Study into relative effectiveness of Public Private Partnership (PPP) arrangements for Rural Water Supply

Report of Findings and Conclusions

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10. Abdi M Hassan, WASH Specialist, UNICEF Kenya
11. Shivanarain Singh, ag Chief of WASH, UNICEF Kenya
### List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHR</td>
<td>Agence Burundaise de l’Hydraulique Rurale (National Agency for Rural Water Supply), Burundi</td>
</tr>
<tr>
<td>CBM</td>
<td>Community Based Management</td>
</tr>
<tr>
<td>ESAR</td>
<td>East and Southern Africa Region</td>
</tr>
<tr>
<td>FPEAR</td>
<td>Federation of Private Water Operators, Rwanda</td>
</tr>
<tr>
<td>ISA</td>
<td>International Support Agency</td>
</tr>
<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>NAW</td>
<td>Non Accounted for Water</td>
</tr>
<tr>
<td>PPP</td>
<td>Public Private Partnership</td>
</tr>
<tr>
<td>PPCP</td>
<td>Public Private Community Partnership</td>
</tr>
<tr>
<td>RCE</td>
<td>Regie Communal de l’Eau (commune water board), Burundi</td>
</tr>
<tr>
<td>RWS</td>
<td>Rural Water Supply</td>
</tr>
<tr>
<td>SNV</td>
<td>Netherlands Development Cooperation</td>
</tr>
<tr>
<td>WASAC</td>
<td>Water and Sanitation Corporation, Rwanda</td>
</tr>
<tr>
<td>WASREB</td>
<td>Water Services Regulatory Board, Kenya</td>
</tr>
<tr>
<td>WRMA</td>
<td>Water Resources Management Authority, Kenya</td>
</tr>
<tr>
<td>WSB</td>
<td>Water Services Board, Kenya</td>
</tr>
<tr>
<td>WUA</td>
<td>Water Users Association</td>
</tr>
</tbody>
</table>
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Study into relative effectiveness of Public Private Partnership (PPP) arrangements for Rural Water Supply

Introduction
UNICEF has been supporting development of rural water supplies (RWS) throughout the East and Southern Africa Region (ESAR) for more than 30 years. The sustainable operation and maintenance of RWS has been a challenge in the region. Recognition of the inability of government to provide this service for a growing number of water supplies and the need for more community involvement led stakeholders to promote various approaches based on the principle of community based management (CBM). This approach was applied regardless of the type of water supply and the extent of the operation and maintenance burden. There have been some successes with CBM but there have also been a lot of failures (Harvey, 2005). Evidence suggests that there is a growing crisis in the sustainability of rural water supplies in Africa which threatens to reverse progress towards MDGs for water access1. Growing recognition of the need to address the sustainability of rural water supplies has led UNICEF and other actors to look for alternative models to provide sustainable service delivery for rural communities. One model which has been introduced in several countries is an adapted version of Public Private Partnership (PPP) using private operators to manage water supplies under a variety of contract arrangements with the government and the users. There is anecdotal evidence to suggest that rural PPPs are working in a number of countries but there is very little empirical evidence to show whether service delivery is better under a PPP model compared to CBM. This study attempted to measure the performance of selected PPPs for RWS against similar RWS under CBM in three countries; Rwanda, Burundi and Kenya.

Methodology
Country and Water Supply Selection
The researcher initially selected three countries with documented experience with rural water supply PPPs. This included Somalia (specifically Puntland State) but this had to be dropped after security concerns prohibited the consultant from travelling to collect data. Kenya was selected as a substitute even though the UNICEF country office had limited engagement with the PPP trials taking place in the country.

Ideally a sample of RWS to be studied in each country should have been selected randomly from a known population of RWS. However this was difficult to do in practice because there was no complete database of RWS under different operator models (public, PPP or CBM) in any of the three countries to form a population to select from. Also it was more practical to visit a number of RWS in one area rather than travel all over the country to visit randomly selected projects.

A total of 16 water supplies were studied as follows:

- Rwanda – 5 (3 PPP and 2 CBM)
- Burundi – 6 (5 PPP and 1 CBM)
- Kenya – 5 (3 PPP and 2 CBM)

---

1 Recent sector analysis in Tanzania resulted in the government revising the figures for rural water access downwards from 52% to 36% when the high numbers of non-functional water supplies were taken into account (Big Results Now Summary Report, 2013).

*Rural Water Supply PPP Study, September 2015*
These were all piped schemes (motorized systems with a borehole or river source) or piped gravity schemes. Some of the service providers in Burundi also operated springs and shallow wells with hand pumps within the same commune (sub-district) but there was limited data available for these compared to the piped schemes.

It was difficult to find RWS under full CBM in Rwanda and Burundi because the new government policy is for all RWS to be privately operated so the local authorities are in the process of converting all the RWS to PPPs. Similarly the CBM water supplies that were studied in Kenya were also aspiring to meet the criteria for taking on a private operator so could be said to be performing better than average.

It is important to note that nearly all the private operators included in the study (with the exception of Aquavitura in Rwanda) were relatively new to the water services business and most were only 1-2 years into their PPP agreements. This may have had a significant effect on the results of the study, especially the quantitative survey.

Document review

Purpose:

1. to put regional learning in context of global knowledge on rural PPPs
2. Identify additional information on PPPs in each country (for example Rwanda is used as case study in multiple World Bank and Water Sanitation Project documents).

