

triple-s

Public-private partnerships for rural water services

Elizabeth Kleemeier and Harold Lockwood

POINTS FOR ACTION

→ **For Governments**

- Clarify and strengthen policy and legislation defining asset ownership, legal mandates, and responsibilities for delegated contracts, especially in common-law countries
- Identify the entity that will design and bid the contracts

→ **For NGOs**

- Work within national policy and sector frameworks to support improved technical and managerial capacity of new private operators

→ **For Donors**

- Provide external technical and financial support for government-led initiatives to promote PPPs
- Discuss with government what support and regulation are needed to ensure that consumers receive acceptable services and are fairly treated

Community management, the dominant model for rural domestic water service, works in many contexts but faces several critical challenges, particularly in regard to more complex water supplies. An alternative is to delegate operations and maintenance, or maintenance only, to the private sector through formal contracts and performance agreements. These public-private partnerships (PPPs) potentially harness market incentives to improve service delivery and leverage private capital for investment costs.



A consumer inserts her token in the Grundfos Lifelink kiosk. Photo: Elizabeth Kleemeier

Rural water PPPs have proliferated in recent years mainly for piped schemes, less often for handpumps and other point-source supplies. Well-designed rural water PPPs have shown some success in countries with civil law—that is, legal systems that have statutes and codes regulating public service contracting. Proof that this model will deliver sustainable rural water supplies at scale, however, awaits more data on long-term costs, profitability, and performance. So far, most countries have not demanded significant investments in infrastructure from their private partners, and thus external capital financing is still needed.

Interest in using the private sector as an alternative or supplement to community management stems from the following three challenges:

Poor service delivery

Too many ‘improved’ rural water supplies are not functioning, or are functioning poorly. The extent of breakdowns varies widely among countries, but on average, about one-third of rural water supply facilities in developing countries fail to provide a safe and reliable service.

Demand for higher service levels and increasing technical complexity

Rural water supplies were once virtually synonymous with the simplest technologies. Now, more complex and expensive piped schemes are being constructed. In

Africa, 15% to 20% of the rural population lives within the supply areas of small piped schemes (Gia et al., 2010).

Investment financing

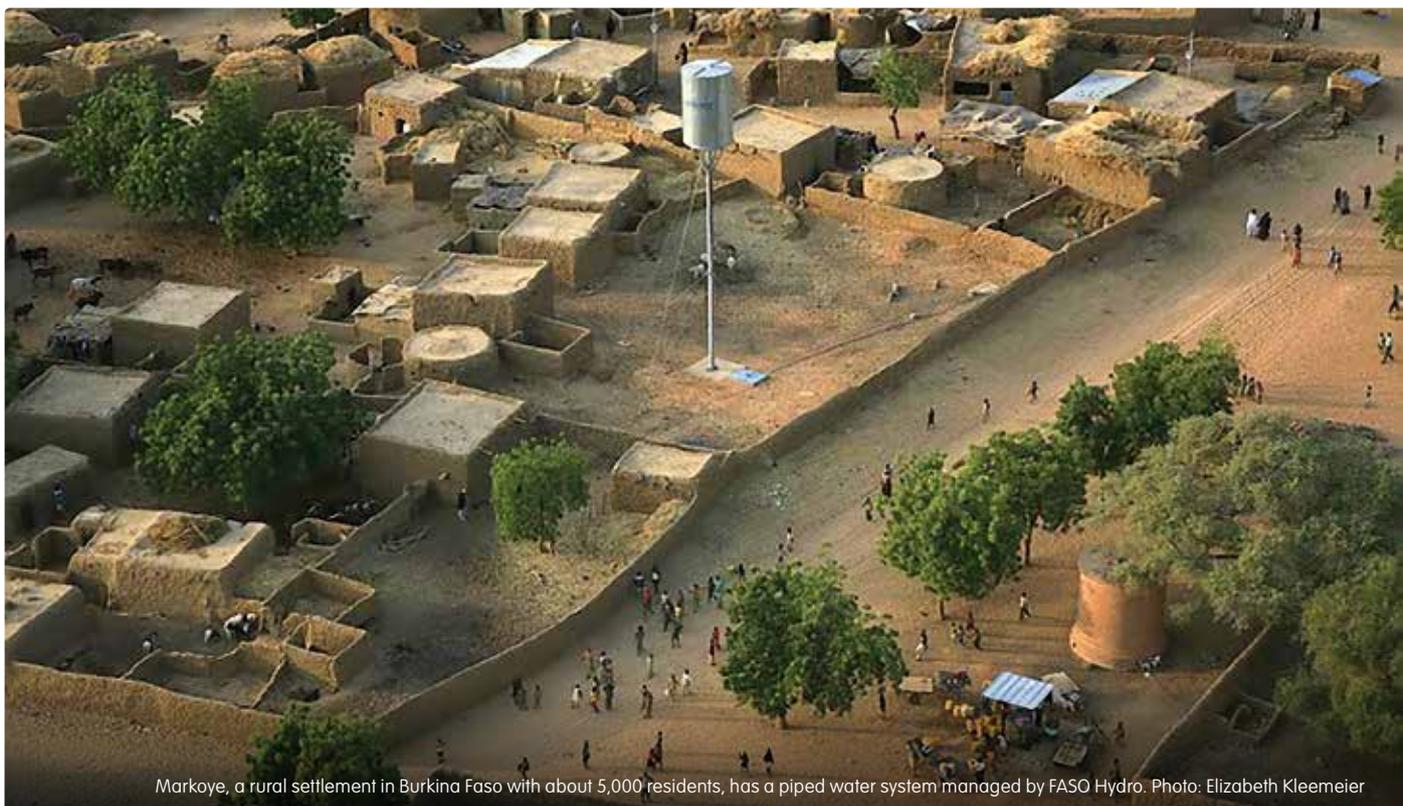
Some 742 million people lack safe water supplies, and the construction costs to remedy the situation are staggering. Leveraging private investment and credit could help finance needed infrastructure.

