# ASSESSMENT OF THE ATTENDED COUPON-OPERATED ACCESS-POINT COST RECOVERY SYSTEM FOR COMMUNITY WATER SUPPLY SCHEMES

**Report to the Water Research Commission**

**By**

**LIMA RURAL DEVELOPMENT FOUNDATION**

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## EXECUTIVE SUMMARY

Poor cost recovery has been identified as the most limiting constraint to the sustainability of rural water supply schemes in Africa. Research has shown that inadequate cost recovery results in:

- Wealthy and influential community members receiving more in the way of a subsidy than poorer members,
- Communities believe that water provision is cheap,
- Limited government funds are required to operate and maintain existing schemes, rather than investing in new schemes.
- As there are not economically viable schemes fail.

According to the White Paper on National Water Policy for South Africa (1997), approximately R20 billion has been spent on water resources infrastructure. However, very few beneficiaries of these schemes pay for operational and maintenance costs incurred. In order for the government to become an effective services provider, the 1994 White Paper for Water Supply and Sanitation Policy states that communities must pay for operating and maintenance costs to ensure both equity and sustainability. When adequate cost recovery is implemented, a relationship of accountability between the water service provider and its consumers is encouraged. Consequently, a more reliable service is provided as consumers are paying for operating and maintenance costs.

The study specifically aims to determine parameters in which attended coupon operated access point cost recovery system operates efficiently by analysing seven existing schemes. The research aims to identify the operational constraints that community water supply schemes are currently facing by conducting sample surveys in the schemes. The survey results will be used to:

- Assess the adequacy of the system,
- Determine parameters for its efficient operation
- Understand social parameters which will render the technology appropriate.

Other objectives are to disseminate information to organisations proposing to implement attended coupon operated supply schemes. The research results should also be used to increase the capacity of water service providers as well as the staff at Lima who are responsible for facilitating and implementing community water supply schemes.

An attended coupon scheme refers to the provision of potable water through public standpipes. Water is dispensed by an attendant water seller through a conventional standpipe, fitted with a water meter. 30 ℓ of water is dispensed, which corresponds to the amount in exchange for one coupon. The water seller retains the coupon from the customer and hands this back to the water office when the meter is read and the water consumption is reconciled. Water sellers are remunerated for their effort, either through a salary or sales commission.

**Summary of major findings**

From surveys conducted on seven coupon attended water supply schemes within the Ugu Regional Council area of KwaZulu /Natal, the following are the findings:

- Five out of the seven schemes are not longer functioning as efficiently as they should be. These schemes are in debt to the local water authority because some of the administrative controls necessary to manage the schemes have collapsed.
- Some schemes have received limited training and capacity-building. Many of the schemes have not been visited and supported for a number of years because of limited funding and lack of appropriate capacity within local government.
- Ugu Regional Council is in the process of taking over management of the five older schemes. The two newer schemes developed under the Department of Water Affairs guidelines are functioning efficiently. These schemes are up-to-date with their payments. The schemes are currently receiving capacity-building and training and monthly visits from the Regional Council and independent auditors.
- The attended coupon scheme is prone to abuse by water sellers if administrative controls are not adhered to and punitive measures properly enforced.
- Despite the poor running of the schemes, the majority of consumer interviewed were satisfied by the quality of services. Most of the consumers felt that the quality of water was acceptable and the supply reliable.

**Summary of recommendations**

Based on the findings, it is recommended tat the Department of Water Affairs and Forestry and Regional Councils should focus on establishing democratic, accountable and transparent community institutions that have the capacity to manage their own water supply viable schemes. Government resources should be focused n providing support to WSPs – over a longer time period – and less emphasis should be placed on day –to-day management of schemes. The current provision of a twelve-month training period is inadequate and should be reviewed.

For a coupon system to be effective it is essential that all the cash, water and coupon controls are put in place and maintained over a period of time. It is critical that controls at the standpipe are maintained and that attendants are held responsible for losses. In order to achieve this the WSP needs consistent institutional and administrative support. The need for external monitoring cannot be over emphasized. Had this been in place on a continuous basis for the five older schemes reviewed, the bulk water debts could have been controlled.

Water projects can be efficiently managed by representative, transparent and accountable community structures. The setting up and maintenance of these institutional structures are critical to their success. The level of clerical staff hired by the WSP's cannot be expected to produce income statements and balance sheets for the service provider. These are essential to measuring the financial position of the institution and need to be undertaken by an external specialist. Another important element is that a financial audit is necessary as part of the transparency requirements of a stable institution.

Attendant coupon systems have an important role to play in community water supply in the future and local government's role should be the provision of training, support, institutional capacity –building and auditing. There is potential for greater efficiency if project are managed by well constituted community –based organisations, rather than by local government. If certain services are contracted out to private agencies, these should report to a CBO rather than to local government.

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## LIST OF ACRONYMS

| | |
|---|---|
| ADI | Automatic Dispensing Unit |
| AGM | Annual General Meeting |
| CBO | Community-Based Organisation |
| DWAF | Department of Water Affairs and Forestry |
| IA | Implementing Agent |
| PSC | Project Steering Committee |
| TMC | Technical Management Committee |
| WSA | Water Services Authority |
| WSP | Water Services Provider |

# INTRODUCTION

South Africa is a semi-arid country with limited water resources. The Government's aim is to provide reliable potable water supply to all the country's inhabitants. Since water is a limited resource it cannot be provided free of charge. The Department of Water Affairs' (DWAF) 1994 White Paper for Water Supply and Sanitation Policy states that communities must pay for operation and maintenance costs of water supply schemes to ensure equitable and sustainable supply of water. When adequate cost recovery is implemented, a relationship of accountability is established between the water service provider and its customers. This results in a more reliable service as consumers are viewed as customers who are covering operating and maintenance costs.

The aim of this study is to identify factors that will improve the efficiency of coupon attended community water supply schemes. This study does not aim to compare coupon attended schemes with other means of cost recovery. Rather, the focus is on improving existing schemes and providing guidelines for future coupon attended schemes.

A coupon-attended scheme refers to the provision of potable water through public standpipes. Water is dispensed by an attendant water seller through a conventional standpipe, fitted with a water meter. 30 $\ell$ of water dispensed, which corresponds to the amount in exchange for one coupon. The water seller retains the coupon from the customer and hands this back to the water office when the meter is read and the water consumption is reconciled. Water sellers are remunerated for their effort, either through a salary of a sales commission.