The document review was carried out using Google scholar and also through networking with other researchers and experts. While documentation on urban water utilities was abundant there was much less documentation on rural water supply PPPs. The approach is still relatively new, especially in East and Southern Africa (it is more common in West Africa) and the experience that has been documented is mostly on financing in Kenya and the private operator model for gravity water schemes in Rwanda.

Qualitative data collection and analysis

Purpose:

1. Collect background information on each operator and triangulate data from quantitative survey
2. Gather anecdotal information on performance of schemes and perceived changes in efficiency under PPP
3. Identify challenges and successes under different management models
4. Understand enabling environment and identify bottlenecks

In each of the countries studied the extensive discussions and interviews were carried out with stakeholders at all levels. These included government agencies and departments involved in setting policy and regulation as well as non-government organizations who are active in the water sector in each country. At local level water departments and private operators were interviewed as well as community committees and users at water points. A broad checklist was used to guide these semi-structured interviews (see Appendix A for the Checklist)

A rich volume of information was obtained from the informant interviews and stakeholder discussions. These provided valuable insight into the operation of the water schemes and performance of PPP models. This empirical data arguably provides more information about the
strengths and weaknesses of the various models for water supply operation than the quantitative data.

Quantitative Survey

The quantitative survey consisted of a short questionnaire to measure performance of the selected water supplies against standard indicators. To enable the results to be coded and analyzed more easily benchmarks for each performance indicator were identified as shown in Table 1 below.

The indicators selected are commonly used for performance benchmarking or monitoring but they proved to be difficult to apply to the RWS selected for the study. Very few of the operators are regularly collecting the right data or analyzing their financial records in order to measure their performance. Coding the information for the analysis therefore required considerable interpretation and estimation from responses given during the interviews rather than taking data from the records of the operator. The exception to this is Aquavirunga in Rwanda who routinely (monthly and annually) calculate and report on the following Key Performance Indicators (KPIs) for each of their water schemes:

- Production capacity (m3/d)
- Volume invoiced (m3/y)
- Unaccounted for water (%)
- Income (million Rwf)
- Operational cost coverage ratio (%)
<table>
<thead>
<tr>
<th>Performance Area</th>
<th>Performance indicator</th>
<th>Indicator values/benchmarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Investment</strong></td>
<td>Capital investment</td>
<td>High (&gt; $100,000)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medium (50-100,000)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low (&lt;50,000)</td>
</tr>
<tr>
<td></td>
<td>Upgrading services &amp; systems</td>
<td>Extensive (&gt; 200 new connections/start of contract)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate (50-200 new connections/yr)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Limited (&lt;50)</td>
</tr>
<tr>
<td><strong>Efficiency of supply</strong></td>
<td>non accounted for water</td>
<td>Low (&lt;20%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate (20-40%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High (&gt;40%)</td>
</tr>
<tr>
<td></td>
<td>Water quality</td>
<td>High (&gt; 90% samples meet standards)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medium (80-90% samples meet standards)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low (&lt;80% samples meet standards)</td>
</tr>
<tr>
<td></td>
<td>Metering</td>
<td>Yes (all water sales metered)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No (some or none of water sales metered)</td>
</tr>
<tr>
<td></td>
<td>Hours of supply</td>
<td>Continuous (24hrs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate (&gt;12 hrs/d)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Limited (&lt;12hrs/d)</td>
</tr>
<tr>
<td></td>
<td>Water coverage</td>
<td>High (&gt;80 residents served)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate 50-80% residents served</td>
</tr>
<tr>
<td></td>
<td>Average down time</td>
<td>Low (&lt;4 days)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate (&lt;10 days)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High (&gt;10 days)</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>Revenue collection efficiency</td>
<td>High (&lt; 20% fees outstanding &gt; 1 month)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate (20-50% fees outstanding &gt;1 month)</td>
</tr>
<tr>
<td></td>
<td>O&amp;M cost recovery</td>
<td>High (100% O&amp;M costs covered from revenue annually)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate (&gt;80% O&amp;M costs covered from revenue annually)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Performance Area</td>
<td>Performance indicator</td>
<td>Indicator values/benchmarks</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(&lt;80% O&amp;M costs covered from revenue annually)</td>
</tr>
<tr>
<td>Planning</td>
<td>Good (Budget &amp; Plan exists)</td>
<td>Moderate (Plan exists but not used)</td>
</tr>
<tr>
<td>Staff management</td>
<td>High (Daily supervision &amp; work reports)</td>
<td>Moderate (weekly supervision &amp; work reports)</td>
</tr>
<tr>
<td>Governance</td>
<td>Meetings of oversight committee</td>
<td>Regular (&gt; 1/quarter)</td>
</tr>
<tr>
<td>Feedback to users</td>
<td>Systematic (system in place and feedback regular)</td>
<td>Informal (occasional via public meeting)</td>
</tr>
<tr>
<td>Users satisfaction</td>
<td>Costs to households (relative to monthly income)</td>
<td>Affordable (&lt;10% av monthly income)</td>
</tr>
<tr>
<td></td>
<td>perceived value for money</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>service satisfaction levels</td>
<td>High (no complaints)</td>
</tr>
</tbody>
</table>
Limitations of survey methodology

Non representative sample

It was not possible to select a statistically representative sample of RWS for the study because there is no clear population of water supplies to sample from. Even in a small country like Rwanda it was difficult to get an accurate picture of the RWS in the country although WASAC believes the total is 638 RWS with 463 (72.5%) under PPP. In this case the analysis of the data from the quantitative survey can give an indication of comparative performance between CBM and PPP water services but the results cannot be taken as scientifically valid.

