

Focus on Maharashtra:

Alternate Management Approaches for Village Water Supply Systems

Effective management arrangements for the operation and maintenance (O&M) of rural water supply systems are critical for sustainability. Institutional arrangements for O&M may take a variety of forms. This note documents some of the alternate approaches that are already in practice in various parts of Maharashtra.¹



¹ The cases described in this note and the approaches that they represent are not intended as models to be replicated. We expect, however, that the lessons drawn from these cases will help policy-makers and sector professionals to come up with improved institutional designs for sustainable approaches in the management of rural water supply schemes.

Since the mid-1990s, the worsening fiscal situation in most states has compelled policy-makers to search for institutional options that would create a climate for meeting O&M costs in a sustainable manner.

Effective management arrangements for the operation and maintenance (O&M) of rural water supply systems are critical for sustainability.² Institutional arrangements for O&M may take a variety of forms, including management by government-owned agencies (the traditional approach), management by user groups (an emerging approach), and management by public or private sector providers through formal or informal contracts or agreements with the owners of the assets.

Across India, (state) government-owned agencies are typically responsible for the construction and management of water supply systems. Although this approach has led to the creation of assets on a massive scale, the O&M arrangements have been far from satisfactory. Assets created have rarely lasted as long as expected and service quality has, at best, been fair. The traditional approach to provision of rural water supply in India has been supply-driven, with emphasis on norms and targets and on construction and creation of assets, with relatively little concern for sustainable arrangements for the less glamorous but critical issue of better

management and maintenance of the facilities built. As a result, there is a large gap between coverage on the books and actual coverage on the ground, which is significantly lower. An important government document, the Mid-term Appraisal Document of the 9th Plan (page 439),³ states:

“Although the Ministry of Rural Development claims more than 95 percent coverage, independent reports show scarcity of drinking water in about half the villages of India. What is more distressing is that this gap has been increasing over the years, despite heavy investment.”

The viewpoint that users are ‘beneficiaries’ rather than empowered stakeholders (informs the approach of service providers to users and) serves only to alienate them.

Since the mid-1990s, the worsening fiscal situation in most states has compelled policy-makers to search for institutional options that would create a climate for meeting O&M costs in a sustainable manner. Arguably, to a lesser extent, this is also under pressure of increasing concern for consumers’ welfare.

The Evolving Reform Environment

Changes in the policy environment pioneered by the Government of India (GoI) through its Sector Reform Program and projects funded by donors such as the World Bank, address this issue by piloting a more demand-sensitive approach. This Community Driven Development (CDD) approach promotes active participation of users, and key decision-making by local governments, with the expectation that this will lead to sustainability.⁴ In the Indian context, the approach is also consistent with the provisions of the 73rd Constitutional Amendment and the principle of devolving responsibility to the most accountable level of government. In this approach, ‘ownership’ is fostered through users sharing in the capital cost (typically, around 10 percent) and paying fully for O&M expenses.

Although it is by no means a necessary condition, in practice users themselves undertake project construction and management of the schemes in most cases (with some success). This is typically through a representative committee that may or may not be formally part of the panchayat system.⁵

² This is, of course, true for urban systems as well. The reference to ‘sustainability’ in this paper is to the technical and financial aspects of the O&M arrangements. Although some of the issues are common, the paper does not focus on the issue of source sustainability.

³ See: <http://planningcommission.nic.in/plans/mta/midf.htm>.

⁴ Some commentators and practitioners are of the view that local government involvement is not central to the CDD approach. However, others (including the authors of this note) believe that a combination of accountable local governments and empowered communities is essential for good governance and delivery of quality services at the local level.

⁵ These committees are generically referred to as Village Water and Sanitation Committees (VWSCs). In some states they are legally created sub-committees of Gram Panchayats; in others they are independently registered bodies.

Presumably, the justification for this approach is that if the user and provider are one, accountability is automatically assured.

Although this may be true, it may not be the most efficient solution in all cases and in the long run, as users have to spend considerable time in management activities in addition to their regular occupation. Moreover, such an approach is unlikely to foster professional management and is difficult to successfully replicate at scale. Extension of this approach to other sectors will (in some cases, already has) led to the creation of a plethora of user committees with a consequent loss in coordination and other efficiencies. Further, in virtually no state do the users currently cover the true cost of power. Therefore, for states that try to upscale reforms, there is a need to explore alternate options for management of the assets and service provision while ensuring accountability of the provider to the user.

Focus of the Study

This note documents some of the alternate approaches that are already in practice in various parts of Maharashtra. Although the cases described in this note do not represent an exhaustive typology of approaches, they do provide useful lessons that can inform the design of government policy as well as of future donor projects. The cases are



A storage tank and public standpost in Hadshi, Pune.

drawn from Maharashtra as the state offers a variety of such examples, and because the state is currently in the process of scaling up reforms in the rural water sector.⁶ However, we believe that these examples have relevance beyond Maharashtra.

Four different approaches to managing operations and management of rural water supply systems are represented by the schemes described in this note. The schemes covered include three single-village schemes (SVS) and two multi-village regional systems. The first case documents service provision by informal private providers of water to low-income communities. The second case presents an example of a system managed by a self-help group (SHG). The third provides an example in which responsibility for O&M is vested with a

representative user entity legally constituted for the task. The fourth case describes a situation where a private operator has been contracted to undertake O&M of a scheme owned by the local government, the zilla parishad (ZP).

Case Studies of Informal Private Service Arrangements

Village Kendra Khurd, District Hingoli

Arrangements for Water

Supply: The public water supply consists of four handpumps and a public standpost that provides water for about two hours during the day. The public sources of water supply were constructed by the state public health engineering department, Maharashtra Jeevan Pradhikaran (MJP), and are maintained by the gram panchayat (GP).