Chapter 1 of this report is a literature survey focusing on the key elements to a successful community water supply scheme. The chapter also discusses the advantages and disadvantages of coupon-attended water supply schemes. The second chapter deals with the research methodology and study areas. Chapter 3 describes the community water supply schemes surveyed in the study while Chapter 4 reports the survey results. Both qualitative and quantitative data were used to analyse the schemes. Recommendations based on the survey results are reported in Chapter 5.

# CHAPTER 1
# LITERATURE REVIEW

The success or failure of a community water supply scheme is not only determined by the technical aspects of the scheme. Social factors play an extremely important role in determining a scheme's success. While the choice of technology is important, it is not the only factor. Often schemes have failed due to the fact that social and community issues have not been given sufficient attention. This literature review aims to highlight the key elements – both technical and social - of successful community water supply schemes.

## 1.1 Current Institutional Environment

Water supply is constitutionally a national competency and falls under the overall jurisdiction of the Department of Water Affairs and Forestry (DWAF). The Water Services Act, Act 108 of 1997, identifies a variety of institutions that are involved in community water supply schemes. The Water Services Act and the Local Government Transition Act, Act 209 of 1993, determine the roles and responsibilities of various institutions providing potable water to consumers or potential consumers. Water Services Authorities (WSA) and Water Services Providers (WSP) are the institutions of relevance to this study.

### Water Services Authorities

The Water Services Act suggests that a WSA as a municipality or Regional Council, defined by the Local Government Transition Act, is responsible for ensuring access to water services.

According to the Water Services Act, everyone has a right of access to basic water supply. The WSA has a duty to all consumers or potential consumers in its area of jurisdiction to progressively ensure efficient, affordable, economical and sustainable access to water services. In order to achieve this objective, all WSA's are required to compile a water services development plan. In carrying out its function, the WSA may not unreasonably refuse or fail to provide water services to a consumer or potential consumer. In emergency situations, the WSA must take reasonable steps to provide basic water supply at its own cost. When deemed necessary, the WSA has the authority to impose water restrictions.

Table 1.1 Roles and Responsibilities in Water Service Provision

| Role | Who | Responsibilities |
|---|---|---|
| **Constitution of South Africa** | Ministers of Water Affairs and Forestry, and Provincial and Local Government. | • To set national norms and standards<br>• To fill the role of Water Service Authority if service at local level fails<br>• To provide support to local government in relation to water services<br>• To legislate with regard to municipal functions (including minimum procurement rules)<br>• To monitor performance |
| | Municipal government (local sphere) | • To be responsible for the provision of basic level of service to all South Africans |
| **Regulator** | Minister of Water Affairs and Forestry | • To set minimum levels of service<br>• To set minimum reporting requirements<br>• To set tariff policy<br>• To monitor performance<br>• To encourage regionalization to achieve economies of scale |
| **Water Services Authority (WSA)** | Municipal government | • To achieve requirements set by regulators<br>• To balance the needs of stakeholders<br>• To enter into contracts with WSP(s) best able to achieve these requirements<br>• To monitor performance of the WSP in terms of the contract with the WSA<br>• To report to regulators |
| **Water Services Provider (WSP)** | Public, private or mixed entities, or municipal government itself | • To provide the services and perform the duties as required in the contract, the WSA and the Constitution. |

Source: Introductory Policy Note Regarding Regulation of Water Service Providers (DWAF, 2000)

**Water Services Provider**

A WSP is a water services institution that provides water services to consumers or to another water services institution. The WSP may either be the WSA or a public or private institution appointed by the WSA to be the WSP.

The WSP is expected to provide water to consumers or potential consumers in accordance with regulations and standards prescribed by the WSA. A WSP must provide information concerning the provision of water services as may be reasonably called for by a:

- WSA;
- The relevant Province;
- The Minister of DWAF;
- A consumer.

The Department of Water Affairs provides the bulk of funding for project capital costs and other costs related to implementation and limited post project support. All operation and maintenance costs are to be covered by customers and need to be raised through the sale of water. Cost recovery on the sale of water is for the recovery of recurrent operational costs and not capital costs.

In accordance with the Act, DWAF appoints a Water Service Authority (WSA) to undertake all aspects of water supply within a specific region. This would be the Regional or Local Council within each area. The WSA, in turn, has the prorogative to appoint a Water Service Provider (WSP) to undertake undertake any project level management requirements. The WSA can retain this responsibility appoint a community institution as the WSP or appoint an agent.

**Future Policy Changes and Challenges**

Aside from the challenges of implementation, developments in the water and sanitation sector and local government framework subsequent to 1994 have resulted in a range of issues where clarity in policy is required.

The Water and Sanitation White Paper was published in 1994 before a new local government framework had been established. There have since been major

developments in the sector. The framework for local government has been established. A streamlined new local government system is being put in place. Local government finance has been reformed and policies to address poverty and indigency have been implemented. Policies on public/private partnerships have been developed and a regulatory framework for such partnerships has been produced.

In this new environment, DWAF will soon be reviewing the policy framework governing water services in order to provide all stakeholders with a clear, secure and predictable environment within which to operate. Specific issues that may arise include:

(a) The structure(s) and method(s) of operation through which these regulations are to be implemented.

(b) The relationship between the provisions of the National Water Act and the Water Services Act, as well as the regulation of water use by industrial users.

(c) The role of Water Boards in the achievement of regional scale service provision and as a competitive public alternative to promote efficiency in the sector.

(d) The regulation of Water Boards and the rules governing the establishment by them of joint ventures and other corporate entities.

(e) The regulation of WSPs, particularly with respect to the regulation of tariffs and rates of return outlined in s.19 of the Water Services Act.

(f) Possible amendments of s.10.2(b) and (c), and s.19.2 of the Water Services Act.

(g) Technical issues such as the use of the words “licence” or “permit” instead of the work “contract” to reduce the potential for litigation and whether “joint venture” should be referred to separately from other agreements in the Water Services Act, will also be considered.

(Source: Introductory Policy Note Regarding Regulation of Water Service Providers (DWAF, 2000))

## 1.2 Community Involvement

A critical factor in the success of a water supply scheme is community participation. Schemes installed without community participation have virtually no chance of succeeding (Shandu and Wilson). For a scheme to be a success, community involvement, empowerment and sustainability is essential. Therefore, a mechanism for communicating and consulting with communities needs to be developed, regardless of the administration system that is ultimately utilised (Shandu and Sithebe).

