



Operation and Maintenance for Rural Water Services

Sustainable solutions

Around 6% of the global burden of disease is water-related. Safe water supply, sanitation and hygiene education can significantly reduce this.

The Millennium Development Goal (MDG) for water (to halve by 2015 the proportion of people without sustainable access to adequate and affordable safe drinking water) is harder to achieve in rural areas due to low coverage and the limited sustainability of existing services.

Effective operation and maintenance (O&M) is essential to this sustainability. It requires:

- government strategy for community support;
- long-term financial planning;
- appropriate technology, technical skills and supply chains; and
- sufficient capacity.

Government targets and plans for increasing rural water supply coverage typically include a decentralized, demand responsive approach to service delivery, responsibility by users for O&M and cost-recovery, and private sector provision of technical services and spare parts.

Headline facts

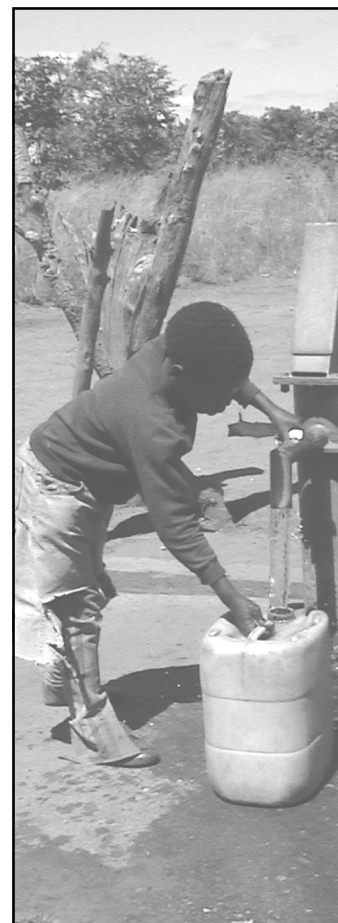
- The proportion of people without access to safe drinking water is significantly higher in rural areas than in urban areas.
- Unless sustainability levels are improved, the MDG for water will not be met.
- Effective O&M is essential for sustainability. Community management of rural O&M has limited success if ongoing support is not provided.
- Rural water strategies can provide institutional support to communities, incorporating technical, social and financial planning and capacity building as well as provision of equipment and spare parts.
- Alternative models to community management could be applied successfully on a larger scale. For instance, public-private O&M options can remove supply chain difficulties.
- Although rural water services require some level of subsidy for regulation, monitoring and technical support, it is likely to be less than those for urban water services.

Making Community Management Work

Village Level Operation and Maintenance (VLOM) assumes that the user community owns the water supply and contributes to installation, sets and collects tariffs and manages and finances O&M, with support from the implementing agency. Although VLOM is widespread, it has not delivered anticipated levels of sustainability, as communities are not always willing to take this on.

Also, there is the misconception that community management presupposes self-sustainability of systems. However, governments have not facilitated VLOM effectively and services cannot be managed by communities alone.

'Scaling-up community management' means increasing sustainability and coverage using institutional frameworks for community managed services, using a learning approach including all stakeholders and allowing for the local context. This requires political support; appropriate low-cost technology; building capacity; and adequate financing.



BRIEFING NOTE 15: Operation and Maintenance

Institutional support for community management

Appropriate institutional support comprises the following:

- encouragement and motivation;
- monitoring and evaluation;
- participatory planning;
- capacity building; and
- specialist technical assistance.

Institutional support is best provided by local government institutions or other Non-Governmental Organisation (NGO) or stakeholder groups. This may be a district water and sanitation team including water, environmental health and community development staff.

External support agencies (ESAs) should work in partnership with government institutions from the onset of programmes. The capacity of institutions must be considered for them to fulfil a support role effectively, and institutional strengthening may be required.

Effective institutional support has a significant but moderate financial cost associated with it. Consequently, both national and decentralized government institutions must budget for this accordingly. There is little point increasing service coverage through investment in new water systems if there is insufficient investment to ensure that existing systems are sustained. This financial support may be viewed as a subsidy for rural water services, but is significantly lower than most subsidies for urban water supplies.

Building institutional capacity

Without sufficient capacity at government and local level, services will not be sustainable.

Capacity building comprises:

- human resource development;
- institutional reform and restructuring;
- development of an appropriate operating environment;
- provision of physical and financial resources; and
- impact assessment and follow-up training.

Alternative Management Models

When community management is not a sustainable solution to rural water supply O&M, alternative O&M management models exist.

Public-Private Operation & Maintenance (PPOM)

In the PPOM approach, the key principles are:

- water supply is owned by the user community;
- users finance O&M;
- the private sector ensures maintenance, repairs and functionality; and
- the public sector is responsible for private sector regulation and provides subsidies.

Total Warranty Scheme

The handpump manufacturer Vergnet piloted the Total Warranty concept in the 1990s on 75 water points in Mauritania, supporting and training local enterprises, with users paying an annual contract fee. The government role was one of regulation. After two years 60% the villages had paid and 20% had paid half. The cost recovery rate was low where systems were not operating.

The Water Assurance Scheme (WAS)

Although similar to the Total Warranty Scheme, WAS provides safe and accessible water regardless of the technology involved. Rural communities pay a monthly premium to a private company, regulated by local government. The company provides maintenance, water monitoring and repairs. WAS has been applied in Kenya and has considerable potential, especially where community management is ineffective.