WHERE PPPS CAN WORK

The delegated management of public services is codified in the legal systems of countries with civil law. For this reason, rural water PPPs are more prevalent and more ambitious (though still relatively novel) in countries with civil-law systems (e.g., francophone Africa, Peru).

Countries where common law prevails, as in the British Commonwealth, have used delegation in the urban water sector, but rural water PPPs remain rare. People in common-law countries are more ambivalent about allowing the private sector to recover costs and profit from providing public services, since the tradition of delegating public service management is largely absent. As a consequence, contracting entities have less experience in creating incentives to achieve financial sustainability (PPIRC, 2012).

Here, we focus on the public delegation of rural water service delivery to the private sector. In some countries,



Markoye, a rural settlement in Burkina Faso with about 5,000 residents, has a piped water system managed by FASO Hydro. Photo: Elizabeth Kleemeier

the public sector may delegate this responsibility to community or civil society organizations, such as a village water committee or a cooperative.

PPPS FOR HANDPUMPS AND OTHER POINT-SOURCE SUPPLIES

Almost all community management systems for rural point-source supplies already outsource certain functions to the private sector: private shopkeepers stock and sell spare parts, for example, and private mechanics repair the pumps. These systems have had problems¹:

- Pump mechanics who are paid for repairs lack incentives to ensure the continued functioning of supplies.
- New pump mechanics are not trained when existing mechanics leave.
- Communities or their water committees cannot save or mobilize funds for expensive repairs and lack incentives to pay for preventive maintenance.
- Shopkeepers – particularly in sub-Saharan Africa – often lack incentives to stock spare parts, especially expensive ones, because rural population densities mean low demand.

PPPs seek to address those challenges and differ from outsourcing in that they delegate responsibility for maintenance to a private sector entity through a contract.

Three basic approaches for rural handpump PPPs have been tried:

- Handing over responsibility to a piped scheme operator in the area (see Box 1);
- Signing a manufacturer's warranty with villages; and
- Contracting maintenance of all handpumps in the local government's jurisdiction to one or a few companies.

Box 1 describes the experience with the first approach. It did not lead to better handpump functioning in Burkina Faso and Angola; the results from Rwanda have not yet been documented.

BOX 1 DELEGATION OF HANDPUMP OPERATION AND MAINTENANCE TO PIPED SCHEME OPERATORS

In Lubango, Angola, the Dutch supported a pilot 'handpump leasing' project under which a small town water utility owned the handpumps in surrounding villages and was responsible for maintenance in return for a monthly fee paid by villagers. Mobile brigades from the utility company were supposed to visit the pumps regularly for preventative maintenance and repairs for each pump. However, a 2006 evaluation found that the system did not succeed in covering costs, and so rural handpump maintenance fell off.

In Burkina Faso and Rwanda, the private operators of rural piped schemes also assumed responsibility for handpumps within the supply areas. Vergnet Hydro and its partner, Faso Hydro, were one such operator for seven schemes in Burkina Faso. Eventually, the operator closed down the handpumps within 500 meters of a standpost. It proved impossible to monitor sales from the handpumps, and the nonrevenue water supplied from them undercut the sales from the piped schemes.