⁶ We are aware that similar examples are available elsewhere in the country as well.

Another concern raised in relation to the private schemes was the potential for exposure to groundwater contamination arising from the use of fertilizers and other chemicals on the farm.

Table 1: Existing Sources of Drinking Water Supply and User Charges

Source	Village Kendra Khurd		Village Maldhamani	
	Number	User fee (Rs per annum)	Number	User fee (Rs per annum)
Community well	01	–	03	–
Handpumps	04	–	08	–
Public PWS standpost	01	–	–	–
Private PWS-I	27	360	60	360
Private PWS-II	51	360	90	360
Private PWS-III	05	360	–	–

Note: The numbers against the various PWS schemes refer to the number of household connections.

There is a community well near the center of the village⁷ that provides water seasonally.

In addition, the village also has three informal private piped water supply (PWS) schemes, owned and operated by local residents, which supply water to individual users in the village. Based on the location of the source, these schemes deliver water to different sections of the village. In each case, the source is located on the private provider's land and was primarily developed for irrigation purposes. Of a total of 240 households, 83 households currently have private connections.

The first private PWS scheme appeared in the village around five years ago. As a single operator could not meet the needs of the entire village, particularly during the summer, the number of private suppliers has increased to three. Although the sources were originally developed for irrigation, the owners began to divert water to the residential areas at the request of the community. The first scheme began with an appeal from residents to the owner to provide water during the summer. In another case, the farmer-provider initially laid the mains up to the village center to bring water to the temple. At the request

of residents, the owner began to supply water to individual users. One of the providers explained that while his primary motivation was the sense of social responsibility that he felt towards the residents of the village, provision of water for residential use provided him with a higher return than the alternative use (for irrigation).

Technical Provisions: All three private schemes are similar, consisting of 5 to 7.5 horsepower (HP) submersible pumps that draw water from borewells that range in depth from 60 to 90 meters. The pumps have been installed in operator farmlands, with each of the private operators laying 2.5-inch PVC mains from the source to the village. Households that decide to avail of a private water supply connection within their homes, either independently buy the (operator-specified) 0.5-inch connecting PVC pipes and connect to the main pipeline or pay a fee to the operator to make the connection. In both cases, the private operator supervises the connection from the mains to the house.

Although timings are fixed for the supply of water to the village, power outages often lead to a rescheduling of water supply.

Financial Arrangements: All three schemes were constructed and developed at costs ranging between Rs 125,000 (US\$ 2,717)⁸

⁷ The total population of the village in 1991 was around 1,191 in 240 households. The estimated population in Census 2001 is 1,430.

⁸ Calculated at the exchange rate of US\$ 1= Rs 46 (October 2003) approximately.

to Rs 150,000 (US\$ 3,260). The private operators typically first installed the pumps then gradually extended the pipes on their own land and, thereafter, laid the mains to the village, providing a gradually increasing number of private connections. The O&M cost of the scheme consists mainly of the electricity charges and occasional repairs. The pumps have not been replaced since installation but have been repaired as required. The electricity charges paid by the operators are not at the commercial rates but at the subsidized rates at which electricity is supplied for agricultural use (see Table 2).



Source of a dug-well in Hadshi, Pune.

Table 2: Power Tariffs

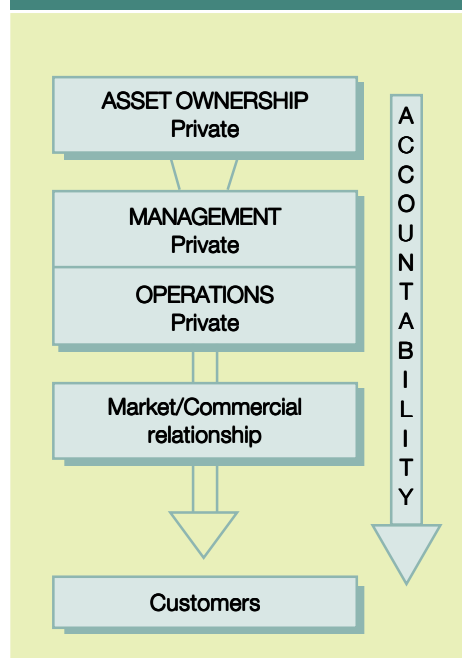
The table presents tariffs charged to rural water supply schemes and for agriculture. Where there is metering, the typical structure is of a two-part tariff with a fixed element based on the horsepower of the pump and a variable usage charge. The table shows that the tariffs for the two uses are quite similar. Tariffs for both uses are lower than the tariffs for most other categories of users. In addition, there is a 50 percent subsidy for rural water supply schemes, which is now being gradually phased out.			
USAGE CATEGORY	Fixed charge (Rs/HP/month)	Usage charge (Rs/unit)	Transmission & distribution loss charge (Rs/unit)
Rural water supply			
Gram panchayat schemes	20.00	0.75	Nil
Other rural public water supply schemes	30.00	1.40	Nil
Agriculture			
Non-metered	110.00	Nil	10.00*
Metered	10.00	0.90	0.10

Note: (i) HP refers to horsepower (ii) Supply to rural water supply schemes is metered (iii) 'Agricultural' use is for pumping loads up to 50 KW or 67 HP (iv)* This figure is at Rs/HP/month (v) Tariffs in force since January 1, 2002.
Source: www.msebindia.com/

Economic regulation is not critical where there is competition in the market and where provision of an alternate public service is available.