Research conducted by the World Bank in India revealed that the lack of involvement of the local communities in the maintenance arrangements, shortage of staff and inadequate funds were the main reasons why existing water supply schemes failed to yield the expected results (Briscoe and deFerranti, 1988). In cases where villagers have driven the process and they feel that they have achieved a victory in persuading the outside body to install the scheme, acceptance is much more whole-hearted. In addition, if people have been consulted on the details of the proposal that most affects them, such as the precise siting of standpipes, their sense or ownership is enhanced (Kerr, 1989).

A period of intensive community facilitation should precede the design and construction activities (Van Wijk-Sijbesma, 1984). Key role-players need to be identified during the facilitation process (DWAF 1999). Local leadership structures – such as tribal authorities - are not always the best-qualified institutions to lead development (Khuzwayo, 1995). Traditional leaders, chiefs, spiritual leaders and local political leaders often have authority which the majority of people are expected to obey.

Roles and relationships of the stakeholders need to be clarified at an early stage. As well as agreeing on the empowerment process, it is important, that the key role-players meet and agree on the essential elements which must be fulfilled to ensure sustainability of the project. These key elements should include social elements like capacity-building and training as well as technical aspects like operational, maintenance and cost-recovery requirements. Role players need to agree on the allocation of responsibilities in a manner which ensures that all have a clear understanding and acceptance of who is responsible for what, time frames and how effectively they are to be carried out (DWAF, 1999).

Before any water scheme can be implemented, the issue of the ownership of natural resources must be resolved (Forster, 1994). People may intend to use water for purposes, which have not been foreseen by the agency. Local landowners should not suffer unduly because of a new supply. Projects must link infrastructure developments with land-use planning, housing and agriculture. The environmental integrity of the project should be considered, taking into account the current situation of the settlement (Khuzwayo, 1995).

In order for water supply to be sustainable, it must be provided on an economic basis (Rodriques, 1993). For cost–recovery measures to be effective, a joint venture between the service providers and the community will have to be in place (Khuzwayo, 1995). Hazleton and Kondlo (1998) showed that systems worked smoothly for some time in developing urban communities, but broke down in the mid-eighties when customers were discouraged from paying by a culture of non-payment.

The capacity of communities to manage water supply technologies depends on the extent of training given to them (Nerquaye-Tetteh and Apambire, 1993). The communities concerned need to be educated through the various media and field liaison officers. Infrastructure must be linked to human resource development calculated on short-term and long-term solutions (Khuzwayo, 1995). There needs to be an exchange of information and experience between communities as was shown in Bushbuckridge and Kwandebele (Pybus, 1997).

Care should be taken that unrealistic expectations are not created. Problems may be encountered, for example, when communities expect compensation for labour and secondary uses of water. The community should have a clear view of its role after the completion of the scheme and of the increased public health risk when an improved supply is not properly maintained and used (Van Wijk-Sijbesma, 1984).

In summary, people are willing to participate in the development of their own communities. It has been shown that communities generally have a good idea of what they want. Proper community participation, however, has enormous potential, and there is enough experience to define conditions under which local people can indeed be in charge of successful rural water supply projects (Briscoe and deFerranti, 1988).

## 1.3 Cost Constraints

As with any project, be it rural or urban there are always cost constraints that can result in the project not succeeding. Rural communities generally struggle to pay for the full cost of water supply services. Supply is often visibly drawn from natural sources, sometimes with the minimum of technology. Communities in these cases question the reason for paying for a resource that already belongs to them (Forster, 1994). Expenditure on water is the lowest on average in terms of total average expenditure on all consumptive items (Data Research Africa, 1994). It is, however, often it is not a question of affordability, per se, but a cash flow problem (Abbott, 1989).

It has also been shown that there is a relationship between cost and user convenience (Abbott, 1989). Funding agencies have generally assumed that rural people are only able to pay very little for improved water supply. The Northeast Thailand demonstrated the fallacy of this assumption. Villagers showed a considerable ability to pay in cash for services they wanted (Briscoe and deFerranti, 1988). Poor households without good alternative supplies are often willing to pay much more for improved water supplies, in both absolute and relative terms, than wealthier families pay for their existing supplies (DFID, 1998).

There are two costs involved in water supply schemes – capital and operational costs. The tariff should reflect the full cost of providing such a service. There will also be financial consequences, which the community should know about in advance such as the varying installation costs. Some technologies will have greater potential for self-help labour and use of local materials than others and their use may have a cost-reducing effect. Recurrent costs will vary and a greater role in operation, maintenance and administration by members of the community may also cut down expenses (Van Wijk-Sijbesma, 1984).

Even when customers are paying for water, costs must be controlled. Since such a high percentage of these costs are fixed during design and construction and do not vary with consumption, engineers should take care to design appropriate schemes. Costs, which can be controlled after completion of a scheme, are administration, operation and routine maintenance costs and unaccounted-for-water. Control of all these costs is especially important for community water supply schemes because of the tight financial constraints within which they function (DWAF, 1997).

The tariff structure is vital and needs to promote social equity, financial viability and environmental sustainability (DWAF, 1999). When cost recovery is not implemented, the rich and influential receive more by the way of subsidy than the poor, communities are misled into believing that water provision is cheap, and the Government's budget is spent operating existing schemes rather than implementing new ones. The White Paper on National Water Policy stipulates that "to promote the efficient use of water, the policy will be to charge users for the full financial costs of providing access to water". Conversely paying for water encourages a relationship of accountability between the WSP and their customers. As a result, water schemes where communities pay the operating and maintenance costs are the ones, which provide the most reliable service (DWAF 1997).

### 1.4 Gender and Health Issues

Exclusion of women from the process of improving water supply may well be the most significant factor in the disastrous failure rate for water supply schemes. If women are not included in the planning and implementation of the improved water source, as they have been in the past for traditional water sources, their motivation to use and maintain the new source will be small (Kerr, 1989).

The representation of key groups such as women and youth are vital to the success of any project (Shandu and Wilson). There is usually a big difference between the attitudes of men and women in villages with respect to demands for an improved water supply. Women are generally responsible for water collection. Young children, mostly girls help the women in this task.. Grown men are however almost never involved in the day to day collection of water. As a result in most villages the women are more willing to pay for improved water supplies than the men are. However, men control most of the meagre money resources available. Thus, without adequate community mobilisation and empowerment, sustainable water supplies are almost impossible to implement (DWAF, 1997).

