/SNV survey of 2015, 92% of districts have formed HPMA and 80% of districts had properly registered HPMA as CBOs or in some cases limited companies. Similarly, findings from this research show that in the five case study districts the HPMA model has to some degree been established on a formal level. All five HPMA reported to be registered as a CBO with four of them able to provide their certificate of registration. This enables them to formally conduct business and gives them legitimacy. Moreover, two of the associations (KAWATA and Lira) have also registered as companies with the motivation to improve their level of business. Both associations have encountered challenges with maintaining two entities, with the requirements for operating as a business considered as expensive by one of the associations.

The second important legal document in accordance with the HPMA model guidelines is that the HPMA should have a legally binding MoU and framework contract with the DLG. According to the MWE/SNV survey in 2015 only nine out of 111 HPMA had signed MoUs with the districts, including two of the districts covered under this research – Kasese and Luuka. Interestingly, the field research was able to confirm the existence of the MoU in Kasese, but not in Luuka with LUDWASA. Furthermore, it is apparent from the findings that there is more value placed on having the MoU in certain districts than others. For example in Kasese the MoU between the district and KAWATA is in place and updated on a regular basis and provides the basis for an annual work plan, however, in Kamuli there is no formal MoU in place despite the district awarding repair and rehabilitation work to the association on an annual basis.

6.3.2 HPMA capacity

To understand the status of HPMA further it was necessary to research their capacity levels in four key categories namely financial management, management/leadership, operational/business, and technical capacity.

Overall, HPMA scored **highest in technical capacity, poorly in financial management, with average ratings in management/leadership and operational/business capacity**. These findings suggest that HPMA have been able to continue with the technical work (minor and major repairs)

that they have been carrying out for a number of years as HPMA, but have been less inclined to adopt some of the more managerial and financial aspects of the HPMA model.

Financial management capacity

The poor performance in financial management is perhaps a direct result of the lack of motivation to perform the day to day financial tasks as it has little correlation to the award of business in a formal contracting sense. For example, in Luuka District LUDWASA has no financial records in place yet has benefited from the most work of any of the five associations through the PPDA Waiver. As such it has also not needed to submit for any formal tenders (which would require evidence of financial record keeping). Secondly, there is an obvious skill gap in financial record keeping with only Lira HPMA having a qualified finance person in place and the rest to some extent learning on the job.

Operational/business capacity

Although, the overall ranking in operational capacity was average there was some variation in the capacity of the five associations. In general on demand responsiveness associations were ranked highly on coverage and technical skills, but were constrained by the absence of plans for O&M tasks, and access to quality spare parts. As such the approach of most associations is ad-hoc, and rather than engaging in preventive maintenance, repairs are done on a needs basis. At the same time associations cannot always engage in corrective maintenance effectively without a functioning spare parts system in place. As a makeshift measure (for corrective maintenance work or contracts with DLGs) the water office has organized the procurement of spares themselves, however, this has often caused tension with the HPMA who feel they pocket less of the contract value under this arrangement. The spare parts system in Uganda is a broader issue, however, it was intentioned in the guidelines that HPMA would stock spares themselves, which has not materialized in any of the case study districts.

Overall, the level of business capacity is still low in all five associations and is currently not sufficient to keep them going in a profitable and incentivized manner. At the same time the older associations tended to rank higher in level and type of business with Lira District the best performing due its record of getting business from more than one source (other than the DLG) which has not been the case with the four other associations. Although it is not clear how many further opportunities Lira HPMA will get in the future with a declining NGO presence in the region, this will still stand them in good stead to access other opportunities from the private and public sectors should they emerge. At the same time three of the four other associations (excluding KAWATA) do not currently have the capacity to identify and manage such opportunities (beyond the DLG). This would seem to reinforce the MWE/SNV (2015) finding that HPMA do not yet have the capacity to manage strategic relationships and networks.

Secondly, one clear area of success was the development of a standardised tariff system in all of the associations, which was employed across all the districts and had installed some trust toward HPMA's from the community, and reduced competitiveness within the association themselves.

Management/leadership capacity

HPMA's exhibit mixed capacity in the major areas of management and leadership, although they rated this as their second biggest strength (after technical competency). HPMA's were able to demonstrate some degree of transparency as evidenced by a general understanding on the legal and financial position of the association from the members interviewed. This is perhaps due to several factors including the fact that associations were all registered quite recently, and that there is a system for effective communication on the financial status of the association either formally at meetings or informally through phone calls. Furthermore, the leadership is aware of its roles and responsibilities and is performing some of them adequately.

On the other hand most associations have inadequate documentation in place (in the form of minutes from executive meetings and AGMs and reports of O&M work completed) to show they are accountable and transparent. Also, despite the strong faith and trust expressed by members in their leadership structures, it is apparent that membership of the associations is on the decline which according to some members is a result of not yet getting a return (for their time and resources). The low female membership in the HPMA's (only two of the five associations had female members) is symptomatic of the prevailing cultural norm that HPMA's is a role for men only. This issue seems to reinforce the SNV/MWE report findings of 2015 where women made up only 10% of membership.

Technical capacity

Finally, on technical capacity, the fact that all HPMA's were able to score highly in the capacity assessment and collectively rate this as their biggest strength, is a reflection of their depth of experience and knowledge that has accumulated over a number of years. Most HPMA's were recruited prior to the formation of HPMA's and have received some technical training from DLG's and development partners which (combined with on the job learning) has resulted in them being competent and able to perform almost all O&M tasks. Most of them attribute their success to the fact that they have been able to learn (new skills) from each other and work as a team rather than individuals as was the case prior to the HPMA. The majority of District Water Officers interviewed were complimentary about the HPMA's technical standard of work as long as there was supervision, with only two districts (Alebtong and Lira) still remaining hesitant to provide the HPMA with work. Interestingly, the issue of access to tools did not come up as significantly as in the MWE/SNV survey (2015) where it was noted only three districts had full access. Although few HPMA's have a full tool kit,

HPMAs seem to have been able to overcome this by using and sharing their own toolkits or accessing those from the sub county.

One area of obvious concern was on preventive maintenance whereby the capacity of HPMAs is constrained by transportation (to check on water points) and willingness to pay from users. The fact that one HPMA (LUDWASA) had more or less abandoned preventive maintenance is worrying from the point of view of systematically improving functionality and reliability. This is part of a broader issue in the water and sanitation sector and will be discussed in more detail in the conclusion.

The weakness of support structures in the districts is restrictive to the development of new technical skills for HPMAs. Support structures such as DLG, NGOs and private sector, were rated as either poor or average in this area which can be attributed to the inadequate formal support they receive in skill development from this cross section of stakeholders. A slight note of concern was that none of the District Water Offices interviewed were planning to further train the HPMAs in the immediate future, even though they acknowledged the capacity gaps that exist. With the reduced budgets of development partners and the lack of significant private sector engagement in these districts, this means the HPMAs are to some extent reliant on their own resources and expertise to further develop.

6.4 Comparison of approaches/variations in HPMA model

Overall evidence suggests that the nationwide rollout of the HPMA model has been done in a fairly standardised manner and to some extent in accordance with the HPMA guidelines. HPMAs existed in all five of the case study districts and four of the five provided constitutions and evidence of legal registration. As in the design of the model the government (DLG with some TSU support) is still the 'enabler', the private sector through the HPMA the 'service provider' and the community (to some degree) the 'financer'.

Despite this there are still a number of variations in the implementation of the HPMA model. These include perception of PPDA Waiver; difference in contracting processes and type of work; and differences in perception of the districts towards the HPMAs.

The findings of this research tend to support (and further advance) the SNV and MWE (2015) survey finding of a general willingness to support the PPDA waiver by the DLGs. At the level of the District Water Office all five of the districts were enthusiastic about the waiver, and four out of the five had actually put the waiver into practice by awarding repair contracts to the HPMA's. Only one district – Kamuli – had received resistance from its procurement department who still preferred the former process of competitive tendering for repair work and has rejected the contract format provide by the

DWO. This would suggest slight progress has been made since the SNV and MWE survey where only three out of 111 districts had contracted HPMA's at the time.