The user charge is fixed at Rs 30 (US\$ 0.65) per month or Rs 360 (US\$ 7.8) per annum. While recovery is not always 100 percent, the schemes do not suffer from the chronically poor cost recovery often associated with public schemes, largely due to the proximity and personal contact of the provider with consumers and responsiveness to their needs. For example, flexibility in the payment schedule allows users to pay their dues in accordance with the seasonal nature of their earnings.

Figure 1: Single-village Scheme – Private Management and Operations



Institutional Arrangements: The private provision is based on what is virtually a pure market transaction between the provider and the user (see Figure 1). The gram panchayat (GP, elected village committee) and other government agencies have not made attempts to interfere with the operations of the private schemes.⁹ However, the GP is proposing to improve the existing public water supply scheme by constructing an overhead tank and providing private connections. If constructed, it would be interesting to see whether users prefer the public scheme to the private ones.

Another concern raised in relation to the private schemes was the potential for exposure to groundwater contamination arising from the use of fertilizers and other chemicals on the farm. However, the operators argued in their defense that public water supply systems also suffered from this problem, as all public sources also tapped groundwater, and that no health problems had so far been experienced.¹⁰

Village Maldhamani, District Hingoli

Public water supply in the village¹¹ consists of seven working handpumps. In addition, there are two private piped water supply options available to the residents,

both of which are owned and operated by local residents. Interestingly, in this case, the main pipes of the two private schemes run parallel to each other along opposite sides of the main path of the village. There is an informal understanding that residents buy water from the supplier whose pipes are located on their side of the path. In other important respects, the Maldhamani schemes are very similar to the Kendra Khurd schemes.

Lessons from Informal Private Initiatives

- Private ownership and provision is feasible.
- Proximity of the provider and dependence of the provider on the users for revenues provides a simple route for accountability.
- Although this is not a perfect example because of the subsidized power supply, it shows that capital cost recovery is possible through the tariff.¹²
- Water quality regulation is an important function that could be performed by the state.
- Economic regulation is not critical where there is competition in the market and where provision of an alternate public service is available.

The emergence of the private schemes has had an adverse effect

⁹ Note that although the provision of irrigation water for drinking purposes on a commercial basis is not strictly legal, the authorities have taken a pragmatic view.

¹⁰ This is an important issue for water quality regulation and needs to be addressed for both private and public schemes.

¹¹ In 1991, the population of Maldhamani was 1,825 persons in 406 households. The estimated 2001 population is 2,185.

¹² Note, however, that the power charges for agricultural use and for rural water supply schemes are similar (see Table 2).

on the collection of the water cess by the GPs, as residents are increasingly reluctant to pay for the upkeep of public sources that do not serve them any more.

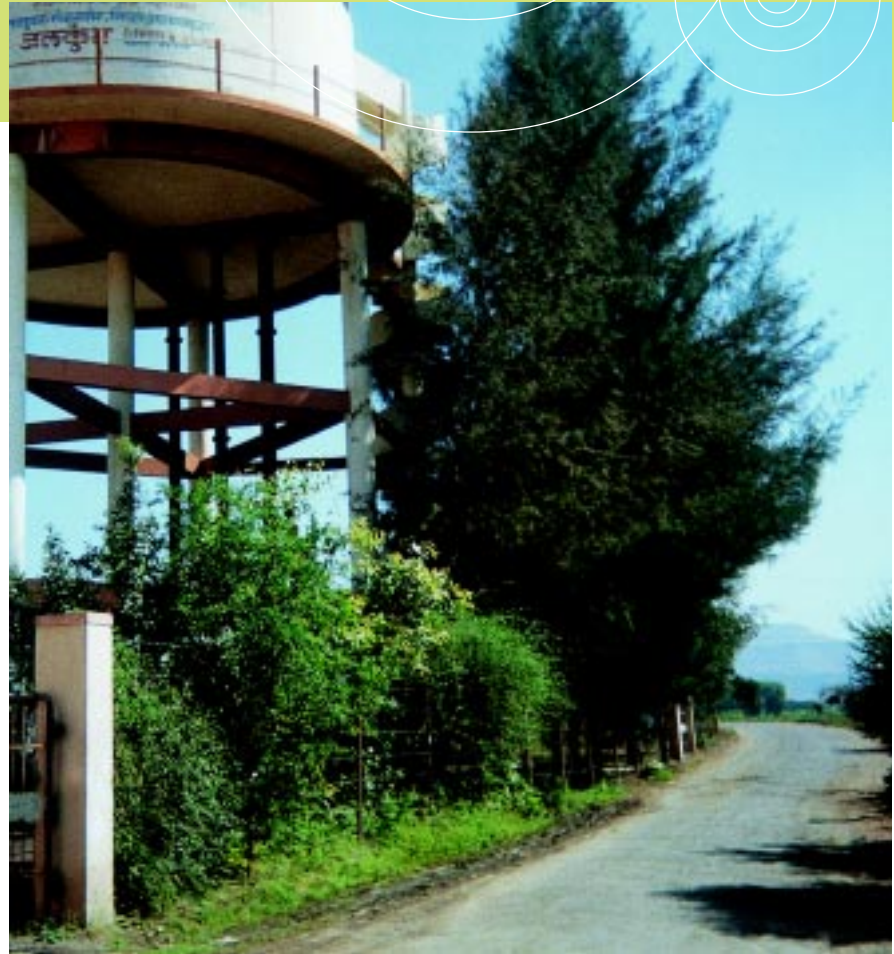
Case Study of Community Management

Hadshi Village, District Hingoli

Arrangements for Water

Supply: Prior to the commissioning of the scheme, residents met their domestic water needs from a dug-well located at a distance of about 120 meters, at a level about 40 meters lower than the main residential area. The residents, especially the women, were facing extreme hardship in carrying an average of 15 to 20 buckets of water a day. The situation would worsen during the monsoon, with many women suffering injuries while carrying water uphill. Handpumps are not technically feasible in the village. Under the circumstances, the residents were actively seeking an alternative way to meet their daily water needs.