Education, which targets women and youth, is vital (DRA, 1994). Studies found that it was difficult to address health issues, as the connection between water and health is not always perceived.

Men have few incentives to carry out repairs and maintenance because drawing water is perceived as being a woman's task. In Zimbabwe, women manage, use and maintain communal water points. In an urban slum in Zambia, the woman's branch of the political party organised women to improve drainage around public taps. Women have been trained as handpump caretakers in Bangladesh, India, Kenya, Lesotho and Sudan (Briscoe and deFerranti, 1988).

### 1.5 Technology

The choice of technology is often the main focus of any project. There are several factors relating to technology that need to be borne in mind, irrespective of the system chosen. These are outlined below.

The option selected will be determined largely by the social framework and the valuation allocated to the various inputs and outputs. A rural water-supply project designed, built and maintained using appropriate technology should be more labour intensive than high technology, more efficient than traditional methods and should have the following characteristics (Kerr, 1989):

- Simple, robust and reliable
- Relatively labour-intensive with low capital cost and little import of foreign materials and skills
- Acceptance and support of the local community with minimum change to the social fabric

The greatest need in the area of water supply and sanitation is to increase the number of people served. Not only does the use of excessive technology siphon funds away from higher-priority needs, but also investment in this technology becomes a heavy liability (Okum, 1988). The simplicity of technology will contribute to a project's success. The cost of materials are kept low and allows communities to help construct and maintain the system (Hill and Mtawali, 1989).

Experience suggests that the sustainability of water supply systems is highly dependent on maintenance. Hence, local commitment to maintenance through the local contribution of resources may be essential for the sustainability of water supplies (DWAF, 1999). Without sustainability, increased coverage does not address poor service delivery but represents a significant waste of scarce resources.

Sustainability as defined by DWAF is, the benefits of the water supply projects continuing indefinitely in a reliable manner at a level genuinely acceptable to the community it serves and close to the design parameters, without an unacceptable level of external managerial, technical or financial support (DWAF, 1997).

The maintenance of any system is vital to its success. A major bottleneck to effective maintenance of rural systems is the lack of spare parts. Spare parts need to be readily available and inexpensive (Nerquaye-Tetteh and Apambire, 1993). Hours and time of supply are often lost time when systems have to be restarted and shut down due to mechanical failure. Without community involvement in the maintenance of the system, it will fail.

Local people should take part in the selection of pipeline tracks and location of standpipes. This will alleviate fears of crop damage. When these proposed tracks are known and discussed, risk of pipe breakage from agricultural activities, road construction, etc will be diminished. Villagers in Lesotho complained that their gravity-fed water supply was out of use for two to three months each year due to frost. They used a spring on the south slope: they had suggested one on the North Slope, which would have allowed the morning sun to thaw out the frozen tank outlet (Van Wijk-Sijbesma, 1984).

Leakage from water mains and distribution pipes, bursts, breaks, misuse and loss through consumer installation are the reasons for water wastage (Ahmad, 1988, Unvala, 1995). The study shows that the water charges to the consumers are very nominal and thus there is little incentive to reduce wastage. Control of unaccounted for water, is essential for satisfactory cost recovery, for the sustainability of water supply authorities and for keeping the long-term price of water low.

Although the system design needs to be based on supplying water to meet individual households' current choices, it should have the flexibility to met future demand, especially to facilitate the increased use of water which results in important health benefits and increases in the number of private connections (DFID, 1998).

A 1985 World Bank review of the sector concluded that overall performance was disappointing, and suggested that technology did not appear to be a major problem. The problems were diagnosed as being that the improved systems often did not meet

local expectations, local institutional realities did not meet local expectations, local institutional realities were not taken into account, and government support was erratic (Briscoe and deFerranti, 1988).

## 1.6 General

There are several other general issues that need to be taken into account in order for a water supply scheme to be successful:

- The Administration of the schemes is one of the most difficult issues to resolve and has often lead to the downfall of the system
- Rural communities get discouraged by long delays in getting the scheme implemented and are then less likely to get actively involved.
- There needs to be a reliable source of water. Land use, pollution and changes in the weather are among the environmental factors, which can affect water sources and which need to be considered when developing supplies.
- The local traditions need to be taken into account so that the system is placed in the right areas and has the required “blessings” if necessary
- South Africa is characterised by an ageing rather than a developing population due to aids and, hence, the system must cater for this.
- Improved water supplies may also be valued because they reduce conflict at overcrowded sources, as studies in Guatemala, El Salvador, and Bangladesh have indicated.
- The various designs may also have consequences for further development, such as the impact of water on agriculture and livestock and the recovery and recycling of waste products.
- Whatever system is chosen, it is important that there is some kind of legal framework which gives the village water organisation sufficient authority to solve problems of opposition and non-contribution.

Water supply schemes have failed due to

- Lack of accurate qualitative and quantitative data has often lead to inefficient schemes.
- Subjectivity of the concept of essential service.
- The operation and maintenance of the system were poor.
- There was usually a lack of trained technical and managerial personnel.

- Financing was often a problem.
- Organisational problems were more common than technical ones.
- Political Interference.
- No post-project support provided.

However, as water scarcity intensifies, any mismanagement, degradation or underdevelopment of the regions water resources will severely undermine economic growth initiatives (Forster, 1994). The need to conserve water will be one of the critical factors limiting the future growth of South Africa (Simes *et al*, 1993).

## 1.7 Cost Recovery and Water Dispensing Systems

A variety of water dispensing systems are used at the community public stand pipe and the private house connection. The main features of each of these systems are discussed below.

### Flat Rate Water Tariff

In this system all community members pay and agreed to monthly tariff or water tax per homestead. The systems are difficult to administer in that monthly tariffs are notoriously difficult to collect and it is impossible to prevent non-payers or non-community members from using water from the scheme. (The “free rider” problem) As the cost of water is not related to consumption, there tends to be abuse of water, substantial wastage and no incentive for communities to conserve water and report leakages. However, the biggest problem with these is that these systems are inequitable as smaller poorer households end up subsidising the water consumption of the larger and wealthier households in the community.

### Conventional Metered House Connection

This is the normal system of dispensing water to individual households. The consumer pays for a metered connection and normally pays a refundable deposit on estimated monthly usage. Meters are read on a monthly basis and accounts are issued to the customer that include a fixed monthly fee for the connection plus the value of the water consumed. If the water account is not paid within a certain time the water supply is disconnected. This system is considered to be one of the better

systems for individual house connections, but cannot be extrapolated to the community public standpipe situation.