One major variation in the implementation of the HPMA model has been the actual contracting process. The HPMA's guidelines stipulate the need for both an overall MoU between the DLG and the HPMA and a framework contract. Of the four associations that have so far been engaged in work by the DLG only two (KAWATA and LUDWASA) have been engaged formally i.e. through a contract or a MoU, and only LUDWASA has both of these in place. Kamuli and Lira associations have managed to do this informally which has certainly benefited Kamuli in terms of number of contracts but means there is no legally binding agreement which could lead to financial issues in the future. The fact that there has been limited attention paid to MoUs and contracts so far suggests that both the HPMA and the districts are content to maintain the 'informality' of their arrangement at present, which may be serving both parties interests satisfactorily.

The other major variation was the differing attitudes and perception between the HPMA's and the districts and vice versa. At the district level, Alebtong and Lira Districts were more cautious in awarding contracts to HPMA's and in other areas there was more trust with contracts awarded annually in the case of Luuka. In Lira District a more cautious approach has been adopted whereby according to the ADWO the HPMA "can't start aiming too high, they should manage the small money well first". In the case of Lira this has not yet proven so restrictive on the development of the association due the availability of O&M work with development partners, however, with the reduction in development partner funding the HPMA will be looking more towards the district for business. In Alebtong the cautious and protracted approach has hindered the development of the association which at present is lacking the incentive and vision to progress further.

One of the most interesting developments of the model is the dual registration of some associations, both as a CBO as per the HPMA guidelines, and as a private company in the case of KAWATA (through KAHAMA) and Lira HPMA. The motivation for establishing the private company in both cases was to get more business as it enables the HPMA to compete more favourably for tenders on the open market. The results have been somewhat different with Lira benefitting from two repair borehole contracts from NGOs through its 'business wing' and KAHAMA being superseded by KAWATA once the PPDA waiver came and the advantage of having a company was reduced. In both cases it is apparent that these two are the best supported and most established HPMA's where DLG/development partner assistance has been required to establish the private arm. Secondly, as reported by both associations the cost of keeping the 'business wing' is a major challenge, and as such would seem to outweigh the benefits so far. Therefore while in Lira the private sector arm is

surviving, in Kasese it has separated from the HPMA and diversified away from the water sector into other areas such as brick making.

Another variation in the HPMA approach as pointed out in the literature is the savings models as developed by organisations such as Triple-S and The Water Trust. During the field research although funds mobilisation was cited as an issue by all HPMA none of them had established any savings initiatives. They tended to place more emphasis on pursuing contracts or accessing microcredit from financial institutions, rather than how they could generate funds from their own resources through savings and lending schemes.

6.5 Comparison with other alternative models and approaches used in Uganda

Two of the other prominent models introduced in Uganda include the incentive based model developed by Whave and the SWSSB or 'Board' model which has been piloted by Triple-S and now the MWE. As both these models are relatively new their success so far is difficult to evaluate. Overall, both models would seem to complement the HPMA model rather than supersede and may provide lessons that can be used to improve the model in the future.

Whave PPP model

This model has been in existence for slightly longer than the SWSSB and has more available data. The model is representative of the shift towards improved service delivery through the private sector, and is based on the premise that the private sector brings down costs and increases profit margins. In the pilot districts, the Whave PPP model has had significant impact on functionality rates (at 99%), reliability and water quality, with less success in the improvement in hygiene practices.

On the other hand there are some design issues with the Whave model that need to be considered if the model is to be introduced on a wider-scale. Primarily, this is a subsidised model whereby Whave contributes about 40% and the community 60% of the total service cost. It is stated that the model has a gradual subsidy reduction component, however, this has not been put in place yet. On a pilot basis the subsidy has worked but on a wider scale would require a significant amount of funding beyond the efforts of one organisation. Also, the underlying challenge of mobilising community contribution (even at 60%) remains. Secondly, beyond the overall improvement in water service indicators at a district level, the HPMA has not yet really benefited from the Whave PPP model as funds received from WSPs are not invested back into the HPMA but kept by individuals. This limits the growth of the HPMA's funding base and also puts into question the rationale for having an HPMA where the Whave model is also operational. In Luuka District, the lobbying capacity of the HPMA was cited as the main reason for continuing with both models although this is strongly reliant on the availability of funds at district level to lobby for. Finally, with one model promoting the ideals of

preventive maintenance and the other somewhat incentivising corrective maintenance through repair contracts, it is apparent that some merging of the two would be required in the future, in which the shift back to preventive maintenance needs to be reprioritized.

Sub County Water and Sanitation Board (SWSSB)

The SWSSB model is similar to the model implemented in small towns in Uganda. The 'Board' contracts out O&M services to a service provider (the HPMA) and oversees the implementation of a performance based contract. As such this is a complementary approach to HPMA, which although only piloted on a small basis so far may feature more prominently in MWE plans going forward.

From the research conducted in Lira Sub County (one of the Triple-S pilot locations) the Board was working directly with the individual HPM on the coordination of corrective maintenance and to a lesser extent the HPMA at the district level. The board have repaired four sources through contracting the HPM including three shallow wells and one deep well. The main challenges of the model are again some of the inherent challenges of CBMS including: willingness to pay; low membership so far; and low efficiency of repair.

According to the field research the major constraint to further out-scaling of the Board model is the availability of funds. Under the pilot arrangement some support was provided by Triple-S but most of the interim Board are voluntary. It is anticipated in future that part of the O&M fund that the district has under the 'conditional grant' will filter down to the sub county level. According to the interim Board if the government commits itself "it will boost our capacity and make us to be far ahead with close to 100% functionality". With this model firmly in the thinking of the MWE there may be some willingness at the central government level for this to happen although the DLG would also need to be on board. In some cases such as Lira District, however, the ADWO noted a number of challenges such as leadership, technical capacity, and accountability at the sub county level that would make them hesitant about releasing funds to the lower tier of government. As such it would seem some consistent capacity building support will first be required at the sub county level to ensure that capable structures are in place to handle this responsibility before any wider out-scaling of the model can take place. Interesting in Alebtong District, the Northern Uganda Umbrella⁶⁰ has started to engage with some Boards with a view to providing training and other technical support. If this materialises in the form of a consistent capacity building programme then it represents a step in the right direction.

⁶⁰ The umbrella is an overall support body for small piped schemes at regional level

6.6 Discussion on enabling environment

The enabling environment can be considered at two different levels. Firstly, the central government/policy environment and secondly, the local government and support structures on ground. For community management to be implemented an enabling framework of technical support, policies and regulations needs to be in place (Schouten et al: 2003). This is arguably not yet in place in Uganda is presently insufficient to support the improvements in CBMS such as the HPMA model as discussed below.

National enabling environment

At the policy level there is still a strong emphasis on CBM with some acknowledgement that this may not apply to all situations and that other options such as private sector can be considered. The HPMA model has clearly emerged from this outlook towards the private sector and the HPMA guidelines of 2013 at present represent the closest thing to a public-private partnership approach in rural water supplies. Beyond that, however, the policy environment does not provide any guidance on how the PPPs will materialise and indeed the last national O&M framework was developed in 2011 which precedes the shift towards the HPMA model. Only the District Implementation Manual (2013) mentions the HPMA but in a few aspects such as registration status and performance contracts. At the development partner level several agencies are supporting the efforts of the MWE including IRC Triple-S, Whave, and SNV on the implementation of the O&M framework.

Interviews at central level with the MWE revealed that funding for the contracting of HPMA's at the district level was in place through the conditional grant. At the same time roll out of HPMA guidelines was the responsibility of the regional ministry structures the Technical Support Units. According to MWE/SNV survey (2015), with the TSU now under development phase there has been a shift from humanitarian aid with most actors now development focused. Interestingly, however, in the SPR of 2015 there is little mention of the HPMA beyond some training carried out on the HPMA framework by development partners. In summary therefore the enabling environment at the central level is shallow at best and the HPMA has not clearly manifested itself yet at the national sectoral performance level.

Local enabling environment

Under the political and economic decentralisation model in Uganda the emphasis is strongly on local level decision making and management of resources. At the implementation level this means the roll out of the HPMA model has strongly relied on the DLG with some support from the regional TSU's. To complement the efforts of the MWE, development partners have played a key role in several areas including technical training and equipping with tools. The third tier of support is the private sector which has essentially been negligible in relation to HPMA model.