Operator record keeping

Most service providers do not systematically collect performance data. Monthly reporting is required by all local authorities but not completed accurately by many service providers. The limited numbers of meters on the main production and transmission lines also made it difficult for operators to monitor performance. For the study there was therefore a need to interpret responses to the questions in the questionnaire to input coded answers into data capture sheets. For example only AquaVirunga in Rwanda monitors non-revenue water and could produce an accurate figure for this. For other RWS the non-revenue water had to be estimated from whatever figures on production and sales the operators were able to produce. In some cases this was simply an estimate of the percentage of people who pay for the water they use.

Other indicators which for which it was difficult to get data included:

- Water coverage (many operators did not know the number of households served)
- Affordability (cost relative to average household income)
- O&M costs recovery (many operators could say if the costs O&M costs were covered by revenue or not but could not calculate the %)

Non-quantifiable factors affecting performance

The indicators selected to measure the performance covered most of the common areas of performance but during the study it became apparent that there are other factors that significantly affect the performance. In particular the dedication/motivation of the key individuals involved in the service provision was clearly driving the operators to better performance in some of the schemes. This was particularly noticeable in Burundi where all the RWS were operating under the same model of management by a board of directors at commune level, ‘Regie Communal de l’Eau’ (RCE), under the same contract terms and with similar RWS to operate but the ones run by a dynamic and engaged chairman were performing better.

The other factor affecting performance which was not quantified was the condition of the infrastructure. In some cases RWS had been rehabilitated (usually with donor funds) before the private operator started the contract. CBM schemes (and some privately run RWS) were often working with infrastructure which was in need of rehabilitation and the leakages and frequent breakdowns of pumping equipment effect all indicators of performance.
Challenges with field data collection

There were a number of logistical challenges with data collection in the three countries. The most notable include:

- The data on user satisfaction was collected by interviewing users at the water points. Depending on the time of day there were often only one or two informants at water points and the presence of the service providers’ representative probably influenced the response.

- The RWS included in the survey were mostly ones that UNICEF had had some engagement with. In Rwanda this meant that only 3 out of a possible 30 Districts were visited and only five out of a possible 343 RWS were studied. Some of the stakeholders felt that there was considerable variation in the model of service provision between districts and the study should be extended. Unfortunately this was not possible due to time and budget constraints. Similarly in Kenya there is no fixed model for management of RWS in the country so every RWS has established its own service provider arrangement. The study only surveyed RWS supported by SNV under their model. The document review attempted to overcome this problem by gathering information about the performance of other RWS in each country.

Isolating data for a specific RWS scheme

Many of the Private Operators in Burundi and Rwanda operate more than one water scheme because they have a contract for a cluster of RWS in one area. Usually they do not collect/collate information for specific water schemes and only have data for individual water points (e.g. hand pumps) or for all their water schemes collectively. For these operators it was difficult to collect data on the performance of an individual water supply and the data entered is for a cluster of water supplies under one contract.

Appropriate benchmark bands

Most of the benchmarks defined at the start of the study appeared to be relevant but some of them were either too broad or not relevant for the way RWS are being operated in the three countries. For example, only 4 RWS estimated below 40% non revenue water so it would have been more useful to have bands ranging from 25% to 75% (instead of <20%, 20-40% and >40%) in order to distinguish between the different schemes. Similarly none of the countries have regular water quality testing and reported results so the benchmarks could more usefully have been set for the number of samples tested in a year.
Background to PPPs in three countries

Origin of introduction of PPPs

Rwanda has a long history of private operators in the rural water sector with the first PPPs established in 2004. According to Government figures data up to 73% of the RWS in Rwanda are under PPPs. In both Rwanda and Burundi the government made a policy decision to decentralize water service delivery and encourage private operation of RWS throughout the country. This is clearly laid out, together with the roles and responsibility for the delegated management model in their recent policy revisions (both in 2010). The government at district or commune level has a strong role in this model and hence it can be considered a real partnership for service delivery (PPP).

The approach has been different in Kenya with the progressive Water Act of 2002 providing room for private operators and delegating responsibility for oversight to the Water Service Boards at regional level. Between 2002 and 2015 a number of different models of RWS management emerged, some of which involve private operators and innovative financing mechanisms, but the vast majority of RWS in the country are still under community based management with little or no support or supervision from Government. Although the national regular (WASREP) is active in regulating urban utilities, the engagement of government in supervising or regulating rural water service provision has been limited prior to the devolution and emergence of strong county government. The new constitution gives responsibility for rural water supply services to the county government (similar to Rwanda and Burundi) but the new Water Act (2013), is still not approved by Parliament and the models for rural water service provision are not clearly articulated in the current draft. Meanwhile private operators for RWS are emerging in several parts of the country but it is debatable as to whether these can really be considered as PPPs as the role of the public sector seems vague.