In 1997, while a local NGO (called Sadhana Village) was seeking proposals from villages in the region for community-based lift irrigation systems, the residents articulated the need for a drinking water scheme. With the help of the NGO, which had earlier helped to establish a self-help group for



women, the villagers entered into negotiations for the construction of a water supply scheme. Another Pune-based organization, Development through Resource Organization and Planning (DROP), assisted the community with resource mapping and feasibility and costing of different technical options for the water supply system. Sadhana Village was able to obtain 60 percent of the funding required for the scheme as a loan from the Rotary Club; the residents were required to repay the entire amount with interest in monthly

installments.¹³ In addition, the users were also required to contribute the remaining 40 percent of the construction cost in cash (10 percent) and labor (30 percent). As a result, the villagers brought down the cost of the scheme – from Rs 175,000 (US\$ 3,804) to Rs 135,000 (US\$ 2,934) – by making changes in the design from a sophisticated to more affordable levels.

The scheme caters to the needs of a habitation of around 150 people, in a total population of

¹³ Although the agreement between the NGO and the community specifies a 14 percent interest for the loan, at the request of the people, the interest has been waived. However, there is a stiff penalty for not repaying the loan installment within a specified date every month.

The responsibilities of the society include the O&M of the bulk water supply from the source up to the two elevated storage reservoirs (ESRs).

800. All 150 people belong to the same (Gawali) community and derive a significant portion of their earnings from dairy activities. The scheme supplies water through three standposts.

Technical Provisions: The source of the water is the original dug-well (privately owned, and with the written concurrence of the owner). This is fitted with a 3-HP centrifugal pump that lifts water to a 5,000-liter polyethylene ground-level storage reservoir

(GSR), through 225 meters of 65-mm galvanized iron (GI) pipes. The tank is filled twice a day, providing for a consumption of 60 liters per capita per day (lpcd). The water is treated in the storage tank using a TCL (tri-chlorinated lime or bleaching powder) solution.

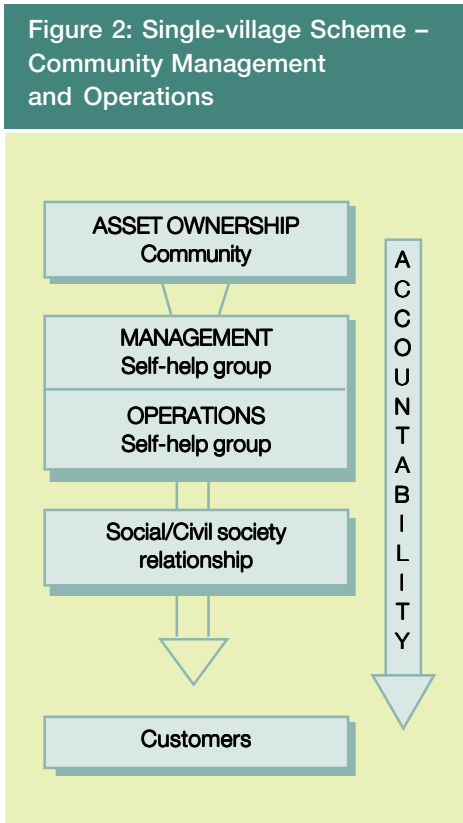
Financial Arrangements: Initially, each household contributed Rs 2,000 (US\$ 43) towards the capital cost. Currently, each household pays Rs 100 (US\$ 2.1) per month towards the repayment of the loan. In addition the SHG collects Rs 10 (US\$ 0.2) per month from each household towards salaries and other O&M expenses. The scheme employs one person to oversee the pumping hours and repairs. This is the only recurring expenditure. The electricity connection for running the pump has been unofficially accessed, free of cost, from the connection of the farmer on whose land the source and the pump station are located.¹⁴ Only one repair job has been undertaken so far in which Rs 250 (US\$ 5.4) was paid out as cash by the SHG. While the payment of Rs 100 per month is considered high, the SHG has been able to make the required collections to pay the monthly installments.¹⁵

Institutional Arrangements:

The scheme is operated and managed by the SHG without any government support (see Figure 2). The distinguishing aspect of the scheme is that not only are the decisions with respect to O&M made by the users, but almost every decision related to the design and construction of the scheme was also made by the users. The original motivation behind the formation of the SHG was the need for water. The scheme is managed by the SHG, which currently consists of 22 members, one of whom acts as the chairperson. The SHG meets once a month to discuss the income and expenditure statements and make collections for repayment of the loan, which are due around the middle of each month.

Lessons from Community Management Initiatives

- Hundred percent capital cost recovery is possible.
- Demand-sensitive designs can significantly reduce costs and ensure sustainability.
- For smaller homogenous groups, SHGs can manage schemes without government assistance.
- The community management model requires intervention of support organizations (NGOs).



¹⁴ It is learnt that the SHG has applied for a regular electricity connection but has not received it as yet.
¹⁵ In addition to the convenience, there are likely to be other commercial benefits.

Case Study of Management by Registered Society – MVS

Chandnapuri, District Ahmednagar

The Chandnapuri scheme, located in Ahmednagar district, is a multi-village scheme (MVS) serving the three villages of Chandnapuri, Zole and Hiwargaon Pawsa. The scheme was constructed and commissioned by the Maharashtra Jeevan Pradhikaran (MJP) in 1997, under the first World Bank-supported Maharashtra Rural Water Supply and Sanitation project.