All five case study DWOs were aware of the PPDA Waiver and HPMA framework and thought both provided sufficient guidance for the implementation of the HPMA model. The exception was Kamuli District which had experienced problems with getting clearance for the waiver at the DLG level. In addition some concerns were noted by the DWO of Kamuli over the future policy of decentralisation of funds to the sub county given the lack of institutional and governance capacity at the sub county level. Although this policy has not been put in place yet it will mean some percentage of the conditional grants will go to the sub county (as per the SC WSSB model) which will have some impact on the future of the HPMA.

The case study districts show that the level of support received by the HPMA in the five key areas is marginally higher from development partners compared to the DLG. At the same time the level of satisfaction with the support provided by development partners was wide ranging with poor in Luuka District to good in Kamuli and Kasese Districts and little variance between the performance of partners and DLGs. While the reported higher level support provided by the development partners was not surprising the wide range of satisfaction with the support provided was more revealing. The high level of satisfaction with the support provided by DLG in Kasese and Kamuli compared to Lira and Alebtong could be due to the fact that the former have both received O&M work from the DLG. The anomaly was Luuka District which ranked the training support received as poor and expected additional support in the form of tools at the sub county level and motorcycles to address transport challenges

Other institutions have played a role in the creation of the local enabling environment. Three of the five districts have received technical support from the TSU although this has generally been a one-off training. Only one district recognised any support provided by an umbrella organisation which is consistent with the approach of these institution's which are more focused on small towns and piped water schemes.

At an overall level there were significant gaps in several capacity areas particularly contract management, operational/systems, and monitoring and evaluation which the vast majority of HPMA had not received training on and acknowledged weakness in. These areas would represent a minimum training package outside the technical training that all of the associations have received. It is apparent that the resources to conduct these trainings in a consistent manner is lacking at present both at the DLG level and with development partners who have suffered from reduced levels of funding in recent years. This suggests that unless more resources are made available for training from the MWE level these key capacity gaps will not be effectively addressed. At the same time there is a question of the consistency of training that has been done given the reported use of the HPMA guidelines and other materials in two districts, rather than the national HPMA handbook.

6.7 Successes in operationalisation of HPMA and other alternative/innovative approaches

The main objective of the HPMA is to create a mechanism through which CBMS can be technically supported. To what extent has this been achieved at an operational level on the ground? To further understand whether this technical support is being provided in an effective manner this sub section will analyse the technical, business, financial and governance achievements as presented in the case study chapter. It will also draw on the strengths of HPMA as per the findings from the SWOT analysis.

Technical

Overall the technical achievements stand out as the major success of the HPMA model so far. This is supported by the fact that all five case study associations rate their main achievement as being able to perform both minor and major repairs on handpumps, in a timely manner with good quality workmanship according to the District Water Office in four of the five districts. Moreover, all five associations feel that they have the required skillset to do their work efficiently and to a high standard. In addition the standardised tariff for repairs in four of the five districts has reduced the occurrence of overcharging, which may build more trust in the HPMA (from the community) over time. This supports the argument that under the HPMA model there has been a reported reduction in the cost of major repairs and timely response to handpump breakdowns.

Interestingly the results from the five case study districts were better than the national average. At the national level, with the right tools available, 50% of the HPMA can carry out rehabilitation works including fishing out (MWE and SNV: 2015) whereas this was not cited as an issue with the five case study districts, and at least four of the five had a track record of performing rehabilitation work. Moreover, at least three of the associations has branched out into other technical areas beyond corrective maintenance including installation of handpumps, and in Kasese have gained some experience on the O&M of Gravitational Flow Schemes. It is clear that the HPMA has been the catalyst through which these skills have been enhanced and it is doubtful whether individual HPMA would have received this skill enhancement opportunities prior to the HPMA formation. The notion that 'we learn together' was echoed throughout all HPMA and has clearly had a galvanizing effect on the associations since their formation.

At the same time the fact that only one association reported to be practicing preventive maintenance with the community means the practice of this fundamental aspect of CBMS is being lost. In summary therefore it is apparent the HPMA model is providing improved technical support to CBMS but with an over reliance on corrective rather than preventive maintenance.

Business

Even with the appropriate technical skills in place the HPMA will need sufficient incentives in place to operate as a viable business. The overriding achievement of four of the five associations was successfully completing repair or installation work, and in the case of three of these through a formal agreements such as a contract or a MoU. Prior to the formation of the HPMA this would have been tendered and contracted out to an external contractor. At the level of the DWD the clearance of the PPDA waiver - which empowers District/Sub-county Local Governments to directly engage HPMA in the O&M activities of rural water supplies - is therefore a major achievement in itself.

The HPMA has therefore provided the HPMA with this opportunity, and has demonstrated the capacity to manage the work in a timely and efficient manner. The fact that HPMA were considered a cheaper and better use of resources by most District Water Offices (compared to the hiring of external contractors) suggests that some trust has been built between the DWO and the HPMA which may result in a long-lasting mutually beneficial relationship. At the same time it should be acknowledged that in some cases this has also created a sense of reliance on the DLG in some districts.

The two best examples of achievements in business were Lira HPMA and KAWATA. Interestingly, these are also the two oldest and best supported HPMA. The Lira HPMA stands out due to its diversified income base where it has received support from development partners as well as the DLG. In this sense it has benefited from the higher presence of NGOs and development agencies working in the water sector but has demonstrated capacity to tap into these opportunities. In Kasese district KAWATA has managed to incorporate the small scheme operators into the association which has bought mutual benefits for both parties through sharing of new technical knowledge and hands-on O&M skill work. Although this has not yet resulted into a larger resource base for the HPMA as payment for work done is usually kept by the individual – in future it might as opportunities arise on larger schemes through formal tender processes. For example in Kabarole District, the HPMA is already providing O&M services for 65km of GFSs (interview Jane Mulumba, IRC Triple-S, August, 2014).

In terms of volume of work the highest achiever was LUDWASA. Since 2012 they have been provided with three contracts by the DLG (through the DWO) for a total of 67 rehabilitations and installations of handpumps. This is a significant achievement with the contracts managed by HPMA themselves although the procurement of spare parts was handled by the DWO's office. At the same time the DLG has been the only source of business for the HPMA, and in a sense the HPMA has become an extension of the District Water Office rather than a fully functioning business entity by themselves.

Financial

HPMAs achievements in financial management have so far been fairly modest. This is due to the limited number of contracts they have received which has resulted in the absence of a steady stream of income and therefore limited opportunities to practice some aspects of accounting. The picture from the five case study districts tends to reflect the national situation whereby around 9% of HPMAs were using cash books, payment books and receipt books (MWE and SNV: 2015). Of the five cases studies only one (KAWATA) has two of these three tools in place. It is unsurprising therefore that the HPMAs reported their achievements in areas such as opening and maintaining a bank account, and covering some running costs. This is not an unexpected outcome in the sense that the practice of record keeping or a culture of saving is not a common practice with community level organisations across Uganda regardless of the sector.

The standard practice in HPMAs is to share out funds once the work has been completed. KAWATA was the only exception to this rule as some funds were left on the account to cover costs for the following year. The short term outlook of most HPMAs and the tendency to do things on a needs basis does provide them with a level of functionality now, but will not enable them to plan on how they can further develop for the future uses their available resources.

Governance and Transparency

One of the more interesting findings from the FGD discussion was the fact that leadership strength and commitment was rated the second highest strength by three of the five HPMAs. This suggests members have a strong degree of trust in the leadership structures of the HPMA, which bodes well for future progress of the associations. This corresponds with some of the earlier literature on HPMAs in Uganda that found that the success of the model was determined by the strength of leadership (at both association and district level) and commitment from members (Mommen and Nekesa (2010)). Some of the achievements such as good communication and transparency over pay outs were less tangible than in other areas, but are still important examples of a functional governance structure.

6.7.1 Other management models

Of the two alternative models presented in this research the Whave PPP model has achieved more in relation to improving functionality and reliability albeit on a small scale so far. The SWSSB model has been piloted with some success only in one sub county in one district, therefore it is difficult to read too much into the minor achievements that have been made so far - although some lessons can be drawn on for the concluding part of this report.