In Rwanda, most PPP contracts for rural piped schemes state that the operators must also maintain other improved sources in the supply area, which in Eastern Province included handpumps. The results from this experience have not yet been documented.

Source: Kleemeier, 2010

Vergnet Hydro developed the second approach, in which the firm contracted directly with village water committees in West Africa for the maintenance of Vergnet handpumps. The results were not satisfactory because the committees proved too weak to collect user payments and manage the funds (Kleemeier, 2010). Currently, Vergnet Hydro is working to develop a meter for handpumps that would allow a company to manage them much like piped scheme kiosks.²

Burkina Faso is implementing the third approach. The local government (commune) signs a maintenance agreement with a private individual or firm to handle preventative maintenance based on regular inspections of all handpumps in return for a set fee.³ The contract also sets prices for various repairs. The commune simultaneously signs a handpump management

¹ Foster (2012) documents two examples, in Uganda and Uttar Pradesh, India, where forming associations or business groups of mechanics may have addressed some of these problems. Also see Triple-S Uganda experiment on hand pump mechanics associations: www.ircwash.org/news/hand-pump-mechanics-associations-experiment-overview

² Personal communication with Thierry Barbotte, Managing Director, Vergnet Hydro, May 2012. Vergnet Hydro views community management as generally satisfactory for handpumps, provided a good after-sales network exists. Therefore, Vergnet works with local partners who will take charge of mechanic training, and spare parts importation distribution to local shops.

³ Large communes, or ones with several different types of handpumps, may require more than one maintenance firm. In Burkina Faso, 33 communes signed 39 maintenance contracts.

agreement with each village's Water User Association (WUA), which obliges the latter to pay the firm directly for repairs, and to pay an annual fee to the commune to cover the cost of the preventative maintenance. The WUA must also hire local pump attendants to supervise the handpumps and collect water payments from the users, at a price set by the commune to cover preventative maintenance, repairs, attendants' salaries, and eventually handpump replacement (Foster 2012). The results from this approach have not yet been documented.

Finally, there are PPPs for point-source supplies other than handpumps. These arrangements are specific to the technologies and cannot be applied to handpumps. Grundfos LIFELINK and WaterHealth International provide two examples.

Grundfos, a Danish pump manufacturer, has developed the LIFELINK model, in which kiosks managed by a Grundfos affiliate sell water from a borehole fitted with a solar pump. Consumers purchase water through prepaid tokens that are charged with credits via a mobile phone payment system. The same mobile phone network enables wireless monitoring of pump performance, alerting the Grundfos affiliate to send out a local technician to make repairs. LIFELINK systems have been constructed by Grundfos in Kenya under build-and-operate contracts, principally financed by donors. It remains to be seen whether this system can compete with lower-cost alternatives available in rural communities.

WaterHealth International, an American company that manufactures ultraviolet water treatment plants,

TABLE 1 ORGANISATIONAL OPTIONS FOR CONTRACTING AUTHORITIES

Contracting authority	Example	Contracting arrangements
Central government ministry or technical agency	Paraguay	Government created central agency (SENSA) to expand rural water supply provision. Although SENSA relies largely on local water user associations to manage schemes, it has used competitively bid build-and-operate contracts with construction firms to control capital costs, leverage private investment, and increase cost recovery from users.
	Mauritania	Government formed nonprofit national organisation (ANEPA) to assume responsibility for managing and maintaining piped schemes, including those in small rural centres, from Ministry of Water. By 2006, ANEPA had signed contracts with private operators to manage almost 90% of country's piped schemes.
National or regional utility company	Morocco	Government gave responsibility for rural water provision to national bulk water supply utility (ONEP). ONEP is testing franchise approach, under which private operators will manage local networks.
	Vietnam	Under World Bank-assisted project, several provincial governments formed utility companies to manage rural piped schemes. Companies would award operation and maintenance contracts to private firms; private sector would purchase utility company stock. Not implemented.
Local government (central ministry plays critical role in supporting local government contracting for PPPs)	Burkina Faso	Under French-assisted project, two firms won contracts to build (or rehabilitate) and then operate 15 schemes for seven years.
	Benin	As of March 2010, 132 schemes were operating under delegated management, most with private operators.
	Rwanda	As of 2008, 70-plus rural piped schemes were managed by private operators under delegated management, of roughly 850 rural piped schemes in total.
	Madagascar	Some 20 piped schemes under private management serving approximately 120,000 people (see Box 2).
Water user association	Kenya	Local microfinance bank (K-Rep) has piloted loan programme for community self-help groups to build, expand, or improve piped water schemes. K-Rep requires loan recipients to engage private operators on management contracts until loan has been repaid.
	Niger	Central ministry handles bidding process for private operators, which sign contracts with water user associations.
	Senegal	Central ministry delegates responsibility for rural piped schemes to water user associations (ASUFORS), which sometimes contract operations (pumping, kiosk operation, billing, payment collection) to local private operators, who in turn hire pump and kiosk attendants, meter readers, plumbers, etc. Ministry has contracted with single firm to provide maintenance for all ASUFORS, each of which signs performance agreement with this firm.