Description of PPP models

Overview

The study methodology anticipated being able to study both direct and indirect service providers and divide Service Providers into two types:

**Market/Demand Driven Water Providers** - water service providers who developed their activity on their own. They emerged from market conditions (demand), developing water supply as their core business, investing on their own, with no (or little) interaction with a public body. Typically they did not benefit from a lot of subsidy or government support.

**Contract Driven Water Providers** — PPP operators, who entered the market through a formal contract with central or local government or with a public utility. They generally benefited from public funding to develop their business and/or reduce the investment risk.

In practice only direct service providers were studied and these were often a ‘hybrid’ of contract and market driven providers. In Burundi the service providers are all former Commune Water Boards (community elected committees) that were market driven service providers which have now been ‘contracted’ by the commune to be semi-private service providers. In Rwanda the private operators are all relatively new and have come in to the business in response to bids from local government. They can therefore be considered to be ‘contract driven water providers’. In Kenya the Water Users Associations
have emerged from demand and/or been formed by NGOs to take responsibility for water supplies. They can therefore be considered to be ‘market driven service providers’ but in some cases WUAs have then contracted private operators to manage the schemes so the result is a hybrid service provider. The table below describes the different schemes that were included in the study.

Table 2 – Categorization of RWS included in the study

<table>
<thead>
<tr>
<th>Country</th>
<th>RWS Scheme (name)</th>
<th>Service Provider (name)</th>
<th>Type of Service Provider</th>
<th>Public Authority</th>
<th>Community representation</th>
<th>Type of contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>All</td>
<td>RCE</td>
<td>Contract driven</td>
<td>Local authority (commune)</td>
<td>Board of RCE + users committees at each WP</td>
<td>Management</td>
</tr>
<tr>
<td>Rwanda</td>
<td>Gakenge District (all RWS)</td>
<td>Cooperation of technicians</td>
<td>Market &amp; contract driven</td>
<td>Local Authority (District)</td>
<td>Water Point Committees</td>
<td>Management (O&amp;M – fee collection and minor maintenance only)</td>
</tr>
<tr>
<td></td>
<td>Chaseri</td>
<td>REDEC Ltd</td>
<td>Contract Driven</td>
<td>Local Authority (District)</td>
<td>Water users committee</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Nyabinyoni-Gasakuza</td>
<td>AGEOH</td>
<td>Contract Driven</td>
<td>Local Authority (District)</td>
<td>Water users committee</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Gamahuyu-Mukamira</td>
<td>Aquavirunga</td>
<td>Contract Driven</td>
<td>Local Authority (District)</td>
<td>Water users committee</td>
<td>Management²</td>
</tr>
<tr>
<td>Kenya</td>
<td>Left Bank WP</td>
<td>Community</td>
<td>Demand Driven</td>
<td>Government (Water Service Board)</td>
<td>Board of WUA</td>
<td>Registered service provider</td>
</tr>
<tr>
<td></td>
<td>Kanyadihang</td>
<td>Brienscope</td>
<td>Contract Driven</td>
<td>Government (Water Service Board)</td>
<td>Board of WUA</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Wandiege</td>
<td>Lobonyo</td>
<td>Contract Driven</td>
<td>Government (Water Service Board)</td>
<td>Board of WUA</td>
<td>Management</td>
</tr>
</tbody>
</table>

² Aquavirunga also has lease agreements with other District authorities in Rwanda and in other countries

Rural Water Supply PPP Study, September 2015
Burundi

The PPP model was introduced in 2012 and can be considered as a ‘transition’ model with the operator being a semi-private organization and with some of the elements of community based governance maintained (see Figure 1 below).

The commune (local authority) signed a management contract with the ‘Regie Communal de l’Eau’ (RCE) giving RCE responsibility for operation and minor maintenance of all water supplies in the commune. The commune council retains 10% of the revenue collected by the RCE in order to pay for major repairs and upgrading of water supply infrastructure. The new RCE is still governed by an elected board of 5 members as with the former community based organization but employs a professional manager and between 2-6 technicians on a full time basis and manages its own account. Community users committees in the sub-communes as well as water point operators assist with revenue collection and represent community interests at regular meetings with the board.

At National Level the government office responsible for RWS, AHR, has a role in monitoring and technically supporting the commune in management of the contracts. In practice AHR has very few staff (only 4 regional offices) and responsibility for supporting XX communes in 17 provinces.

Interesting features of PPP model:

- Burundi has introduced an SMS based system, ‘Rapid-pro’, with a mobile to web platform for quarterly reporting. The Manager at RCE collects and sends data to AHR. AHR collates and analyses data and provides feedback.
- Coverage with piped water is low in many schemes because many HH rely on springs (free or minimal annual fee). Private operators responsible for all water supplies in commune, including springs, so effectively covering 100% of population.
- Strong community based vendor system. High revenue collection efficiency because vendor’s income is a percent of the fees collected.
- Tariff structures are not based on rates per volume. Users are charged monthly fee depending on what type of water source they use (protected spring, public water point, private connection etc). The tariffs are set at National level and are subsidized as part of a pro-poor strategy, aiming
to meet only operation and maintenance costs. Capital improvement and/or replacement is expected to be covered from government budgets or donors.
Figure 1 – Burundi Service Provider Models

Original CBM Model

- Operator: Commune water board
- Technical Support: Rural Water Dept (AHR)

New PPP Model

- Operator: RCE (formed from former Commune water board)
- Contracting Authority: Commune Council
- Technical Support: AHR
- Regulator: National Rural Water Dept (AHR)
- Monitoring: AHR

RCE – Regie communale de l’eau (semi-private commune water board)

AHR - Agence Burundaise de l’Hydraulique Rurale (national rural water agency)
Rwanda

The PPP models varies across the districts and ranges from a simple operation and maintenance contract with a small company for one single source water supply to complex lease agreements for extensive piped networks with international companies (Aquavirunga).