There are a number of aspects of the Whave PPP service delivery approach that would be complementary to the HPMA model. Firstly, the results so far in terms of functionality and reliability are significantly higher than the national average (albeit on a very small scale) and have clearly boosted performance in pilot districts such as Luuka.

Secondly, there has been some integration with the HPMA model. In districts where the model has been implemented members of HPMA have been able to apply to be Water Service Providers (WSPs) with some receiving performance based contracts. In Luuka District, this has enabled them to receive an extra income source and the work has not interfered with the HPMA as the models operate in different sub counties. In Kamuli however, the integration between HPMA and the Whave PPP model was less clear-cut with no overlap in membership. Part of this is due to the handpump technology used – the HPMA tended to cover the India Mark II handpumps whereas the Whave PPP covered the Consallen pump.

Thirdly, the model has seen a shift in emphasis back to preventive maintenance. The WSPs earn money from a functioning water source rather than a broken down one, which is a welcome reversal of the trend under CBMS in recent years which has shifted towards corrective maintenance and the 'fix it only when broken' mentality.

6.8 Challenges, factors, and key lessons learnt for operationalisation and professionalisation of HPMA and other pilot models

This section will discuss both the current operationalisation of the HPMA model and whether it represents a shift towards professionalisation and better service delivery. The challenges will be discussed first, followed by the factors that are required to enable the successful implementation of the model, and finally the lessons learnt from the case studies.

6.8.1 Challenges

As per the case study results the biggest challenge facing HPMA is sourcing sufficient business. The HPMA model is based on the premise that in the long run the association will become a competitive private sector service provider, however, at the moment all HPMA are strongly reliant on one source of business namely the DLG. Although this is a steady source of income for some associations it is not able to provide them with sufficient business to incentivise their members. For example in Luuka District where the association has had a steady stream of work over the past four years each member on average is getting a share of UGX 70,000 to UGX 300,000 per year as payback for the contracts which leaves them looking for other income options. As such this concurs with the finding at national level (MWE and SNV: 2015) where motivation of HPMA members has reduced due to lack of funding and failure to attract contracts. As a result most associations cited

their main weakness as lack of finance. This prevents them from investing further in areas such as tools and equipment or funds for pre-financing of contracts. As such there is no finance in place to really kick-start their business.

Moreover, only one HPMA has managed to broaden its income base beyond work from the DLG. At least three of the five associations were completely dependent on the DWO getting them business. To some extent this may be both due to lack of opportunity in some districts and the mutually beneficial relationship the DLG and the HPMA has enjoyed under this framework, however, any changes in policy and resource allocation will put the associations existence at risk without further efforts to broaden their resource base.

It is unsurprising that the second most significant challenge to the operationalisation and improvement of HPMA's is the operational and logistical challenges of doing their work. Although there are a number of efficiency advantages in contracting work to HPMA's they are still transported by bicycle and take time to reach the intended water point. This is not a new challenge in CBMS and is compounded by the distance also required to access spare parts. Interestingly, such operational challenges did not come out as strongly with the WSPs under the Whave PPP model which suggests that if properly incentivised the solutions to this challenge can be found.

The most surprising result from the case studies was that access to spare parts was ranked as low as fourth most significant. This is probably due to the fact that for the majority of HPMA's contracted by the DLG, spare parts were procured directly through the DLG rather than by the associations themselves. While it could be argued that the HPMA's lack the capacity to carry out this function at present both on an organisational and financial level, it does remove one of the primary functions away from the HPMA. It may represent a short term operational fix to the HPMA-DLG arrangement, but beyond that spare parts challenge in CBMS remains.

6.8.2 Factors to consider

There are a number of factors that can be considered when looking at the operational viability of the HPMA model so far.

Economic

The concerns in the literature by Triple-S (2013 c) over whether the routine repair and maintenance revenues could sustain the HPMA's still have some grounding. Although HPMA's have been engaged in repair work by DLG's (and some development partners) there is perhaps insufficient work at present to fully engage an association of 20 or so members. To survive and indeed grow HPMA's will need to develop their resource base through other (non-DLG) contracts and also diversify their work. At present the market incentives within the PPP are insufficient to enable this to happen.

Technical

The model is technically appropriate and relevant to the existing skill sets in place. As such it has built off the technical skills developed by HPMS under CBMS and attempted to complement these with the broader areas of financial management, governance and leadership etc. As such it is now a more rounded approach that recognises that the technical handpump skills need can be better utilised under a more organised, systematic and harmonised approach. At present to some extent this has been achieved with gaps remaining in the depth of skills on key elements such as financial management and other useful areas such as contract management and monitoring and evaluation.

Institutional

At present there is willingness to engage with the model at the institutional level, however, there are limitations in the capacity to do so effectively. In essence the MWE and TSU have provided the broad skeleton to the approach and left the districts to get on with the 'nuts and bolts'. As such some districts with greater capacity have moved forward with the model, while others have maintained a cautious approach. More ground has been made where there is more intensive support from development partners such as in Lira and to a lesser extent Kasese. With partner resources reducing this level of support will probably not remain and it is hoped that other entities such as the umbrella organisations can start to replace these gaps. As such the institutional capacity at present is sufficient to maintain the status quo in most districts of a partially functional HPMA, but insufficient to take it beyond to a fully functioning self-sustaining entity. Furthermore, at the sub county level where immediate hands-on support should be provided to HPMA, as noted in the literature the lack of structures are a challenge. (Sentumbwe: 2014). Even if resources are provided at this level in the future, the capacity to handle these resources effectively is still questionable.

Financial

HPMAs are financially operational on a minimal level as demonstrated through the sharing of contract payments after completion of work, which is recorded through some basic bookkeeping. Beyond this HPMA's are too financially constrained to be able to make progressive decisions about their future and what they would like to invest in.

6.8.3 Lessons learnt

On operationalising the HPMA:

Legal

- Having the formalised structure in place does not necessarily lead to better results but does provide guidance and focus for the HPMA. Kasese was the only HPMA with a formal MoU and both parties (the DLG and the HPMA) were clear what plans were in place. The fact that

this has been formally agreed together on an annual basis was a strong motivational factor for the HPMA.

- Where the PPDA waiver and HPMA guidelines are clearly understood, HPMA's have been able to provide technical O&M support to CBMS through contracts from the DLG. Where there isn't a full understanding of the PPDA waiver (as per Kamuli District) this has inhibited the formalisation of the relationship between the DLG and the HPMA. This is still a gap that needs to be addressed in order to solidify the informal arrangements now in place.

Technical

- The HPMA has worked well from the 'shared learning' experience of bringing together individuals with different skill-sets and providing them with opportunities to learn new skills on the job. The example of KAWATA where the Scheme Attendants were incorporated into the HPMA and members were given the opportunity learn about the O&M of GFSs shows how HPMA members can be motivated through the opportunity to learn new skills.
- At least three of the associations has branched out into other technical areas beyond corrective maintenance including installation of handpumps. This suggests HPMA's do possess the capacity to take on new skills, but may just need some additional guidance from support structures of where to find these opportunities.
- When faced with technical challenges HPMA's have demonstrated the capacity to find innovative solutions to these challenges. A good example was the fishing tool developed by the Lira HPMA. This suggest HPMA's do possess the capacity for innovation but may need further guidance and support to fully harness it.

Business

- The perception and attitude towards the DWO of the HPMA is one of the most significant factors in ensuring the level of operationalisation of the HPMA model. Where districts were strongly supportive of the model they were more willing to give the HPMA an opportunity on O&M work which had a positive effect in their motivation. The cautious approach in Alebtong - although understandable given the prior failure of the HPMA - may have hindered the development of the association which at present is lacking the incentive and vision to progress further. Without some degree of risk taking and embracing the HPMA concept fully by districts some HPMA's may simply not take off.
- The fact that HPMA's were considered a cheaper and better use of resources by most District Water Offices (compared to the hiring of external contractors) suggests that some trust has

been built between the DWO and the HPMA which may result in a long-lasting mutually beneficial relationship. However, this mutually beneficial relationship may not always be positive and has tended to engender an over reliance in some districts which is potentially problematic for the HPMA in future in maintaining its autonomy.