Private Ownership, Operation and Maintenance (POOM)

Privately owned water systems have clear responsibility and incentive for O&M and can also be sustainable.

Private ownership of water systems

In Bugiri, Uganda, water has been collected from a privately owned borehole since the 1950s. It is repaired promptly since the owner makes no income when the pump is not working. Local households pay 50 Uganda shillings (US\$0.03) per 22 litres of water. This approach may have limited applicability but should not be dismissed out of hand.

POOM is based on the following key principles:

- the water supply is owned privately;

BRIEFING NOTE 15: Operation and Maintenance

- the user community pays the owner for water; and
- the public sector ensures price regulation.

The simplest POOM model is when the water system is owned by an individual within the community. This role may also be performed by a private company.

Handpump Lease Concept

In Lubango, Angola, the local water company owns hundreds of handpumps, while the communities own the boreholes or wells on which they are installed. Each family pays the pump caretaker an affordable monthly amount, half for the pump caretaker's salary and half paid to the water company. Some handpumps raise \$240 per year, half of which goes to the water company. The average maintenance cost of only US\$30 per handpump per year, gives the water companies a healthy profit.

POOM can be self-regulating, as water users will not pay excessive costs.

Advantages over community management

Alternative private sector management models have a number of advantages over the community management model but they are not always more effective. The choice depends on the local context. For maximum sustainability, more than one approach should be considered.

Option	Advantages	Disadvantages
VLOM	Fast initial response Community control Community pride	Needs motivation Needs local skills/tools Access to spare parts
PPOM	Access to spare parts Skills/resources provided Community choice	Higher cost Slower response times Active regulation required
POOM	Access to spare parts Clear ownership/responsibility Skills/resources provided Incentive for rapid repair	Lack of ownership High initial cost to owner

Supply Chains

A major challenge for sustainable rural water services is the provision of equipment and components for O&M. Attempts to encourage sustainable private sector supply chains have had limited success due to low commercial viability.

Commercial viability

In Kalomo, Zambia, the district water and sanitation committee established a private spare parts supplier by providing spares to a local hardware store to act as a seed fund. This failed as the owner did not use money from sales to replenish stock, due to low turnover and profitability. The district committee itself now supplies spares to communities.

The density of water systems in rural areas is low, so private sector supply chains will be unsustainable unless at least one of the following criteria is met:

- spares supply is linked to the supply of pumps and related services;
- community managed maintenance is replaced with centralized public-private systems; or
- technologies use available 'standard' spares.

If none of these are fulfilled, alternative strategies for spares supply must be adopted.

Procurement and service linkages

Strengthening links between pumps, services and parts can increase the viability of supply chains. Procurement practice of donors has a major influence and can stipulate roles and responsibilities of manufacturers within contracts. This means selecting pump suppliers locally who can provide spares and services rather than international suppliers offering the lowest price. Government decentralization policies can also encourage local procurement of pumps and services, stimulating supply chains down to district level. This approach has limited viability and may not increase accessibility to spares in sparsely populated areas with poor transport routes.



BRIEFING NOTE 15: Operation and Maintenance

Public-private maintenance systems

It can be argued that VLOM creates unreasonable demand on supply chains. PPOM reduces this effect considerably as spares outlets are needed only in larger regional settlements for private service providers with greater mobility than rural communities. The application of this approach may be limited by the density of communities served, willingness of users to pay for services and private sector capacity.

Appropriate technology

The simplest solution is to use technologies which do not require specialist spare components, such as the Rope pump, Bucket pump and locally developed pumps such as the Bush pump or AFRI-pump. It is important that spares can be found in the average rural hardware store or can be made locally and that tools are widely available. A study by International Development Enterprises in Bangladesh showed that the rural poor prefer cheaper technologies in spite of the need to repair or replace them more frequently. This suggests that the argument for high quality technology and parts may be externally driven rather than demand responsive.

Subsidies

Many supply chains are subsidized and it is important to assess their sustainability. External donor or agency subsidies are likely to be unsustainable, requiring phasing out or transfer strategies. Government or indigenous private or non-profit sector subsidies are the most sustainable option where a pure business approach is not possible.

Private-sector sponsorship has not been tried on a large scale. A company may pay advertising fees directly to the spares retailers to promote spares outlets, or a large company might add spare parts to its product list and advertise its support of rural water supply.

Spares provision by non-profit-making organizations may be preferable. Research in Malawi shows that indigenous religious organizations having a reliable funding base have done this successfully for up to 20 years. Although coverage is limited by the number of appropriate organizations, it should not automatically be dismissed as unsustainable.

This briefing note presents sustainable solutions to operation and maintenance for rural water services.

Key references

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Briefing Note source material by Peter Harvey. The full report is available at www.Lboro.ac.uk/well.

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Briefing Note compiled by Julie Fisher of WEDC

Photographs by Peter Harvey

For further information, contact:

WELL, Water, Engineering and Development Centre (WEDC), Loughborough University, Leicestershire LE11 3TU UK, Email: WELL@Lboro.ac.uk, Phone: 0 (44) 1509 228304, Fax: 0 (44) 1509 211079, Website: <http://www.Lboro.ac.uk/well>

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