The District authorities are responsible for water service provision and the National policy is for this to be delegated to private operators. Some districts have moved ahead with this and have multiple private operators engaged on management contracts. In other districts they have moved to a transition model between CBM and a PPP agreement but are yet to contract any private operators (see Figure 3 for different models). The contracts give responsibility for revenue collection, operation and maintenance to the private operator with the Districts retaining 20% of revenue to cover major infrastructure repair or extension. In most Districts a District Monitoring and Evaluation Committee has been formed to monitor the performance of private operators against their contracts.

Interesting features of the Rwanda PPP model:

- Strong national policy supporting PPPs for RWS has provided the opportunity for the private sector to develop and established a clear model for PPP service delivery.
- The Federation of Private Operators provides the opportunity for cross learning and capacity building
- Private operators have experience working under both lease agreements and management contracts
- Some of the public kiosks are sub-contracted to local community groups to run as an income generating activity. Operators reported that this system works better than employing water point attendants directly supervised by the manager.
- ‘Clustering’ of many water supplies under one management contract works in the Rwanda (and Burundi) context because the profit margin on gravity schemes is higher and subsidizes higher operation and maintenance costs on pumped schemes.
Figure 2 – Rwanda Service Provider Models

CBM Model (‘transition’ model)

PPP Model

Responsible Authority (District Administration)

Cooperative of Technicians - Fee collection & minor repairs

Water Scheme (WP committee)  Water Scheme (WP Committee)  Water Scheme (WP committee)

Contracting Authority
District Council + WASAC?

Private Operator

Capacity, Advocacy Support
FPEAR +/or ISA

Regulator
RURA

Monitoring
FPEAR, WASAC, RURA

FPEAR – Federation of Private Water Operators
ISA – International Support Agency
RURA – Rwanda Utilities Regulatory Authority
WASAC – National public agency responsible for urban and rural water service provision
Kenya
The PPP models vary across the country with only very few established RWS PPPs. Under the strategy developed under the 2002 Water Act the Water Service Boards (WSBs) are required to develop community water committees into Water Users Associations (WUAs) which are legally registered associations. These can then apply for a Service Provider Licence under a Service Provider Agreement (SPA). The WUA may then continue to manage and operate the water supply on behalf of the community or subcontract to a Private Operator (see Figure 3 below). There is a system of monitoring and a regulatory framework in place to support this model but it has been somewhat disrupted by the devolution process which gives responsibility for water service provision to the county governments (bypassing the regional WSBs). Water legislation has not caught up with this change yet so there is overlap of roles and lack of responsibility.

SNV, a Dutch registered NGO, operating in Kenya has been supporting the development of private operators for rural water supply for a number of years and has developed a specific model which they are promoting in collaboration with the Kenya Markets Trust. This model works on the assumption that rural water supply assets are owned by the communities themselves. (see model in Figure 4)

Under a different model of community based management community water committees are trained to operate their own water supplies by NGOs who have constructed or rehabilitated the infrastructure. Subsequent monitoring, technical support and regulation is very limited for these water supplies.

Interesting features of the Kenya PPP model
- Many RWS assets are owned by the communities themselves not by government so contracts for management of the supplies are with the community (represented by the WUA) and the WUA then reports back to the local authorities if required. The arrangement is therefore a Public Private Community Partnership (PPCP)
- Vested (business opportunity) interests of the WUA board members frequently interfere with the efficient running of the water supplies.
- The focus of water authorities (WSB and country government) on construction of new water supplies means that public sector engagement in PPCP for water service delivery is relatively weak.
- Poorly articulated policy and strategy for water service provision means that there is no sector guidance on PPP models. Stakeholders are free to develop whatever models they think might work.
Figure 3 – Kenya Service Provider Models

PPP Model (known as PPCP with a strong role for community)

Alternative Community Based Management Model (other NGOs)
Figure 4 - SNV Anticipated PPP Model for Community Owned RWS Assets
Study Findings

General
All stakeholders interviewed believe that PPPs have dramatically improved the service delivery in the three countries. Reported evidence of success included; less breakdowns, more willingness to pay and reduced workload for district administration. While these are valid observations the analysis of performance data does not fully support the argument of improved service delivery.

Investment
All the RWS studied rely on government or donors for capital investment and even for upgrading services/systems. There is no anticipation that the Private Operator might be able to increase profit margin by investing own funds (or loan finance) in upgrading system. The reasons include:

- The assets are owned by government or community group and contracts do not transfer control of assets to the Private Operator so they are reluctant to invest
- Contracts are short (2-5 years) so POs are not able to recover their investment (or pay back any loan) before end of contract

Even for the one PPP in Kenya that was set up as a lease agreement responsibility for capital investment was not clearly given to the lessee in the terms of the lease even though this had been the understanding of the WUA at the start of the negotiations.

The data analysis shows that overall community based schemes have invested more in capital development than private operators with only 37% of private operators reporting any investment (see Figure 5). However all the investment made by CBM groups was made with donor funding raised by the community or an NGO.