The project was sanctioned in 1992 at a cost of about Rs 10 million (US\$ 21,739), completed by MJP and handed over to the ZP in 1997. The design population (2006) of the project was 12,279, of whom 50 percent were expected to take private connections; the average per capita water supply was fixed at 55 lpcd (40 and 70 lpcd for public and private connections, respectively).



A residential area in Hadshi, Pune.

Technical Provisions: Water is lifted from a percolation well situated on the banks of the Pravara river, and pumped to a balancing sump near Zole-Hiwargaon Pawsa. From here, two service reservoirs, one at Chandnapuri and another at Zole-Hiwargaon Pawsa, are filled through two independent rising mains. From these reservoirs, water is supplied to the consumers through private connections and public standposts.

Financial Arrangements: The current annual charge for a private connection is Rs 500¹⁶ (US\$ 10.8) and Rs 100 for a public standpost.

The managing society prefers to increase the number of private connections as this brings in more revenues. The scheme employs four persons, three of whom are responsible for service delivery and repair work for each of the villages, with the fourth person posted at the location of the source. Water charges have been raised twice since the commissioning of supply, and income has been sufficient to cover expenses so far (see Table 3). In 2001-02, the total income of the society was Rs 186,000 (US\$ 4,043, about 70 percent from user fees and 18 percent from the

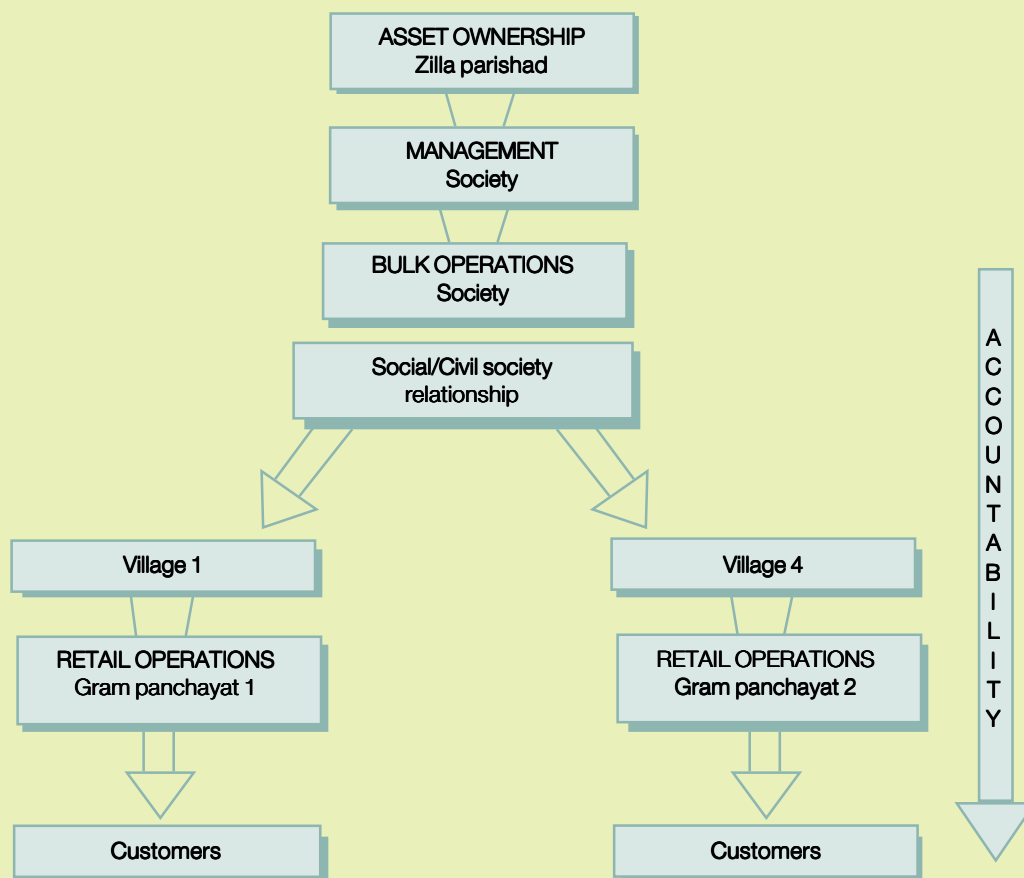
Table 3: Number and Type of Connections

	2001-02		1997-98	
	Private connection	Public standpost	Private connection	Public standpost
Number	500	11	200	25
User charge (Rs per annum)	500/750	100	360	75

¹⁶ Rs 750 if the private connection is for a commercial purpose.

There are two types of water charges in each village, a user fee for private connections and a water tax for households that obtain water from the public standposts.

Figure 3: Multi-village Scheme – ZP-Society-GP Model



electricity subsidy). The expenditure of the society during the same year was about Rs 160,000 (US\$ 3,478, about 43 percent on salaries and 37 percent on power charges), leaving a surplus of about Rs 260,000 (US\$ 5,652). Without the power subsidy, the society would have made a loss of about Rs 12,000 (US\$ 260). Recovering this through user charges

would require an increase of about 9 percent in collection.

Institutional Arrangements: A distinguishing aspect of the scheme is the institutional arrangement for its operations and maintenance (see Figure 3). While the scheme was constructed by the MJP, the bulk water system was handed over, after

an initial test phase of around six months, to a society specifically constituted for the purposes of operating the scheme. The society is registered with the Charity Commissioner under the provisions of the Societies Registration Act, 1860. Distribution within the village is the responsibility of the respective GPs.¹⁷

¹⁷ The communities were mobilized with the help of an NGO – the Centre for Studies in Rural Development, based in Ahmednagar – during the construction phase.