- In response to the need to find new business two associations were able to establish business arms through registered companies. The success of this approach has varied with Lira able to attract two additional contracts and Kasese not really benefiting despite some early promise. In short the cost of keeping the 'business wing' would seem to outweigh the benefits so far. As such the added value of this approach may depend a lot on assessing other factors been in place such as business opportunities and requirements, support structures, to ensure that the decision is ultimately beneficial for the HPMA. Other examples of where the company diversification model has worked such as Orgestone in Katakwi District would make interesting comparison with the case studies.

Governance and Transparency

- Members have a strong degree of trust in the leadership structures of the HPMA. This has been embedded over time through the hard work and efforts of the leadership and informal communication networks which have been used more effectively than formal ones. This suggests that the absence of formal communications (regular meetings, AGMs etc.) needs to be weighed up against the effectiveness of informal networks in ensuring information is disseminated.

Financial

- Although it takes time for systems and practices to develop, the fact that four of the HPMA's are not reinvesting any funds back into the association is a worrying trend for future sustainability. KAWATA has been the exception to this rule and has managed to pay for items to assist in the day to day running of the association. This practice may have benefited from the longevity of the association compared to the rest, but does suggest that with time other associations can also adopt such practices.
- The poor performance in financial management is perhaps a result of the lack of motivation to perform the day to day financial tasks given the level of business the HPMA have got so far. This may be due to the lack of correlation between maintaining good records and the award of business through the DLG whereby in most cases work is provided without the prerequisite documentation. Whilst this is inherent in the PPDA waiver it may not be good

practice in view of the heavy requirements in bidding for other business opportunities through competitive tenders in Uganda.

On professionalising the HPMA:

Professionalisation implies a shift towards utilisation of professional service providers that can be held accountable against predetermined performance indicators. This has had some success in middle-income countries where the prerequisites such as state funding and water coverage are already in place.

- A number of good practices were reported that point towards a more professional approach in some HPMA. In Kasese for example the HPMA had some of the required accounting tools/systems in place, and in several districts HPMA were monitoring water performance and making reports to the district. Although this is positive such good practices were the exception rather than the rule.
- Preventive maintenance has lost emphasis both at the HPMA level and the community level. Communities are reluctant to pay for preventive maintenance and have adopted the 'fix only when broken' attitude. As such there is a lack of incentive for HPMA to engage in preventive maintenance. Although this is symptomatic of a broader concern with CBMS, it would seem that more focus needs to be placed back on the relevance of preventive maintenance which will need a concerted effort from the DLG and the HPMA.
- Coexistence of the HPMA and incentive based service delivery models such as Whave PPP models can be achieved on a functional level in the same district, although the mutual benefit of this coexistence has yet to really be seen beyond the level of the individual HPM or WSP.
- Performance based contracts whereby holding local service providers (WSPs) accountable for results has to an extent worked under the Whave model in terms of delivery of results, albeit with a heavy support system in place which may not be replicable on a larger scale.
- The establishment of a more professionalised service delivery approach (even on a pilot basis) cannot be achieved without the backing and support of another organisation. The Whave PPP model shows that intensive technical support and monitoring is required in the early stages, and may require an initial subsidy based financial systems given the lack of willingness to pay in communities.
- The 'board' model is a complementary approach to the HPMA model that could potentially provide the local support structure (monitoring, resources etc.) in the future if the right conditions are in place.

7. Conclusion

7.1 Achievements in response to each research question

The aim of this research was *to investigate the effectiveness of Hand Pump Mechanics Associations in improving the operation and maintenance of Community Based Management Systems in Uganda*. Six research questions will be discussed before concluding on the three main research objectives. Three main research objectives were proposed in order to address the research aim which is discussed further below.

7.1.1 To investigate the current status of CBMS in Uganda

CBMS has been in place since the 1990s in Uganda and is strongly prioritized in the policy environment. As such, under **research question one**, the research was able to point to **a number of achievements of CBMS** especially on key performance indicators such as access and functionality of rural water supplies. At the same time, national water sector performance targets of 90% functionality and 77% access have not been reached. Also, findings from a more in-depth analysis indicate that only 53% of facilities' are fully functional. In essence CBMS is partially working but not to the extent required to achieve access for all with a fully functioning and reliable water supply. This may be due to the myriad of challenges that are inherent in CBMS such as lack of ownership (of systems), financial mobilization, and a non-functional spare parts supply chain.

In response to **research question two**, regarding **the 'under' achievement of CBMS** a number of paradigm shifts have emerged, that mainly seek to improve CBMS rather than fully replace it. The most relevant to this research are the service delivery approach and the increasing involvement of the private sector. The service delivery approach whereby the 'entire life cycle' of the service is considered and the professionalisation of service providers are new approaches that feature prominently in the literature. It was outside the scope of this research to go into detail on these broader themes, however, both have implications for the future direction of rural water supplies which need to be put into consideration for the HPMA model.

Of the alternative models discussed, PPOM and PSSD seek to improve CBMS, while POOM essentially seeks to replace it. At present POOM, where the facility is owned and maintained by an individual or a private organization, is not a viable option in Uganda given the national preference for CBMS. With PSSD, ownership still remains with the community and at present is limited for rural water supplies in Uganda beyond some success with small piped schemes, which may well be due to the lack of incentives for private sector involvement in Uganda. PPOM has a little more traction,

given the emergence of models such as the HPMA, SWSSB and other PPP incentive based models, but requires both public and private sectors to be strong and vibrant for effective partnerships to thrive such as Faso Hydro in Burkina Faso. In Uganda, the literature pointed to some pockets of success with the HPMA model in several areas including improved functionality (on a small scale) and the implementation of contracts from the DWO's office.

7.1.2 To investigate HPMA as the main Public Private Partnership (PPP) model for Rural Water Supplies

Research question three – the current status of the HPMA model and other complementary approaches/models been used in Uganda - was answered by looking at both the legal status and the capacity status of five case study HPMA in three regions of Uganda. Overall, HPMA have the correct legal status but with variations in formal arrangements with the DLG that do not presently fully comply with what is set out in the HPMA guidelines of both a contract framework and an MOU. For the HPMA without a formal arrangement, this has generally inhibited their capacity to benefit from the PPDA waiver although with the odd exception in the case of KDBOMA in Kamuli District.

The capacity of HPMA was analysed under four categories. Overall, HPMA were rated as average in their capacity assessment scores, with KAWATA scoring highest and Alebtong scoring the lowest. The variation (although not significant) can be attributed to a number of factors including longevity of the association, strength of the enabling environment, and availability of business opportunities. HPMA scored highest in technical capacity, poorly in financial management, with average ratings in management/leadership and operational/business capacity. These findings suggest that HPMA have been able to continue with the technical work (minor and major repairs) that they have been carrying out for a number of years as HPMA, but have been less inclined to adopt some of the more managerial and financial aspects of the HPMA model. This is perhaps due to the lack of incentive to put in place these operational systems, as in general HPMA have been provided with O&M tasks/work regardless of their proven capacity in areas such as **financial management**.

The main reason why HPMA have strong **technical capacity** is experience and knowledge that has been accumulated over a number of years under CBMS and more recently in their capacity as HPMA where the opportunity to share new knowledge and skills and practice cannot be overemphasised. Whether these skills will continue to be enhanced or not in the absence of training plans from support structures is of concern for the future.

Although HPMA's are demand responsive the capacity of HPMA's in the areas of **operations/business** at the moment is insufficient to fully exploit the opportunities available to them. The current approach of HPMA's is ad-hoc rather than planned and the focus has shifted to corrective maintenance at the expense of one of the pillars of O&M, preventive maintenance. The slight exception to this rule was KAWATA which did (with the support of the district) engage in some planning activities. At the same time the HPMA model has not tackled the issue of access of spare parts directly, instead providing a 'half way' measure of the DLG handling the procurement and delivering the spares to site. This means the HPMA is not fulfilling part of its core mandate, which has brought in tension and could lead to the future deterioration in their relationship with the DLG.