Figure 5 – Extent of Investment in Capital Assets

The one PPP scheme that reported a significant investment since taking over the management (Mugweji in Burundi) had constructed 3 new tanks with funds provided by the commune as per the terms of their
agreement. Aquavirunga reported considerable investment (both grants raised in the Netherlands and commercial financing) in the RWS in Rabavu District for which they were given a lease in 2007. There has been no investment (either public or private) on the RWS for which they have a management contract and they report that the performance is constrained by the need for infrastructure upgrading.

Investment in upgrading services and systems was measured by the number of connections added by the service provider. Overall this investment was also very limited (majority less than 50 new connections) with only one RWS in Kenya (Rabour) reported they had installed more than 200 private connections (see Figure 6). Rabour is a CBM scheme which had been given funds from local MPs to drill a new borehole and extend the water supply to new users and institutions. There were signs that the private operators planned to upgrade services and add more private connections but for many of them they were still in the first year of two of operation and profit margins were still small (see section on efficiency). The price of meters was also commonly cited as a reason for not extending services.

Figure 6 – Proportion of RWS Investing in New Connections

![New connections by operator](image)

Efficiency

Private operators were expected to be more efficient than community based management and this is the perception of most of the stakeholders interviewed. However the analysis of the data collected against the six indicators in this performance area show mixed results on efficiency.

Non-accounted for water (NAW), calculated as the gap between water sales and water production as a percentage of water production, is a key indicator for water supply efficiency but out of all the RWS visited only 1 (Aquavirunga) understood the importance of this and regularly reported the NAW figure. There are a number of difficulties for the service providers in monitoring NAW:

- In the majority of the RWS there is no master meter on the production line and the Service providers are estimating what volume of water they are producing
- A proportion of users in each RWS do not pay by volume of water used but are charged a flat rate per month (this is the case for 100% of the RWS in Burundi)
In some of the water supplies operators combine data on water sales across multiple schemes with different production lines.

To overcome these difficulties and record a value for NAW in the data collection sheet verbal data on percentage of people paying for water was used as a proxy. On reviewing the data this appears to have been very unreliable with many CBM committees over reporting the efficiency of revenue collection. As a result the analysis of the data on this indicator show that the CBM schemes are performing better than the PPP schemes (see Figure 7) with only 57% reporting more than 40% NAW compared to > 80% of PPP schemes. However a closer look at the data shows that all schemes in Burundi and Kenya (both CBM and PPP) show more than 40% NAW and only one scheme in Rwanda (Aquavirunga) reliably reported less than 20% NAW.

**Figure 7 – Relative NAW results for CBM and PPP RWS**

Metering of connections was low in all countries except Rwanda (where 100% of connections are metered) and there is no significant difference between CBM and PPP schemes (Figure 8).
The indicator on reliability/continuity (Hours of water supply) was influenced by both technical and social factors. In some schemes there were design problems and water was not reaching all the water points all the time so rationing was introduced. Even where there were no technical problems, all vendors at public water points had specific hours of supply. These vary from 2 hours a day (morning and evening) to 8 hours a day. Overall there were very few RWS which supplied water more than 12 hours per day and the regularity of supply varied across individual schemes as well as between schemes.

The water coverage was difficult to calculate as many Service providers did not know the total population in their supply area and some did not have a complete record of the number of users on their RWS. In Burundi water sales are by month for each household so the record of people served was relatively complete. In other countries the water sales from public water points were only recorded as an overall volume sold and not per household so again calculation of coverage was difficult. Where possible estimates were made of the percentage of the households in each area using the water points. The analysis indicates that PPP schemes have better coverage than CBM schemes, with all CBM schemes in Burundi and Kenya serving less than 50% of the population. Some observations were drawn from the discussions with operators in Burundi and Rwanda which suggest that the piped water supplies are actually serving a relatively small proportion of households with many choosing to collect water from springs and other sources rather than pay for water. This finding does not appear to hold for Kenya where the piped water supply is often the only available option.

Analysis of data on the average downtime of RWS due to breakdowns and leakages shows that PPPs have significantly better response time to breakdowns with an average downtime of less than 4 days for over 60% of the RWS (see Figure 9). Burundi CBM schemes also report fast response times but this could not be verified. Kenya CBM schemes have the poorest performance on this indicator.
Revenue collection efficiency was based on verbal reports from the managers of the RWS and could not be verified from their record keeping. The indicator for this is the percentage of fees outstanding more than 1 month. The private operators appear to be more effective at collecting water fees than community committees and this may be due to the fact that most private operators employ full time fee collectors. The results may also reflect the difficulties that community members have in collecting fees from their own community.
More than 70% of the private operators report that revenue covers more than 80% of operation and maintenance costs compared to the community managed supplies who all reported revenue covering less than 80% of costs. The tariffs are set by the local government in most cases so there is very little room for private operators to set higher tariffs. This result therefore suggests lower O&M costs are driving the better efficiency. Many service providers stated that high electricity costs made it impossible to raise enough revenue to cover operation costs. This was a problem across all the countries.

Predictably the private operators with full time professional managers reported a much higher level of staff supervision than the community committees. This reflects that fact that in most CBM schemes the management and even the technicians work on a voluntary basis and there are no formal staff contracts.