**Prepaid Public Standpipe Systems**

**Manual Coupon System with Water Bailiff**

This is the system that is being studied in this report and consists of the following essential elements. Water is sold through public standpipes to consumers in a pre-determined unit. In all the projects studied in this report water is sold in units of 30 ℓ which is slightly more than a conventional 25 ℓ container can hold when filled to the brim. A tariff is set for the 30 ℓ unit that covers all bulk water costs plus the cost of operation and maintenance of the project.

In order to purchase water customers need to buy water coupons from the WSP or through a participating agent. These are normally sold in lots of ten and entitle the customer to ten units of water. The customer then presents the coupon to the closest water seller in exchange for 30 ℓ of water. Water is normally only available during opening times conventionally two hours each morning and afternoon. Meter readers either receive a monthly salary or are reimbursed on a commission basis for water sold. Once monthly the meter reader from the WSP reads the meter to the standpipe, collects the coupons and reconciles the water usage. Any loses incurred at the standpipe should be subtracted from the water sellers commission or salary. If losses occur for more than two successive months the water seller should be replaced by a more responsible candidate selected by the local community. The success of the system is dependant on the controls carried out at the standpipe at the time of meter reading reconciliation. Coupons are used instead of cash for security reasons and because coupons are a less flexible form of financial tender and have no value except for the purchase of water.

**Automatic Dispensing Units (ADUs)**

Automatic dispensing units are a relatively new technology in this country and have only been developed over the last few years. Electronic and mechanical units have been developed in recent years, but both work on similar principles. The electronic units of which two models are available locally, work on the principle of each

customer purchasing an electronic metal tag from the water authority office. Tags are sold to customers after being validated and personalised on the computer system. The customer can than elect how much water they wish to purchase and the tag is credited with the value of the desired water purchase. The initial cost of the tag is low, being between R25.00 – R50.00. The customer can have the same tag re-credited once the water credit is used up. The customer takes the tag to the closest ADU standpipe and inserts the tag into the tag reader. This opens the valve and water is dispensed until the tag is withdrawn and results in the value being closed. The tag is debited with the amount of water drawn from the ADU.

These systems have only been available for the last few years and, as with any new electronic systems, a number of teething problems have been detected and are being dealt with. The computer system that the ADU is dependent on is high-tech and requires a relatively sophisticated level of operation and staff training. The main advantage of this system is that the point of sale and the accounting system are integrated reducing the likelihood of administrative error and fraud. Other advantages include the fact that customers can purchase and draw any quantity of water they desire, as well having a 24-hour service from the ADU. The electronic ADU does have recurrent costs in that batteries have to be replaced as well as other working parts.

A company in KwaZulu Natal has recently developed a mechanical ADU that has no electronic equipment built into the standpipe. Inserting a coupon or token activates the ADU and it dispenses a given amount of water. It works in the same way as a coin operated slot machine.

### 1.8 Advantages and Disadvantages of Coupon-Operated Schemes

**Advantages**

- Payment is made in advance.
- Taking into consideration that the majority of rural people are migrant workers, a coupon system ensures a guaranteed supply of water for a specified period of time.
- No cash changes hands at the public standpipe.

- Members buy coupons in batches of 10 at a time to minimise administration costs.
- Some clean water is available to the people.
- Jobs are created for water bailiffs.
- People only pay for the water they use.
- The WSP gets paid for the water supplied by them.
- The manually-operated standpipes are easier and cheaper to install, repair and maintain than any of the ADU's. It is anticipated that period of down time on each tap will be considerably lower because of the lower level of technology that is used and the expertise to carry out repairs is available in most rural areas.
- The tariff is set and includes all the costs.
- All communities pay the same.
- Water is not wasted because the community is aware of the cost of water.
- Being a pre-paid system, it has the advantage of ensuring cost recovery and reducing the operating costs associated with invoicing and debt collection.
- It also enables customers to link consumption directly with expenditure on a daily basis so that large, unaffordable bills are avoided. When you pay for water coupons you pay for all operation and maintenance costs.

**Disadvantages**

- The water is often more expensive, as the cost of the water seller needs to be factored into the water price.
- People have to walk to the community stand pipe.
- In order for the system to function smoothly, it has to be maintained properly. The proper functioning of the water meter as with the other systems is critical to the success of the system.
- Providing coupons through external retail agents requires additional administration. This applies to all prepaid systems.
- Opening hours are limited.
- Tamper proof units are required.

It is important for people to have a coupon outlet as close as possible for convenient access. For this reason, the members of the Amanzi Trust have proposed that local business can apply to become coupon providers/suppliers (Barkhuysen).

## 1.9 Institutional Systems, Governance and Efficiency

The setting up of community-based organisations (CBO's) to assist Local Government with the management of certain aspects of service delivery is considered by institutional economic theory to have certain efficiency advantages - provided certain principles of transparency and accountability are adhered to. It is well known that government service delivery even in societies that have a long history of democracy are prone to be inefficient and subject to maladministration. The reasons given for this are the lack of direct incentive, no penalties for poor performance, general inefficiencies of bureaucratic systems and the lack of direct accountability. Improved efficiency can be achieved by the introduction of performance incentives a more direct line of accountability and greater transparency.

Community-based organisations or micro institutions can be efficient delivery organisations if the following systems are in place:

- Constitutional provision that ensures direct accountability of office bearers and staff.
- A clearly-defined membership in terms of geographical boundaries or payment of membership fees.
- Regular and detailed financial audits carried out by an independent third party.
- Regular dissemination of audited financial statements to the membership and external stakeholders.
- Regular meetings of office bearers that are open to members and external stakeholders and monitors.
- The holding of general membership meetings on an annual basis (AGM's) in order to inform members of progress for the year, to disseminate financial statements and to cater for the annual election of office-bearers.
- Regular training and support to ensure that these principles and systems are maintained over time.

The above principles of democracy, accountability and transparency are essential for the efficient operation of any institution. CBO's that are set up with these principles are considered to be more efficient service delivery organisations than any tier of government due to a shorter chain of accountability to its membership and customers.

The contracting-out of government services to private agencies is increasingly seen as playing a major role in improving service efficiency. The reason being that incentive and accountability can be substantially improved. This principle is gaining popularity in the South African water sector and has been mooted for these projects. Evidence from other parts of the world show that private contractors that report directly to properly constituted CBO's are inherently more efficient than if they were to report to local government structures.