The two complementary PPOM models that featured in the literature review – the Whave PPP model and the SWSSB or 'board' model - were discussed further in view of their success so far and the synergies developed with the HPMA. While there had already been some interaction between the two models and the HPMA in the research districts, the SWSSB model had only succeeded in one sub county, therefore making it difficult to draw on any clear findings that would provide solid lessons for improving the HPMA model. On the other hand, the Whave PPP model had been implemented more extensively and data was available to make some more definitive analysis of the achievements so far. It was apparent that although the mutual benefit of the coexistence of the Whave and HPMA models has yet to be seen beyond the level of the individual HPM or WSP, some important lessons could be drawn that have implications on the future improvement of the HPMA.

At the enabling environment level, in response to **research question four**, the policy, regulatory and technical components were analysed at both the national and local level. One of the confines of this research area was the limitations in literature on the enabling environment, especially on private sector engagement which is not available at policy or any other level.

On the whole, the current enabling environment is inadequate in its support the HPMA model on the three key areas. At the policy level the HPMA model has some prominence but has not yet clearly manifested itself at the national sectoral performance level. The HPMA guidelines have so far constituted the only policy document on HPMA's despite its nationwide role in improving CBMS. At the legal level, the PPDA waiver is arguably sufficient at this stage to provide the legal means through which HPMA's can be engaged by the DLGs and will need further reinforcement by the MWE at the district level it fulfil its purpose.

Most of the shortcomings in the enabling environment are at the technical support level. This is despite the improvements that have taken place in recent years in the MWE such as the introduction of the regional TSUs. While HPMA's rated the technical support received as average, there were a number of technical gaps in which the HPMA's had not received training on including monitoring and

evaluation and contract management. Unless more resources are made available for training from the MWE level these key capacity gaps will not be effectively addressed. Quite simply the level of technical support is presently insufficient to fully operationalize the HPMA's.

7.1.3 To establish to what extent HPMA's are an improvement on CBMS and represent a shift towards 'Community Management Plus'

Research question five on the success in operationalizing the HPMA so far was tackled by field research on the achievements of the HPMA so far, the strengths and weaknesses from five case study districts. Overall, the HPMA model seeks to improve CBMS through providing technical support on O&M issues at nationwide scale. As such it is an ambitious solution that has been put in place to address the under-achievements of CBMS since the 1990's. At this stage an HPMA's lifespan has been relatively short and its achievements so far should be put into the context of a longer term picture for sustainable rural water supplies considering the fact that the model has been rolled-out on such a large scale.

Given the short timeline for this research it is possible to argue that HPMA's have achieved a lot and are to some extent operational. In the five case study areas functionality has improved on a year by year basis. Although some districts are still below the national targets some of the improvement can be attributed to the HPMA's as per discussions with the DWO's in each district, where HPMA's have improved efficiency and lowered cost of service delivery. Of course the level of this attribution is difficult to determine and there are other influences such as the local government and the community that would need to be analysed further to provide any definitive conclusion. At the same time there is little evidence to suggest that preventive maintenance has improved under the HPMA model, indeed it may have gone backwards given the reduction in volunteerism at community level. This is a vital pillar in CBMS which needs to be in place to ensure high levels of functionality.

On **technical** achievements the HPMA model is providing improved technical support to CBMS but with an over reliance on corrective rather than preventive maintenance. The fact that the 80% of case study HPMA's were able to perform complex rehabilitation tasks such as fishing pipes, and the majority have branched out into other areas such as handpump installation, is indicative of how far they have come through learning from each other 'on the job.' In a sense this is a more pragmatic approach than trying to tackle the community's willingness to plan and pay for regular preventative maintenance checks.

On a **business** level the overriding achievement of four of the five associations was successfully completing repair or installation work, and in the case of three of these through a formal agreement such as a contract or a MoU. This is an improvement on 2013 when DLG's were still working out how

to engage HPMA. Lira HPMA and KAWATA, the two oldest and best supported HPMA had the best business models in place in terms of diversification in technology and sources of work.

The outcome from further research into **alternative models** found that while the Board model still needs more comprehensive research to understand how it will improve CBMS and interface with the HPMA model, the Whave PPP model has had some positive outcomes and as such needs to be considered as a factor influencing the model going forward. Some of the notable achievements on a small scale have been the high levels of functionality and reliability of water points, which has been achieved through a focus on incentive based preventive maintenance. At the same time the model needs significant resources and technical support to achieve and sustain these results, and has provided no significant benefit to the HPMA model itself. Coexistence has been possible but a synergistic relationship has not yet materialized.

On **research question six** - the challenges, factors and key lessons for HPMA - the most significant challenges as ranked by HPMA were level of business and logistical challenges. Operational and logistical challenges of doing work are nothing new. If sufficiently incentivized, however, it is possible, that such challenges can be overcome as per the Whave PPP model. The most significant challenge for four of the five HPMA was level of business, with Lira the only exception. Although HPMA made some modest steps forward in business it could be argued that they are only partially rather than fully operational. The volume, type and diversity of this work is still insufficient to fully incentive the HPMA and its members. The low volume is perhaps understandable at this stage given the short lifespan so far of the HPMA and the fact that it takes time to develop relationships that may yield future opportunities, however, the type and (lack of) diversity of business are worrying trends. Furthermore, reliance on the DLG for work has seen the HPMA becoming an extension of the DLG in at least two case study districts which may lead to an erosion of its independence. Reliance on corrective maintenance - although understandable from a monetary perspective - means the only technical support HPMA are providing at present to CBMS is to fix systems rather than preventing them breaking down in the first place. This goes against the original vision of the HPMA model but is symptomatic of the broader problem in CBMS of an erosion of willingness to pay for preventive maintenance at the community level.

On the sustainability factors that further analyse the operationalisation of HPMA on an overall level the picture is not so promising. Economically, the question of whether routine O&M work can sustain the HPMA is still relevant. Technically, the model is appropriate but the more operational skills that are required for the day to day running of an organisation are not in place. Institutionally, the capacity of immediate institutions is at present sufficient to maintain the status quo in most districts

of a partially functional HPMA, but insufficient to take it beyond to a fully functioning self-sustaining entity. Financially, HPMA's are too financially constrained to be able to make progressive decisions about their future and what they would like to invest in.

Given the challenges and sustainability factors presented it is fair to summarise that a 'partial' level of operationalisation of the HPMA that has been achieved in a short space of time against numerous challenges. There are however important lessons that should be taken forward from the HPMA implementation so far that can at least improve what is on ground so far. Some of the basic lessons at the HPMA level were in learning together, joint development of MoUs and annual plans, incorporation of new technologies, work tasks, and skillsets; reinvesting funds back into the HPMA to cover operational costs; and hard work and dedication that embedded trust in the leadership. At the district level a more positive and risk taking attitude has provided more benefit to the HPMA's. These 'good' practices are spread too thinly amongst HPMA's at present. Although they may not represent any significant shift towards a more professionalised service delivery it may provide the stepping stones to do so in the future if adopted by more HPMA's.

At the same time the HPMA model may need to look to others models such as the Whave PPP model for the future which has achieved significant results against key performance indicators on a pilot level with comprehensive support, and is now expanding its geographical coverage in Uganda. The main point to take from the Whave PPP model is the direction and standards it has set on performance based service delivery. As such it has shown that community based service providers or WSP's can be motivated to do their work if the right incentives are in place, preventive maintenance is strongly influential in improving service delivery, and an intensive monitoring system can generate accountability and results. Moving beyond coexistence to synergy could be on the cards, whereby the HPMA's and the WSP's are interchangeable, with the association moving back to a focus on preventive maintenance, while maintaining some focus on corrective where necessary. At present the HPMA has gone too far down the road of corrective maintenance. It will first need to be established whether the incentive based approach is more effective over a period of time on functionality, reliability and also cost efficiency before any meaningful integration (between the two models) can take place.

7.2 General conclusions

In response to research objective one to **investigate the current status of Community Based Management Systems in Uganda** it is apparent that CBMS has improved access to safe water but has not yet done this in a fully sustainable manner. With increased emphasis on other performance

indicators such as reliability, quality and distance to travel, at a wider broader level it is possible to argue that CBMS at present does not stand up. At the same time no alternative to CBMS has yet been found in Uganda so it should be a case of improving and building upon what is already there rather than bringing in something new. With the emergence of new paradigm shifts towards professionalised service delivery CBMS in its traditional form is under threat, however, approaches such as PSSD and PPOM which may be more realistic and relevant to Uganda at this time still maintain the community as the owner and financer of rural water supplies. As such CBMS still has relevance albeit in a more dynamic sectoral environment where the 'one size fits all' approach may not work anymore.