Sources: Kleemeier, 2010; Lockwood and Smits, 2011; Annis, 2011.

markets a system in which treated water is sold in reusable containers from a distribution plant, either to consumers directly or to vendors who make home deliveries. The idea is that people will purchase their drinking water in this way, and use unsafe water sources for other needs. WaterHealth has established systems in India, Bangladesh, Ghana, and the Philippines based on a PPP model in which WaterHealth or its local affiliate signs a build-and-operate contract for eight to ten years. The financing comes from some combination of users, local government, donors, NGOs, philanthropic organizations, and commercial bank loans.⁴

PPPS FOR RURAL PIPED SCHEMES

Some urban water PPPs have required national operators to supply small rural settlements as well as urban areas. SODECI in Cote d'Ivoire and SEEG in Gabon both did this successfully. Under SEEG, service in the rural centres improved, tariffs decreased, and coverage expanded (Tremolet and Neale, 2002). A review of three SODECI village schemes also documented improvements over the previous community-managed water services: bill collection was good, leakage low, and consumer satisfaction high (WSP, 2001; Tremolet and Neale, 2002).

TYPICAL PPP ARRANGEMENTS

More typically, rural water PPPs are small contracts, awarded to an individual or local firm, to manage one or a few small rural piped schemes. The key characteristics of these PPPs are described in the following sub-sections.

Contracting authority

The entity that holds the contract with the service provider or private operator may be a central ministry, national or regional utility, local government, or even a water user association (Table 1). In Bangladesh, for



example, the contracting authorities have included: the water department, a non-profit foundation, and a national research institute.

Type of contract

Triche et al. (2006) analyse the types of contracts with local private operators. Table 2 groups these types into four categories relevant to rural water PPPs: management; lease; build and operate; and invest, build, and operate. This taxonomy of contracting represents a sliding scale of increasing transfer of financial risk from the asset holder or contracting entity to the operator.

TABLE 2 TYPES OF RURAL WATER PPP CONTRACTS

Contract type	Level of risk
Management contract. Operator receives fee to perform operations and routine maintenance. Asset owner pays for repairs, extensions, etc. Little risk to private operator.	Asset holder  Private operator
Lease (affermage) contract. Operator keeps revenue but must pay specified operating and maintenance costs and lease fee, and possibly percentage of revenue. Operator loses money if costs and fees exceed revenue and thus has incentive to lower costs and increase water connections and bill collection.	
Build-and-operate contract. Eventual operators construct or rehabilitate and sometimes design water system, then manage operations under either management or lease (affermage) arrangements.	
Invest, build, and operate contract. Contractor-operator is also required to provide portion of investment costs. Schemes are operated as concessions, in which operators assume all costs and retain all revenue for extended period (e.g., 10 years in Paraguay, 18 years in Bangladesh).	

Sources: Triche et al., 2006; Kleemeier, 2010

⁴ Foster (2012) provides examples of other companies who sell treated water from central distribution points.

BOX 2 SUCCESS FACTORS IN MADAGASCAR'S RURAL PPPS

In 1999, Madagascar's Water Code paved the way for PPPs by establishing that water supply infrastructure is the property of the communes (local government), that communes are responsible for ensuring water services, and that they may delegate water services to third parties by means of management contracts. The model has proliferated slowly but steadily since. Annis and Razafinjato (2011) found that, in the case of Madagascar, PPPs have been most successful for piped schemes serving larger rural settlements of around 5000 people or more. Other factors that contributed to the success of the country's PPPs according to their study:

- Political will – in particular the support of the town mayor, which involved considerable political risk since paying for water services was not a common or popular idea.
- Latent demand for modern services – demand for higher service levels among an emerging middle class. Successful PPPs offered a choice of service levels according to personal preferences and willingness to pay.
- Donor support – in addition to financial support for construction/rehabilitation, donors were also instrumental in creating an 'enabling environment' by increasing capacity of communes to oversee water service provision and serve as contracting authorities.