The level of planning and budgeting seems to depend largely on the level of support the RWS is receiving from NGOs or UNICEF. Consequently the RWS which have been handed over to CBM and have no further support see no benefit in planning or budgeting. These results are reflected in the analysis below. While annual plans and budgets exist in many of the PPP schemes there was very little evidence of full business planning (Aquavirunga was the exception to this). Surprisingly many of the private operators did not seem to know whether they expected to make a profit on the basis of the projected or achieved revenue. In Kenya business plans had been developed for the PPP schemes (by a consultant) but the private operators did not seem to have much understanding/ownership of these plans.

**Figure 11 – Extent of Planning and Budgeting**

![Planning](image)

**Governance**

Results for meetings of the oversight committee were relatively consistent across the RWS with the majority having meetings at least once per quarter. Similarly there seemed to be relatively strong mechanisms for feedback from the users via water point committees and at annual general meetings. One notable finding was that consultation on the tariffs was not common even in CBM schemes but this may be due to the fact that tariffs are set by local authorities in both Rwanda and Burundi.
User Satisfaction

Overall user satisfaction was high but the relatively small number of users interviewed at each water point makes these results unreliable. Opinions from non-users were not collected and may have provided good insight into the affordability. The value for money was assessed through the question ‘is the fee fair for the service provided?’ There is some indication that the perceived value for money is higher in the PPP schemes as shown below. This seems to reflect both the reliability of the service (quick repair time and well staffed kiosks) as well as relatively low tariffs.

Figure 12 – Perceived Value for Money of Different RWS Services

In Burundi, user satisfaction with the existing supply is high (it was considered affordable and good value for money but there is a high demand for more water points and increased supply. Fees for water are very low and all users interviewed said they were affordable and some even said they would pay more! This is the result of the pro-poor tariffs set by the government. However these may be preventing the private operators from making a profit and there is a danger that some will collapse, especially those operating pumped water supplies with high operational costs.

Table 4 – Comparison of Water Tariffs in Three Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Price for 20l</th>
<th>Cost/m³ (&lt;6m³/mth)</th>
<th>Cost/m³ (institutions)</th>
<th>Annual fee for springs</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td>0.04-0.05</td>
<td>0.5-0.8</td>
<td>1.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rwanda</td>
<td>0.03</td>
<td>0.05-0.28</td>
<td></td>
<td></td>
<td>Most RWS charging monthly fee/HH for water from public WP rather than price by volume</td>
</tr>
<tr>
<td>Burundi</td>
<td>0.02</td>
<td>0.32-0.40</td>
<td>0.90-1.28</td>
<td></td>
<td>Most RWS charging monthly fee/HH for water from public WP rather than price by volume</td>
</tr>
</tbody>
</table>
Conclusions

In order to compare the overall performance of CBM and PPP schemes in each performance area, the quantitative data from each performance areas was combined by weighting the individual indicators according to their relative importance and likely accuracy. For example “upgrading of services and systems” was reported more reliably during data collection so was considered to be a more accurate indicator and given higher weighting than capital investment. “NAW” is a key indicator (even though not very reliably reported) so was given higher weighting than “Metering” which was consistently poor across all RWS. The weighting scheme used for this analysis is shown in Table 3.

Table 5 – Weighting Used to Combine Data on Different Indicators

<table>
<thead>
<tr>
<th>Performance Area</th>
<th>Performance Indicator</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment</td>
<td>Capital investment</td>
<td>0.5/2</td>
</tr>
<tr>
<td></td>
<td>Upgrading services &amp; systems</td>
<td>1.5/2</td>
</tr>
<tr>
<td>Efficiency of supply</td>
<td>non accounted for water</td>
<td>2/6</td>
</tr>
<tr>
<td></td>
<td>Water quality</td>
<td>0.5/6</td>
</tr>
<tr>
<td></td>
<td>Metering</td>
<td>1/6</td>
</tr>
<tr>
<td></td>
<td>Hours of supply</td>
<td>1/6</td>
</tr>
<tr>
<td></td>
<td>Water coverage</td>
<td>1/6</td>
</tr>
<tr>
<td></td>
<td>Average down time</td>
<td>0.5/6</td>
</tr>
<tr>
<td>Management (financial &amp; technical)</td>
<td>Revenue collection efficiency</td>
<td>1/4</td>
</tr>
<tr>
<td></td>
<td>O&amp;M cost recovery</td>
<td>1/4</td>
</tr>
<tr>
<td></td>
<td>Planning and budgeting</td>
<td>1/4</td>
</tr>
<tr>
<td></td>
<td>Staff productivity</td>
<td>1/4</td>
</tr>
<tr>
<td>Governance</td>
<td>Meetings of oversight committee</td>
<td>1/2</td>
</tr>
<tr>
<td></td>
<td>Feedback to users</td>
<td>1/2</td>
</tr>
<tr>
<td>Users satisfaction</td>
<td>Costs to households (relative to monthly income)</td>
<td>0.5/3</td>
</tr>
<tr>
<td></td>
<td>perceived value for money</td>
<td>1.5/3</td>
</tr>
<tr>
<td></td>
<td>service satisfaction levels</td>
<td>1/3</td>
</tr>
</tbody>
</table>

The analysis produced an overall comparison of performance as presented in the Figure 12 below. This indicates that the PPP schemes are performing slightly better in most areas but there is little difference in the key “efficiency” index and CBM schemes have higher performance in “investment”. The results were tested for the sensitivity to the weighting (by applying a neutral weighting) but this did not change the positions of PPP schemes relative to CBM in any of the areas.
**Investment**
Overall investment in capital assets is low in all the RWS studied. Community schemes performed better in this area as a result of donor funding which is usually available to community groups and not private companies. However, there are indications that this will change if private operators can demonstrate higher efficiency in service delivery and less mismanagement. Surprisingly, there was very little difference in the amounts spent on upgrading services and systems whereas PPP schemes might have been expected to add more private connections in order to increase income.