International theory in institutional economics implies that efficiency gains would be improved if public service delivery were to be contracted out to properly constituted CBO's. Further efficiency improvements could be achieved if CBO's were, in turn, to contract out delivery to private agencies.

This has substantial implications for local government policy. The theory suggests that local government should be reducing its role in the direct management of water supply systems. Local government's new role would be to provide all the necessary training and support services to CBO's to ensure their proper constitution and functioning in the long-term. If water supply services are to be contracted out to the private sector that these contracts should be awarded by the CBO rather than directly by local government.

# CHAPTER 2
# RESEARCH METHODOLOGY

## 2.1 Study Areas

All the coupon-operated schemes sampled in this study fall within the Ugu Regional Council boundary of KwaZulu-Natal. The local water service authority is the Ugu Regional Council. The schemes are located between Harding, Port Shepstone and Umkomaas. All the schemes are on Ingonyama Trust land. The following schemes formed part of the survey:

Table 2.1 Location of Water Schemes

| **Scheme** | **Location** |
|---|---|
| Amahlongwa | Umkomaas |
| Amandawe | Scottburgh |
| Mathulini | Hibberdene |
| Murchison/Boboyi | Port Shepstone |
| Gamalakhe | Margate |
| KwaNyuswa | Harding |
| KwaMbotho | Harding |

The first five projects were developed between the period 1993 to 1996 prior to establishment of the Department of Water Affairs and Forestry. At the time there were not many examples of community-managed schemes with a cost recovery component. These projects were pioneering and experimental in nature. Lima Rural Development Foundation provided training and support funded by The Department of Agriculture, The Department of Works and the Southern Natal JSB. Due to funding limitations, all external support was suspended on these projects in June 1996. The two last schemes commissioned in September 1998 were implemented following DWAF water project guidelines that were put in place during the period 1996–99. Both the Ugu Regional Council and the appointed training agents, Lima Rural Development Foundation, are still providing external support to these two projects.

## 2.2 Research Methodology

A series of questionnaires were drawn up to conduct interviews amongst the different community structures on perceptions about coupon-operated schemes. Five sets of questionnaires were used in each community. The following interviews were conducted:

(a) Water Services Provider Committee members

The committee is elected by the community and is responsible for the management of the scheme and setting water tariffs.

(b) Administration clerk employed by the Services Provider

The administration clerk is responsible for sale and reconciliation of coupons and bookkeeping.

(c) Maintenance officer

A maintenance officer is employed to ensure that the scheme is maintained and he/she is responsible for installing private connections.

(d) Water sellers

Water sellers are responsible for the sale of water at public standpipes by collecting coupons.

(e) Consumers

The surveys were stratified between the different administration structures within the water schemes. The aim was to gain an understanding of administration procedures and to identify strengths and weaknesses. Field staff visited each water project and conducted a questionnaire survey with personal interviews. Water bailiffs and consumers were chosen at random. Committee chairpersons were interviewed where possible.

# CHAPTER 3

# DESCRIPTION OF SCHEMES

This chapter describes the institutional arrangements around establishing of schemes as well as a brief description of each scheme. The institutional arrangements for each scheme will not be discussed as the same methodologies would have been applicable for all the schemes – even though business plan formats may have changed for recently constructed schemes under the latest Department of Water Affairs policy.

## 3.1 Institutional Arrangements

During the implementation phase, DWAF will appoint an Implementing Agent (I.A) to undertake all aspects of project implementation. This is normally the Regional Council or a Water Board. It is the responsibility of WSA to set up a community structure representing a cross-section of community interests for planning and community liaison purposes. This committee is referred to in the Act. as the Project Steering Committee (PSC) and has DWAF and I.A. representation.

A water scheme project cycle can be broken up into four phases: identification, planning, implementation and training, operation and support. A project begins with the identification of the need for potable water by a particular community. An application is forwarded to the local water authority – usually a Regional Council. Once the project has been registered and approved by the Department of Water Affairs, planning of the project commences in order to draw up a business plan. Once the business plan has been approved by all parties concerned, the project is implemented. Post-implementation management support is then provided to the water service provider, normally for a period of 12 months after commissioning.

### 3.1.1 Project Identification

The need for potable water often lies with the community to articulate its needs to available funders. In most cases, influential community members within an area come together and formulate the idea with approval from local leaders. The leadership then forwards the application to the local Regional

Council who, in turn, forward it to the Department of Water Affairs for funding purposes.

### 3.1.2 Business Plan

The WSA needs to at this point in time set up the PSC it can undertake this task itself or appoint a facilitation agent. The WSP will then appoint a planning agent to draw up the business plan together with the PSC and other stakeholders. The planning agent is invariably a consulting engineer working together with a social consultant or training specialist.

The role of the PSC is to guide the consultants during the business plan phase and arrange community meetings. Before the business plan is submitted to the funding agency it must be approved by the project steering committee. The business plan puts forward a preliminary engineering design, technical recommendations and addresses many of the institutional and administrative issues such as composition of committees, management of the scheme, payment for water and community contribution.

The community plays an extremely important role in determining water sources and pipeline and standpipe positions. The committee also provides input in terms of use of local labour, wage rates, training and use of local emerging contractors.

### 3.1.3 Implementation and Training

Once the business plan has been approved the PSC appoints a consulting engineer and a training agent. These are selected by the PSC after presentation by three shortlisted consultants that are then appointed separately. Engineers then undertake detailed designs and advertise construction tenders. Contractors are then appointed to construct the scheme. A technical management committee (TMC) is formed comprising a sub-committee of the PSC to provide community input at contractors site meetings. The committee is required to meet monthly to discuss progress. This ensures that all parties involved in the project are able to share information around technical and social issues.

Training:

Training agents are appointed after project approval and provide training and support during the construction period and normally for one year thereafter.