Discussions with self-help group members in Hadshi, Pune.

The sarpanches (elected heads of the village committee) of the GPs of the three villages are ex-officio members; in addition, two other members from each village (of which at least one should be a woman), are chosen by the GS of each village. The sarpanch of one of the three villages acts as the chairperson of the society.¹⁸ The gram sevaks or village development officers of the villages are also members, of whom one acts as the secretary of the society. The Block

Development Officer (BDO) is the society's administrative advisor and a deputy engineer from the block level is the technical advisor to the society. According to the bylaws of the society, the chair and secretariat of the society is rotated among the three villages on an annual basis.

The society holds monthly meetings to discuss income and expenditure statements and other issues with respect to changes in rules and regulations, extension of service and

leakage and repairs, etc. Officially appointed to undertake an advisory and supervisory position, in practice, the BDO has rarely participated in the management of the scheme, and the secretary of the society has been managing its functions effectively. The operations of the society's bank account require the signatures of any two of the office-bearers – the secretary, chairman and the BDO. In practice, the BDO is invariably one of the signatories for every check.

¹⁸ To the extent that the election cycles of the three GPs are not the same, the executive body of the society doesn't change en bloc. In any event, the official members provide continuity.

Recent reforms in the sector have focused on improving this situation by promoting approaches that are responsive and sensitive to user needs.

Bulk Water Supply: The responsibilities of the society include the O&M of the bulk water supply from the source up to the two elevated storage reservoirs (ESRs).¹⁹ The society also decides on the tariffs and on individual connections, looks after hygiene issues and addresses complaints of the users. The society also keeps a track of illegal connections – in fact, it has evolved a penalty system, which levies a fine for such practices as washing cattle near the standpost, using motors to draw water, taking private connections illegally, etc.

Distribution Provisions: The GP of each village is distinct from the society and is responsible for service delivery within the boundary of the village. The responsibilities of the GPs include collection of the user charges and transfer of 80 percent of the receipts to the society. Each GP retains 20 percent of the receipts to undertake O&M works within the periphery of the village.

While the scheme is self-sufficient with respect to the current O&M, it is encountering problems in extension of services to more distant pockets of population and in replacement of the pumps. With population and income growth, demands for extension of service area and service levels have increased.

Lessons from Registered Society Management Initiatives

■ The management of the scheme provides a workable local government and community-based model for the management of MVSs. It is our conjecture that, for a relatively small MVS such as this, this model is more sustainable than one where the bulk supply is managed by a state government agency.

■ For the management of MVSs, it is practical to separate bulk supply and distribution.

■ A supra-GP level society, with local and state government representation, can effectively represent the GPs and the community.

Case Study of Formal O&M Contract with Private Sector

Songaon-Mekhali Regional, District Pune

The Songaon-Mekhali multi-village regional scheme serves four villages: Songaon, Mekhali, Zorgawadi and Dorlewadi. The scheme was constructed by the MJP and handed over to the ZP for O&M. The ZP operated the scheme on its own for about a year, from July 2000 to June 2001. From July

2001, O&M tasks were contracted to a private company, which has since been operating the scheme.

Technical Provisions: The scheme is relatively capital-intensive, constructed at a cost of Rs 62.1 million (US\$ 135,000, Rs 2,813 or US\$ 61 per capita). Water is drawn from a canal through a reinforced concrete cement (RCC) pipe to a balancing raw water reservoir by a 5-HP mono-block pumpset located in Zorgawadi. The water is brought to the treatment plant and then pumped to the village storage. There is a separate pump for each of the four villages. In addition to the four primary pumps, there are four standby pumps for each of the villages to ensure uninterrupted supply of water.

Financial Arrangements: There are two types of water charges in each village, a user fee for private connections and a water tax for households that obtain water from the public standposts. Three of the villages levy the same charges, whereas Zorgawadi has lower rates. Each village currently has a different set of rates. The Water Management Unit (WMU)²⁰ of the ZP issues water bills to the villages on a quarterly or yearly basis at a pre-specified volumetric rate. This rate is at present exclusive of costs incurred with respect to electricity and TCL powder, which is received

¹⁹ The irrigation department has made a claim for tariff on the bulk water supply since it is lifted from the river; the society has disputed this on the ground that it is not from the river, but from a well near the river.