Role of the community

In some rural water PPPs, community organisations have no role. Examples are Mauritania, Morocco, and Gabon. In Benin and Rwanda, the commune may delegate responsibility to a community organisation, but if a private operator wins the bid, there is no water user association role.

At the other extreme are Kenya and Senegal, where the water user associations are the contracting authority. Niger lies somewhere in between: the central ministry controls the contracting process, but the actual contract is signed with the water user association.

Communities may become important as monitors of operators' performance. Mobile phone networks and attendant software applications are opening up new opportunities: consumers can phone in performance information on water services in their area or respond to text-message surveys. Punjab State in India, for example, has a mobile phone-based consumer complaint system for rural water supplies.

Regulation

Water regulation, covering contract compliance monitoring, tariff adjustment, dispute arbitration, and

water quality monitoring, is a weak point in rural water PPPs. Lengthy disputes between operators and consumers or local governments can undermine operations and sustainability (Gia et al., 2010). For example, some rural operators in Bangladesh were forced to sell water at unreasonably low prices because a system for adjusting tariffs was missing.

Honduras, Colombia, Rwanda, Mauritania, and Mozambique assign regulatory responsibility to independent agencies, in almost all cases the same agency that regulates urban utilities. Most of these agencies are just beginning to cover rural areas. The approach can create problems: rural schemes may be numerous and geographically widespread, and regulations, reporting requirements, and punitive measures that were designed for urban utilities may be unreasonably harsh for small rural operators (Lockwood and Smits, 2011).

Alternatively, regulation may be accomplished largely through detailed contracts that specify performance standards for service delivery, maintenance, revenue collection, financial management, reporting, and so forth. The issue then becomes who monitors and enforces compliance and who arbitrates disputes. Typically, this falls to the contracting authority – either local or central government. However, these entities may lack the capacity to enforce contract compliance or even to monitor it and may also have a conflict of interest: government represents the consumers who are making the complaints.

Yet a third approach has been to give regulatory, or at least auditing, responsibilities to an entity that also provides technical support to the private operators – an approach that likewise represents a conflict of interest (Pilgrim et al., 2007).



External support services

Private operators may sometimes need specialised services that are uneconomical to retain full-time. In practice, rural private operators likely need external support to build their basic capacities, quite apart from any specialized skills.



In Mali the National Water Supply Directorate, with German development assistance, set up a system for providing support and monitoring performance. *Suivi Technique et Financier* (Technical and Financial Follow-Up), or STEFI, provides advice and assistance to both community and private operators and collects monitoring information for service authorities (i.e., the *communes*). The costs of STEFI are equivalent to US\$0.34/person served. The ministry reports higher network productivity, reduced water losses, better life expectancy of small piped schemes, and lowered tariffs due to improved efficiency savings (Smits et al., 2011).

In Senegal, the water user associations delegate only routine operations and maintenance to local private operators and are required to sign an agreement with a designated private firm for preventive maintenance and repairs. In Mauritania, the private operators are required to use the central agency for major repairs and a designated private firm for solar equipment repairs.

Pilgrim et al. (2007) lay out ways to provide external support services to operators in small towns, approaches that can be adapted to rural areas.

Recommendations

The features of rural water PPPs are often determined by the status of the WASH sector in terms of policy and institutional reform, the extent of decentralisation, and progress in public administration reform. Clear rulings about who owns the physical assets, who is responsible for their long-term management and repair, and which institutions can legally let contracts are all vital to successful PPPs. In more practical terms, local entities' capacity to solicit bids, write contracts, and monitor performance are also important, and local political support is needed to overcome initial doubts about involving the private sector (Annis, 2011).

Immediate steps for promoting and improving rural water PPPs are as follows:

- Identify the best opportunities for PPPs and support programmes to develop them. Rural water PPPs are most promising for piped schemes that can be made economically viable through better management and, possibly, reliable subsidies.
 - Ensure that any necessary subsidies from central government or other external sources are a part of the PPP.
 - Make available online information about costs, tariffs, and performance to encourage widespread analysis and understanding of the profitability and sustainability of rural water PPPs under differing conditions.
 - Link efforts to support PPPs with broader public administration reform and capacity building, especially for local government.
 - 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.
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About this Brief

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