The following issues are addressed during training:

- Institutional capacity-building – develop the capacity of the water committee to manage the project in a sustainable manner and to ensure customer satisfaction. The PSC is largely a planning and implementation body and it is necessary, through the training phase to set up representative community institutions to manage the project. An important aspect of capacity-building is drawing up the constitution of the WSP.
- The development of a cost recovery model that includes income and expenditure budgets and the setting of tariffs to ensure long-term project viability.
- Basic financial management – to enable key members of the committee to exercise financial control.
- Administrative training – given to the clerk employed by the water service provider. Training includes bookkeeping, banking procedures, filing, coupon and bank statement reconciliation and stock control. Local staff were trained in the production of a monthly cash book as well as a debtors and creditors ledger. It is anticipated that an income statement and balance sheet would be produced by an external support agency.
- Operation and maintenance – given to maintenance officer employed by water service provider. Training includes repairing leaks, replacing pipes, inspecting pipes and carrying out meter readings

### 3.1.4 Operation and Support

After the project is commissioned the contractor hands the project over to the WSA. The project is then run on a *de facto* basis by the WSP with training support being provided by the training agent and the WSA. The training agent is withdrawn after a twelve-month mentorship period after which the WSA can appoint the WSP to undertake certain field level functions on its behalf. The WSA has the responsibility to provide continuous monitoring and support of the project and the WSP.

### 3.1.5 Financial management and control

The clerk is required to keep detailed accounts of monthly income and expenditure. Coupon, bank, and water reconciliation are done monthly. The Ugu Regional Council has appointed a team of independent auditors to audit the two DWAF's funded projects on a monthly basis. This provides continued support and training and ensures that any financial mismanagement is detected early.

## 3.2 Description of Schemes

### 3.2.1 Amahlongwa

The Amahlongwa scheme is located inland of Umkomaas. The scheme was funded by the KZN Department of Agriculture and commissioned in August 1995. Bulk water is supplied by the Ugu Regional Council. The scheme consists of 30 standpipes. There are 28 handpump boreholes providing free water to the community. However, a large number of the boreholes have become dysfunctional.

Approximately 947 member households have joined the schheme of whom 180 have private connections. Membership fee costs R 200. The connection fee for private connections is R 650. One pirate connection has been detected. Water is sold at standpipes at 25c/30ℓ, with a water sellers commission of 3c per coupon. Private connections carry and R 8.00 per month basic charge and water is sold at R 5/kℓ. The average monthly turnover of the project is approximately R 13 500. At the time of inspection the project a positive bank balance of R12 000.

There is a single administration office where coupons are sold. Staff comprises an administration clerk and maintenance officer. Monthly wages are R1000 for clerk and R600 for maintenance officer.

### 3.2.2 Amandawe

Amandawe lies inland of Scottburgh. The scheme was commissioned in March 1994 and funded by the KZN Department of Agriculture. Water is supplied in by the Ugu Regional Council. The scheme consists of four reservoirs and 19 standpipes. There are two boreholes within the design area of the scheme.

Approximately 218 members have joined of whom 118 have private connections. However, this figure may not be accurate as the service provider's records have recently been stolen – the clerk merely recalled from memory. Membership fees cost R150 for the coupon scheme and R600 for private connections. Four pirate connections have been detected. No action has been taken against the individuals as the connections have been made by a local councillor. The Amandawe WSP claims it currently owes the Ugu Regional Council in excess of R130 000. The Amandawe scheme is presently not functioning properly and will be used as a specific case study.

There is a single administration office where coupons are sold. A clerk and maintenance officer are employed, but only receive salaries when there are surplus funds available.

### 3.2.3 Mathulini

The Mathulini scheme lies North of Hibberdene. The oldest of the South Coast community water schemes was commissioned in December 1993 and funded by the KZN Department of Agriculture and bulk supply infrastructure by the Southern Natal JSB. The scheme is bulk supplied by the Ugu Regional Council to 53 standpipes. There are currently no boreholes within the scheme. The community is dependent on the scheme as its main supply of water.

Approximately 700 members have joined the scheme. A total of 256 of these members have private connections to their homesteads. The membership fee for the scheme is R150 with an additional R500 paid for a private connection which consists of a meter box off the main line. No pirate connections have been detected.

Cost of water:

Standpipes: 25c/30 ℓ. Water bailiff commission: 5c/coupon

Private connections: R250 fee and no monthly charges. R6/kℓ

The average monthly turnover is approximately R12 000. Water sales peak in winter at approximately R13 000 and are slightly lower during summer at R9 000. The Mathulini Water Service Provider currently has a positive bank balance of R50 000.

There is a single administration office where coupons are sold. Staff comprise and administration clerk and maintenance officer. Monthly wages earned are R1000 for clerk and R600 for the maintenance officer.

3.2.4 Murchison/Boboyi

The Murchison/Boboyi scheme lies inland from Port Shepstone along the Harding Road. The scheme was commissioned in May 1994. The capital costs were jointly funded by KZN Department of Works and Southern Natal JSB. The scheme is bulk supplied by the Ugu Regional Council to 150 standpipes. There are 12 boreholes within the scheme design area.

Nearly 1500 members have joined the scheme and 377 members have private connections. The membership fee is R10 for coupons and R800 for private connections. No pirate connections have been reported to date.

Cost of water:

Standpipes: 20c/30 ℓ. Water bailiff commission: 3c/coupon

Private connections: R800 fee and no monthly charges. R6/kℓ

The average monthly turnover is estimated at R18 000. No bank balance was given by the clerk.

There are two administrative offices that sell coupons due to the size of the scheme. Both offices employ a clerk and a maintenance officer. The clerks

earn R900 and the maintenance officers R500. The project also employs an manager who earns R 1000 per month

### 3.2.5 Gamalakhe

The Gamalakhe Water Service Provider, located inland of Margate was commissioned in July 1996. The scheme was funded jointly by the KZN Department of Works and Southern Natal JSB. The scheme is bulk supplied by Ugu Regional Council and consists of 35 standpipes. There are no boreholes within the scheme.

To date, 373 members have joined of whom 77 have private connections. The membership fee is R30. Private connections are R650 and there is no monthly service fee. Only one pirate connection has been detected.

Cost of water:

Standpipes: 25c/30 ℓ Water bailiff commission: 3c/coupon

Private connections: R650 fee and no monthly charges. R6/kℓ

The average monthly turnover is approximately R5 000. Water sales peak in winter at approximately R6 500 and are lower during summer at R2 500. The Gamalakhe Water Service Provider currently has a positive bank balance of R16 500. Water sales are low on this project as there are still a number of free standpipes in the neighbouring informal settlement on Gamalakhe township land.

There is a single administration office where coupons are sold. Staff comprises an administration clerk and a maintenance officer. Monthly wages are R900 for the clerk and R600 for the maintenance officer.