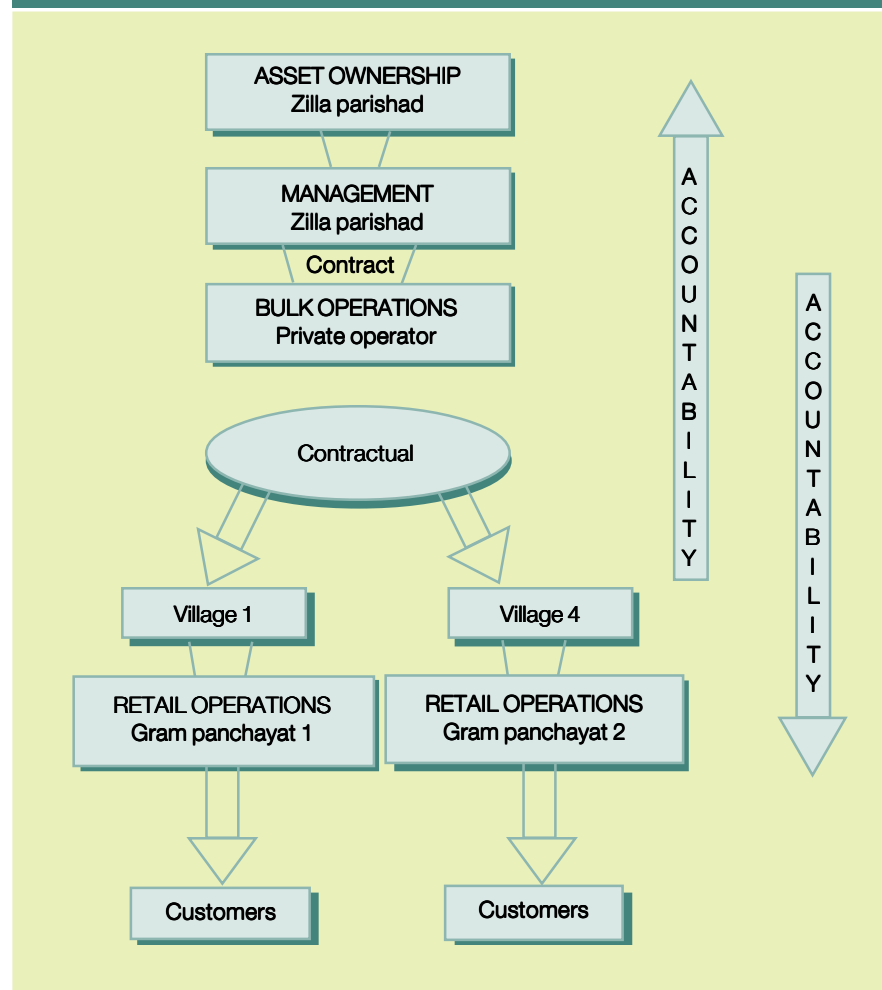
²⁰ Originally set up for a proposed KfW project.

as subsidy by the scheme from the ZP. Despite the subsidy, recovery was less than 50 percent in 2000-01. The contractor is paid a pre-specified fixed amount on a monthly basis for costs incurred against wages and salaries, repairs and material costs. The electricity costs are recovered directly by the ZP.

Till recently, the ZP used to charge the GPs Rs 2.5 (US\$ 0.05) per cubic meter (m^3) for the bulk water. This has now been increased to Rs 3.0/ m^3 . The total expenditure on the scheme includes the contractor's charges (Rs 1.284 million or US\$ 27,913 during 2002-03), payments to the irrigation department (approximately Rs 275,000 or US\$ 5,978 in 2002-03) and the MSEB power bill (approximately Rs 38,700 or US\$ 841 in 2002-03). The actual cost for 2002-03 was about Rs 1.565 million (US\$ 34,021), which translates into about Rs 5.4-5.5/ m^3 . Thus, by design, the subsidy is about Rs 2.4-2.5/ m^3 or, approximately, Rs 700,000 (US\$ 15,217) annually.²¹ In addition, it is reported that the panchayats are not able to recover the billed amount.²²

Institutional Arrangements: The scheme is a regional rural water supply scheme under the management of the WMU of the ZP (see Figure 4). The ZP has contracted out the O&M of the scheme to a private operator. The contract is based on a contract document that was prepared by the

Figure 4: Multi-village Scheme – ZP-Private Operator-GP Model



WMU in accordance with a standard document provided by the state government. An open bid process was used to invite applications for the contract and the contract is renewable on an annual basis.

The contract is managed by the WMU of the ZP but supervised by

block level officials. The contractor is responsible for treatment of water and transmission of daily requirements up to the village overhead tanks. Block and ZP officials monitor the regularity of supply and water quality. The contractor is required to maintain daily records to enable close

²¹ At Rs 3/ m^3 , the monthly bill for a family of six would be less than Rs 30/month. At Rs 5.50/ m^3 , it would be less than Rs 55/month.

²² According to one report, the recovery is less than 60 percent.

Dependence on users for revenues and returns provides the operators with the right incentives.

supervision. Norms have been specified for a minimum number of employees to be appointed by the scheme to maintain efficient operations. The distribution system within the villages is maintained and operated by the GPs. The GPs are also responsible for the collection of water charges and payments to the ZP.

By design, the contractor is answerable to the WMU or the ZP and not to the consumers or the GPs. The contractor does not bear any of the risks and has no incentive to recover dues. The GP collects the tariffs but can only have an indirect influence on the contractor through the ZP. This leads to a potentially unsatisfactory situation, with its attendant tensions, where the contractor is accountable (upward) to the WMU or ZP and the GP is accountable

(downward) to its constituents. A better contracting arrangement would make the contractor accountable to the GP or users, possibly by bearing some of the commercial risks.

Lessons from Formal Private Contractual Initiatives

- Private contracts are an alternative to user committees for management of MV schemes.
- The recovery indicates that the contractor does not have an incentive to collect.
- A better contract design, placing some of the commercial risk on the contractor, would make the contractor accountable to the users.
- The design of the scheme is supply-driven and not based on needs and affordability.

Concluding Remarks

There is a growing recognition that the traditional approach to asset creation and delivery of rural water through state-level agencies is not sustainable. Generally, these agencies do not have the incentives to be sensitive to consumer demands and have poor incentives for O&M. Although they have an interest in creating assets, very often the assets are not suited to local needs. As they are often technically sophisticated and maintenance costs are high, they are difficult to maintain locally.

Recent reforms in the sector have focused on improving this situation by promoting approaches that are responsive and sensitive to user needs and by making users pay (at the very least) for the O&M costs of the schemes. A common approach has made users (through committees) directly responsible for construction and maintenance. Though this approach has successfully demonstrated, albeit on a pilot basis, that such user involvement can enhance sustainability, there is an issue of whether such direct user involvement is efficient and amenable to upscale. Further, at this point there is insufficient evidence to provide confidence in the long-term financial sustainability of the approach. Almost across the country power costs are either directly or indirectly subsidized, which raises the issue of how well such an approach would absorb the shock of tariff rationalization.