As per research objective two - **to investigate HPMA as the main Public Private Partnership (PPP) model in rural water supplies in Uganda** – the field research shows that HPMA has indeed been established as the main O&M model in rural water supplies. This has some semblance of a PPP, but at present lacks all the formal arrangements and commitments to be a fully-fledged partnership. The legal establishment of the model is firmly in place and the HPMA has demonstrated capacity in several areas showing strong technical capacity, some business and managerial capacity, and only limited financial capacity. Despite this HPMA is only partially operational and lacks the benefits that could be gained from a strong enabling environment. Without this in place (and the strengthening of linchpin actors) it could be surmised that at the present trajectory HPMA will not be fully operational in the near future as per the original vision of the model.

To address research objective three - **to establish to what extent HPMA is an improvement on CBMS and represent a shift towards 'Community Management Plus' in rural water supplies** – a two part answer is required. Firstly, the HPMA model has been designed to improve CBMS rather than replace it. As such it is possible to argue that to some extent it is fulfilling its mandate of providing technical support to communities on O&M. Although there has been improvement in functionality whether HPMA has led to this improvement in performance levels is difficult to attribute at present. Just working on HPMA alone does not improve functionality, the community and the DLG are very important influencers/factors. Moreover, the sustainability of the model in its present form is questionable. As such the finding of the MWE/SNV (2015) report that HPMA does not currently have the capacity to attract support and resources for their continued existence still holds true.

Secondly, on community management plus it is perhaps safe to assume in its present form the HPMA model does not represent any significant shift towards a more professionalised service

delivery at community level, nor does it enhance some of the community level aspects such as community cohesion and financial accountability. In short it may provide an improved corrective O&M service but falls short of anything more comprehensive that will start to address some of the recurring challenges of CBMS.

7.3 Recommendations

At the HPMA level

- HPMA's should be supported by government or development partners to run their association as a business. Learning the basic concepts around business and marketing skills that go hand in hand with financial management skills. The combination of poor/low education amongst more established members of the HPMA, lack of exposure to business 'know how' to keep community demand for preventative maintenance steady are detrimental. Prioritising the recruitment of a business/finance person (full or part-time) to help keep the financial records, recommend and track reinvestment opportunities for the HPMA is vital to the lifeline of HPMA.
- HPMA's should be held accountable for keeping up to date financial accounts to qualify for future contracts and retain their independence from the DLG.

On an operational level

- Attention should be placed upon developing MOUs in a participatory manner to ensure that there are formal arrangements between the public (DLG) and private (HPMA) sectors and attract more private sector engagement,
- Further reinforcement of the PPDA guidelines is required to fully capitalize on the opportunity that has been created for the HPMA's.
- Stakeholders should work with the community to develop marketing strategies to generate demand in conducting regular preventative maintenance checks thus offsetting the burden of high costs to fix bigger corrective/major breakdown issues.

On an institutional level

- Government and opinion leadership should promote the community's role in ensuring adequate social services given the resource stressed central, and local government bodies tasked to work on delivery of social services.
- MWE to redirect funds to improve DWO capacity to monitor HPMA's and provide a comprehensive training package for HPMA's and lower tiers of government to address gaps

including improving the supply chain for spares. In the last year the MWE has created a new division called infrastructure O&M looking at more cost-effective ways to spend the O&M budget.

- Improve the capacity of the sub county technical team before the plan to decentralize the O&M component of the conditional grant is put into action.

On a sectoral level

- Scale up the ‘board’ model in more areas to provide more solid findings on its effectiveness.
- Explore opportunities and lessons drawn from the Whave PPP model by the HPMA as an improved service delivery approach and to establish whether this model can be rolled out at scale to have greater impact.

7.4 Suggestions for further research

Although improvements in functionality in the five case study districts have been recorded on an incremental basis since the start of the HPMA model, it is difficult to attribute improvements in functionality at present to the HPMA. The correlation between improved functionality and HPMA remains an assumption at this stage, based on available data and anecdotal evidence from key informants such as the DLG and MWE. The extent of this relationship, however, is still unknown especially in relation to the reduced emphasis placed on preventive maintenance by HPMA, which will have consequences on the level of functionality. There are significant influencers such as the local government and the community that would need to be researched further before definitive conclusion on levels of attribution can be made.

More research needs to be done on the potential synergistic relationship between the HPMA and Whave PPP model. In theory the two models are striving for the same basic objective of improved functionality (although the Whave model incorporates other key performance indicators) but have different approaches to achieving – one preventive and one more focused on corrective. Whether some mutual benefit can be achieved is unclear and would need to be researched further in a looking at more than one case study over a period of time. With Whave solutions now planning to work with the HPMA in conjunction with the PPP model in several more districts of Uganda this should be possible over the next two or three years.

As acknowledged in the limitations of this research there has been limited opportunity to further understand the operationalisation of the HPMA model from the perspective of the end-user. Due to time and logistical restrictions only two interviews were conducted with water user committees which

was insufficient to draw any definitive findings from. Anecdotally in both cases the awareness of the HPMA was minimal and water users tended to engage with their immediate HPM as an individual rather than the wider association itself, and as such nothing much had changed. It would be interesting to research the effectiveness of the model so far from this perspective to see if the model has made the impact on the lives of the end-users as is assumed.

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Appendix 1 Data collection forms

Form 1: Focus Group Discussions

FGD – HPMA's

Estimated duration: 1.5 hours

Participants: 10 HPMA members including leadership structure.

Introduction: purpose of study: a post graduate MSc in Water and Environmental Management from Water Engineering Development Centre (WEDC), University of Loughborough.

Title: *To investigate the effectiveness of Hand Pump Mechanics Associations in improving the operation and maintenance of Community Based Management Systems in Uganda.*

Research objectives:

- IV. To investigate the current status of Community Based Management Systems in Uganda
- V. To investigate HPMA's as the main Public Private Partnership (PPP) model in Uganda.
- VI. To establish to what extent HPMA's are an improvement on CBMS and represent a shift towards 'Community Management Plus' in rural water supplies

NB: 15,000 shillings per participant; refreshments worth 5,000 shillings

NB: questions will be slightly adjusted for SWSSB

Topic 1: Success in operationalisation (responding to research question 5)

- What was the approach before HPMA's, why was there need to bring in a new approach?
- What was working/not working? What were the challenges?
- Why was the HPMA formed?
- Why are HPMA's different to traditional CBM?
- What binds you as an organisation?
- What are the benefits/reasons for having a HPMA? To what extent to the following apply? (Very relevant, relevant, somewhat relevant, not relevant)
 - HPMA's can support each other in doing difficult repairs, or in managing workloads
 - HPMA's can provide a means for training and improved knowledge
 - HPMA's can provide a means quality assurance of HPMA's
 - HPMA's can provide a coordinated means of procuring HP spares
 - HPMA's can provide a forum for discussions with L. Govt, NGOs and communities
 - HPMA's can provide a focus for receiving support and capacity building from L Govt/ NGOs etc
 - HPMA's can market the services of the HPMA's to key stakeholders to increase their business?
- What have been some of your achievements in these areas?
 - Business i.e. level and type of work
 - Financial management
 - Governance & Transparency

- Technical – range and type jobs. **Are you involved in preventive maintenance?**
- Who are you accountable to (yes/no)? If yes, how?
 - Water Users
 - WSC's
 - DLG
 - Members
 - Others?

Topic 2: Enabling Environment (in response research question 4)

- Do you work with the following structures on a day to day level? (Yes/No)
 - WSCs,
 - DLG,
 - Umbrella
 - TSU
 - SWSSB
 - Private sector
 - Others
- Are you being supported by DLG/NGOs/private sector (yes/no)?
 - If yes explain the form of support you receive from them?
 - technical training,
 - operational training,
 - contract management,
 - hands on backstopping,
 - M&E, others
 - If so how would you rate their level of support? (good, average, poor) and why?
 - DLGs
 - Private sector
 - NGOs
- What further support do you require from these structures to succeed?