**Efficiency**
The PPP schemes performed better in coverage and speed of response to breakdowns (low down time) but CBM schemes performed better in NAW (but unreliable result) with no difference in performance in metering, water quality or continuity of supply. Hence overall there is no evidence that PPP were more efficient than CBM.

**Management**
The PPPs performed better on all indicators in this area; revenue collection, coverage of O&M costs and planning and budgeting. This is to be expected as one of the main improvements with the introduction of the PPP in all three countries is employment of professional managers.

**Governance**
The governance systems at community level are similar between CBM and PPP schemes as private operators have retained much of the structure for community representation. There are differences in the involvement of local government with a clearer defined role for local government in the agreements for the PPP schemes. There was evidence that PPP schemes tended to be weaker in feedback to users. The weak capacity in the local water department in all three countries means that there is no evidence of improved oversight in the PPP schemes yet.

**User Satisfaction**
The user satisfaction is generally high across all the RWS visited but there is some indication that users consider the PPP schemes to be better value for money. This seems to be a result of a better management and reliability of service relative to the price of water, which is the same in CBM schemes. The regulation of tariffs has resulted in relatively affordable water across all three countries which contradicts the common view that PPPs will make the water inaccessible for the poor. By contrast the price of water at the unregulated PPP water supplies in neighboring Somalia is much higher and not affordable for many households.

Summary
Overall, on the basis of the quantitative survey the PPP schemes appear to be performing slightly better than the PPPs (see Figure 14 below). However the difference is not as great as might be expected and for key areas such as “efficiency” the CBMs schemes are performing better. This result may relate to the fact that most of the PPP RWS studied have only recently been taken over by private operators and there is very little difference in the service delivery from a well-established and committed CBM and a newly established and relatively inexperienced private operator under a PPP.

Figure 14 – Summary of comparative performance between CBM and PPP RWS

There are a number of other general conclusions that can be drawn from stakeholder consultations:

- Very few of the Private Operators are making a profit yet. The major reasons appear to be due to
  - inefficiencies related to inadequate infrastructure upgrading (high NAW)
  - lack of metering resulting in un-controlled water supply to some customers.
  - Business plans not updated and followed
  - Higher than anticipated operational costs (especially power supply)

A clearer systems of business planning and performance review could help the Private Operators to understand their profitability better.

- Despite a comprehensive monthly reporting framework all three countries and extensive training by NGOs and UNICEF, Service Providers are not measuring or using Key Performance Indicators (KPI). The clearest indication of this is that most of the managers do not know
volume of water production. There is a strong likelihood that better understanding of their performance and the implications for profitability might lead to better performance. Additional mentoring, follow up and training is needed for new private operators to operate efficiently and fulfill their obligations under PPP agreements.

- Non functionality of large parts of the system is a common feature of RWS under CBM and hence effective coverage and perceived value for money are the major difference between CBM and PPP schemes in all three countries. Investment in infrastructure upgrading and capital replacement is clearly a precondition for an effective PO model to succeed. In Kenya the presence of a private operator seems to reassure donors that investment will not be wasted so there is potential for WUA with POs to mobilise resources (either commercial finance or grants). The initiative by SNV (and others) to establish dedicated, appropriate commercial finance for water infrastructure development (through donor guaranteed loans) has potential.

- In both PPPS and CBM schemes the key to success seems to be effective capacity building at all levels (community, local authority, regulator etc). The intensive mentoring, coaching and learning after commissioning is rarely part of donor projects and systems are not built into government for this type of support. UNICEF needs to advocate for this capacity building in all three countries.
References


RWSSN Water Supply Management Webinar Series, Nov 2013


*Rural Water Supply PPP Study, September 2015*
Appendix A - Example of Checklists for Key Informant Interviews

Checklist 1 - Key Stakeholders Interviews

[Agency for Rural water supply, UNICEF, GIZ etc]

- Policy and strategy for supporting PPPs.
- Who is responsible agency? National or local contract?
- Regulatory framework?
- Performance monitoring
- Challenges/Successes
- Relevant reports/evaluations
- Cost recovery & sustainability

Checklist 2 – Service Providers

[Communal water board, manager, technicians etc for PPP
Community committee/village operator for CBM]

Background information

- Reason of engagement in water service provision (demand driven or contract driven)
- Date of start of contract
- Type of contract
- Contracting authority
- Number & type of RWS included in contract
- How many people/households served

Performance Data

[See separate sheet]

Comments on challenges/successes of PPP

- Has PPP improved the service to users?
- (if CBM) what are problems

Checklist 3 – Community/Water Users

[Interviewed at water collection point]

- Who is RWS Operator
- Who operated RWS before?
- Perceived difference (and/or problems with current management)
- What mechanism for feedback/engagement in PPP
- Preference—CBM or Private operator? Why?