A storage tank and public standpost in Hadshi, Pune.

Table 4: Summary of Ownership and Management Arrangements

Function	SVS		MVS	
	Case 1	Case 2	Case 3	Case 4
Policy			State government	State government
Economic regulation	None	None	Zone	Zone
Ownership of assets	PO*	Community	ZP	ZP
Management	PO	SHG	Society**	ZP
Operations	PO	SHG	Bulk-Society**	Bulk-PO
			Village-GP	Village-GP
Commercial risk/Responsibility subsidy	PO	PO	Society/GP	ZP/GP
Power	Yes	Yes	Yes	Yes
Other	None	None	Yes	Yes

Note: (i) *PO = Private operator (ii) **includes local government (GP) and state government representatives.

In this context, this documentation of four non-traditional approaches to the management of water supply schemes in rural Maharashtra draws lessons for the design of policy and future projects. In none of the cases was there any involvement of government or government agencies. The ownership and management arrangements for the four cases are summarized in Table 4.

The informal privately operated and managed piped water supply schemes are, by their very nature, 'demand-responsive' and technically adequate for serving the needs of

the user despite the lack of any kind of external support. The schemes also demonstrate that full cost recovery is possible through the use of appropriate technology and responsiveness to user concerns. Dependence on users for revenues and returns provides the operators with the right incentives. These cases also demonstrate that competition in rural water supply is feasible and accountability can keep prices competitive. However, risks related to water quality and legality underscore the need for an appropriate mechanism to monitor water quality and regulate the use of groundwater.

The Hadshi village scheme is a classic example of a community-planned and managed scheme. It demonstrates that users are willing to bear the full cost of construction and maintenance provided that service levels are determined in accordance with their preferences.

The success of the model, however, is probably linked to the small and homogenous nature of the user group and the role undertaken by the support agencies (NGOs). It is not obvious that a similar approach

**Water and Sanitation Program-
South Asia**

World Bank
55 Lodi Estate
New Delhi 110 003
India

Phone: (91-11) 24690488, 24690489

Fax: (91-11) 24628250

E-mail: wsp@worldbank.org

Web site: www.wsp.org

would work for a larger scheme involving a large and heterogeneous user group.

The larger (MVS) schemes described in the note offer alternative models for the management of MVSs. Both schemes are characterized by precise rule-based agreements between the different agencies involved to facilitate effective O&M as well as cost sharing. The schemes combine the advantages of division of responsibilities (between bulk and distribution), local involvement, feedback from users, broad user payment base, accountability for the performance of the system and ex-post evaluation. However, both schemes are currently dependent on state subsidies for electricity and recovery from users is insufficient to meet day-to-day expenditure for operations as well as periodic maintenance required to maintain the quantity and quality of service delivery. Contracts with the private operator should be structured to make the contractor accountable to the GP or users.

A final point: For various reasons, none of the schemes described in this note faces the true costs of power. It is not obvious how these schemes would fare if compelled to bear the true

cost of power, particularly where power costs are typically between 50 percent and 70 percent of operating costs.

Based on site visits and interviews with villagers and the following officials:

Dr R. Mopalwar, Director, GSDA, Pune

Kendra Khurd and Maldhamani Schemes

Mr I.I. Shah, District GSDA officer, Hingoli

Mr I.H. Syed, District Senior GSDA officer, Parbhani

Mr K. Singh, Executive Engineer, MJP, Hingoli

Mr V. Manekari, Sarpanch, Kendra Khurd

Mr P. Gowri, Private provider, Kendra Khurd

Mr S. Yadav, Private provider, Kendra Khurd

Mr A. Karale, Private provider, Maldhamani

Mr S. Bhonsle, Private provider, Maldhamani

Chandnapuri Scheme

Mr S.B. More, Deputy Engineer, Sangmner

Mr A. Dhakne, Village Development officer, Chandnapuri

Hadshi and Songaon – Mekhali Schemes

Mr V. Bhosle, Deputy Director, GSDA, Pune

Mr R. Deshpande, Director, Sadhana Village, Pune

Mr A. Phadnis, DROP

Mr L.M. Darare, Deputy Engineer, Water Management Unit, Pune

January 2004

WSP MISSION

To help the poor gain sustained access to improved water and sanitation services.

WSP FUNDING PARTNERS

The Governments of Australia, Belgium, Canada, Denmark, Germany, Italy, Japan, Luxembourg, the Netherlands, Norway, Sweden, Switzerland, and the United Kingdom, the United Nations Development Programme, and the World Bank.

ACKNOWLEDGMENTS

The idea for this study came from comments made by Dr R. Mopalwar, Director of the Ground Water Survey and Development Agency (GSDA) during a workshop in Panchgani. This study is based on field work done by Pooja Sharma. We are grateful to C. Ajith Kumar for generously sharing his time and insights. We are also grateful to a number of our colleagues, Sham Abhyankar (World Bank), in particular. Special thanks are due to B.C. Khatua and Sudhir Thakare of the Government of Maharashtra without whose support this would not have been possible. All remaining errors and omissions are ours.

PREPARED BY

Vivek Srivastava
Pooja Sharma

Photographs: Pooja Sharma
Created by: Write Media
Printed at: Thomson Press

ABOUT THE SERIES

WSP Field Notes describe and analyze projects and activities in water and sanitation that provide lessons for sector leaders, administrators, and individuals tackling the water and sanitation challenges in urban and rural areas. The criteria for selection of stories included in this series are large-scale impact, demonstrable sustainability, good cost recovery, replicable conditions, and leadership.