Topic 3: Challenges (in response to research question 6)

- What are the biggest challenges you face as an HPMA? (rank from high to low)
 - Financial management/book keeping
 - Technical work – maintenance tasks (preventive, minor and major repairs)
 - Contract management
 - Organisation of work/business
 - Access to spare parts
 - Sourcing sufficient business
 - Operational/logistics
- How can these challenges be overcome?

- Based on the challenge mentioned what further support do you require to improve your association?
- Where do you see yourself as a HPMA in three years' time?

Topic 4: Other models

Are there any other alternative O&M models (to traditional CBMS) in the district?

Can you explain how they work and relate to the HPMA?

If so what have been some of the achievements of the model so far?

What are some of the challenges of the model?

What are areas of improvement?

Form 2: HPMA assessment tool

Put as scale of 1 2 3 against each statement under each subject

1 = poor

2= average

3= good

1. Financial and management autonomy;

- Qualified/experience financial personnel are in place 1 2 3
- Financial records are in existence⁶¹
 - Cash flow statement 1 2 3
 - Profit and loss account 1 2 3
 - Balance sheet 1 2 3
- Fee structure is in place and is reflected in financial records 1 2 3
- Bank statement is provided 1 2 3
- HPMA is profitable on an annual basis 1 2 3

2. Governance, transparency and accountability,

- Leadership structure is in place and is gender sensitive 1 2 3
- Leadership is aware of its roles and responsibilities 1 2 3
- Meeting are held frequently with members 1 2 3
- Minutes of meetings are in place 1 2 3
- Members are aware of legal registration and its significance 1 2 3
- Members are aware of financial position of organisation 1 2 3

3. Demand responsiveness;

- System of purchase of spare parts is in evidence 1 2 3
- Full range of O&M tasks are carried out
 - Preventive 1 2 3
 - Minor repairs 1 2 3
 - Major repairs 1 2 3

- Association is able to cover all areas of district 1 2 3
- A O&M work schedule/plan is in place for preventive maintenance 1 2 3

4. Level and type of business/contracts;

- Records of repairs/business carried out in place 1 2 3
- Evidence of MoUs with district or other organisations 1 2 3
- Evidence of contracts with district or other contractors. 1 2 3
- Number of hand pumps is sufficient to provide regular work 1 2 3
- Standardised price tariff is in place and followed 1 2 3
- Feedback mechanism/communication from clients is in place 1 2 3

5. Professional support available;

- Support structure is in place 1 2 3
- HPMA receives support where necessary 1 2 3

6. Human capital/skills.

- Technical positions are in place to perform work 1 2 3
- Technical skills and knowledge is evident
 - Knowledge of preventive maintenance with example 1 2 3
 - Knowledge of minor repairs with example 1 2 3
 - Knowledge of major repairs with example 1 2 3

Form 3: Semi structured interviews – District Water Office, Umbrella Body

Estimated duration: 2 hours

Participants: DWO/ADWO

Introduction: purpose of study: a post graduate MSc in Water and Environmental Management from Water Engineering Development Centre (WEDC), University of Loughborough.

Title: *To investigate the effectiveness of Hand Pump Mechanics Associations in improving the operation and maintenance of Community Based Management Systems in Uganda.*

Research objectives:

- VII. To investigate the current status of Community Based Management Systems in Uganda
- VIII. To investigate HPMA as the main Public Private Partnership (PPP) model in Uganda.
- IX. To establish to what extent HPMA are an improvement on CBMS and represent a shift towards 'Community Management Plus' in rural water supplies

Community management plus (response to research question 1)

- Is Community Based Management in its traditional form working? (yes/no) please explain.
- What of the following are/were challenges with CBMS? (high/medium/low)
 - Lack of ownership
 - Supply of inputs (spare parts system not in place)
 - Technology choice – demand driven or not.
 - Community mobilization and training (not targeted)

- Replacement of non-functional committees is not done
- Financing not done for O&M (especially preventative)
- Gender - women lack skills to perform their roles
- Follow up and back-up support for major repairs insufficient.
- One author noted that for CBM to work it needs
 - strong user perception of need,
 - strong community institutions,
 - proactive and responsive support organisations.
 Are these factors in place (yes/no) what if anything is lacking?

Private sector service delivery (response to research question 2)

- In the literature on CBMS there is a strong theme of greater private sector involvement, should this be encouraged?
- What's the role of the local government?
- What are the challenges, opportunities?
- Are there any threats associated with greater private sector involvement?

PPPs (response to research question 2)

- What evidence is there of PPP in RWS?
- How can PPPs work in RWS, can the success with small towns and RGCs be replicated?
- What are the opportunities, is their potential for aggregation (explain)?
- What are the major challenges in establishing real public-private partnership?

HPMAs current status (in response to research question 3)

- When was the HPMA model established in the district? What is its legal status?
- What's different from traditional community based management?

Success in operationalising the HPMA model (in response to research question 5)

- What are the roles/functions of a HPMA? What is the structure of an HPMA?
- Who/what does the HPMA membership consist of?
- How does the district engage with HPMAs? Individual HPMs? What of the following support does the district provide to the associations? (yes/no) Any others, please specify.
 - Formation and training of HPMAs
 - Framework contracts
 - Tools/tool boxes
 - Spare parts outlets at S-C level
 - Use of revolving funds
- How are HPMAs financed?
- What is the PPDA waiver? How is it used for carrying out repair, rehabilitation and maintenance works?
- How are HPMAs trained, is there a standard manual in place? What operational areas are covered?

- Are there mechanisms in place for coordination with the HPMAs? (yes/no)? please state the coordination e.g. DWSCC meeting
- What are the challenges and opportunities for the DWO/DLG in supporting the HPMAs?
- What good practices have you observed?

Enabling environment (response to research question 4)

- Is the policy/legislative environment in place for the model to function effectively, is there awareness of it, and how can it be improved for the benefit of HPMAs?
- Are any of the following shifts/changes taking place in the water sector?
 - Project versus program?
 - Provision of water services at scale rather than one-off projects.
 - Move towards private operator options/private sector participation in future?
- What support structures are in place? e.g. NGOs, TSUs, Umbrella organisations etc.
- How can they provide better support to the model?

Future of HPMAs (in response research question 6)

- What have been the successes so far?
- What have been the key challenges so far? What capacity gaps do the HPMAs have and by who/how can they be addressed?
- How can the model be improved?
- How can the HPMAs be made more sustainable in the future?

Other O&M models and approaches

- Are there any other alternative O&M models (to traditional CBMS) in the district?
- Can you explain how they work and relate to the HPMA?
- If so what have been some of the achievements of the model so far?
- What are some of the challenges of the model?
- What are areas of improvement?

Appendix 2 Example of field timetable

Timetable for first leg of research – Lira/Alebtong, August 2015

Date	Time	Participants	Method	Assistance required SNV	Contact persons
31/08/2015	14.00	SNV WASH Advisor	Meeting and preparation for fieldwork		Wilbrord SNV
01/09/2015	09.00	Lira HPMa and	Focus Group Discussion. SWOT Collect secondary data. HPMA assessment tool	Translator	Moses Chairperson LHPMA
	14.00	Lira SWSSB[1]	Focus Group Discussion, SWOT		Milly HA Lira Sub county
	15.30	Lira WSC[2]	Focus Group Discussion		Dorine GLOFORD
02/09/2015	08.30	Alebtong DWO	Semi-structured interview		Moses ADWO Alebtong
	09.30	Alebtong HPMa	Focus Group Discussion. SWOT Collect secondary data.	Translator	Moses ADWO Alebtong
	12.30	Alebtong WSC[3]	Focus Group Discussion		Moses ADWO Alebtong
	15.00	Alebtong SWSSB[4] (No active SWSSB in Alebtong yet)	Focus Group Discussion, SWOT		TBD
03/09/2015	09.00	Lira Private Sector/Private Operator of piped system[5] & Alebtong Private Sector/Private Operator of piped system	Semi-structured interview		Translator
10.30	Umbrella organization	Semi-structured interview	Gilbert/Bonny NUWS		

		Lira			
	14.00	Lira DWO	Semi-structured interview		Jimmy ADWO Lira
	15.30	TSU	Semi-structured interview		Steven TSU
04/09/2015	09.00	Wrap-up with SNV			Wilbrord SNV