### 3.2.6 KwaNyuswa

The KwaNyuswa scheme is a stand-alone scheme situated between Port Shepstone and Harding. The scheme was commissioned in September 1998. The scheme has been funded by the Department of Water Affairs and implemented by the Ugu Regional Council. The scheme comprises 38

standpipes. In addition there are six handpump boreholes providing free water to the community.

There are 296 members and seven members have opted for private connections. Members are charged R35 as a joining fee for the coupon scheme while households with private connections are charged R650 – of which R100 is held as a deposit. Members who opt for private connections are also required to pay a monthly service fee of R10.

Cost of water:

Standpipes: 20c/30 ℓ. Water bailiff commission: 3c/coupon

Private connections: R650 fee and R10 monthly charges. R6/kℓ

The average monthly turnover is approximately R2 800. Water purchases follow a seasonal trend with sales peaking in winter – R5 200 per month and dropping in summer to R970 per month. The scheme currently has a surplus of R9 000. A single pirate connection has been detected. The individual concerned was compelled to pay the membership fee and join the scheme.

There is a single administration office where coupons are sold. Staff comprise an administration clerk and maintenance officer. Monthly wages are R800 for the clerk and R500 for the maintenance officer.

### 3.2.7 KwaMbotho

The KwaMbotho scheme is a stand-alone scheme situated near Harding. The scheme was recently commissioned in September 1998. The project was funded by the Department of Water Affairs and implemented by the Ugu Regional Council. The scheme comprises 64 standpipes. There are no handpump boreholes.

There are 555 members of whom six have opted for private connections. Members are charged R35 as a joining fee for the coupon scheme while households with private connections are charged R650 – of which R100 is held as a deposit. Members who opt for private connections are also required to pay a monthly service fee of R10.

Cost of water:

Standpipes: 20c/30 ℓ. Water bailiff commission: 3c/coupon

Private connections: R650 fee and R10 monthly charges. R6/kℓ

The average monthly water sales are approximately R5 500. Water purchases follow a seasonal trend with sales peaking in winter – R9 500 per month and dropping to R2 100 per month in summer. The KwaMbotho Service Provider currently has a positive bank balance of R27 000. No pirate connections have been detected.

There is a single administration office where coupons are sold. Staff comprise and administration clerk and a maintenance officer. Monthly wages are R800 for the clerk and R400 for the maintenance officer.

Table 3.1 Summary of Schemes

| Scheme | Year | Standpipes | Boreholes | Members | Private Connect | Member fees | Water price: Coupon c/30 ℓ | Water price: Pvt R/kℓ | Average monthly turnover | Bank Balance |
|---|---|---|---|---|---|---|---|---|---|---|
| Amanhlongwa | 1995* | 28 | 28 | 947 | 180 | R200 | 25c | R5 | R13500 | R12000 |
| Mathulini | 1993* | 40 | 0 | 700 | 125 | R150 | 25c | R6 | R12000 | R50000 |
| Murchison | 1994* | 100 | 12 | 1500 | 300 | R150 | 20c | R6 | R18000 | - |
| Gamalakhe | 1996 | 35 | 0 | 373 | 77 | R30 | 25c | R6 | R5000 | R16500 |
| KwaNyuswa | 1998+ | 38 | 6 | 296 | 7 | R35 | 20c | R10 | R2800 | R3000 |
| KwaMbotho | 1998+ | 64 | 0 | 555 | 6 | R35 | 20c | R4 | R5500 | R10000 |

Notes: * denotes schemes that were implemented pre-94
+ denotes stand-alone schemes

Water prices are consistent for schemes supplied with bulk water, while KwaMbotho and KwaNyuswa are stand-alone schemes. The schemes are well supported with monthly average monthly turnovers varying between R18 000 and R2 800. The older schemes seem to have higher turnovers and memberships despite high membership fees – possibly due to the age of the schemes. Rural communities are willing and able to pay for potable water. Commissions paid to water bailiffs are consistent – 3c per coupon. Mathulini is the only scheme that pays 5c per coupon.

# CHAPTER 4

**SURVEY RESULTS** Interviews were conducted with committee members, administrative clerks, maintenance officers, water bailiffs and consumers. The results will be reported individually for each set of interviews. Results are presented for each project and as a sample aggregate.

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## 4.1 Water Committees

Water committees meet monthly to discuss management issues. The committee works according to a constitution that is drawn up during the facilitation and training period of the scheme. The committees are re-elected every three years – except at Gamalakhe where it is re-elected annually. The Chairperson at Gamalakhe is the only member still performing his function. According to the chairperson, the committee's constitution has not been formerly adopted.

Respondents, mainly chairpersons, claim that decisions taken at committee meetings are implemented. However, according to interviews conducted with administrative staff - Table 3 - very little is done to ensure that water bailiffs pay for water losses. The constitutions of the water service providers do allow them to take legal action against transgressors, but in some cases they do not seem to have the political will to do so.

Table 4.1 Response from Water Committees

| | Amahlongwa | Mathulini | Murchison | Gamalakhe | KwaNyuswa | KwaMbotho |
|---|---|---|---|---|---|---|
| Respondents | 1 | 2 | 2 | 1 | 2 | 2 |
| Constitution | YES | YES | YES | NO | YES | YES |
| How often does the committee meet? | MONTHLY | MONTHLY | MONTHLY | FORTNIGHTLY | MONTHLY | MONTHLY |
| How often is the committee re-elected? | 3 YEARS | 2 YEARS | 3 YEARS | ANNUALY | 3 YEARS | 3 YEARS |
| Are decisions implemented? | YES | YES | YES | YES | YES | YES |
| Are decisions reported to community? | YES | YES | YES | YES | YES | YES |
| How are decisions reported? Notices Meetings | YES | YES | YES | YES | YES | YES |
| Can the community object to decisions? | YES | YES | NO | YES | YES | YES |

Decisions taken by the committee are reported to the community via mass meetings. The Committee at Murchison stated that the community could not object to the decisions taken. The other committees felt that they would listen to the community response. No decisions were advertised via community notices at prominent points such as shops and clinics.

General discussions with respondents revealed that their major concerns were:

- Coupons being easily lost
- Meter readers were not reconciling coupons. When fined, bailiffs are refusing to pay fines and demanding their commission.

### 4.2 Administration Clerks

It appears as if all the administrative records are well-maintained on the schemes – according to responses from administration clerks. The schemes have adequate coupon control measures, with the majority implementing all three coupon control measures. Murchison is the only scheme that has no coupon control measures.

Standpipe meter readings are taken monthly. Coupon reconciliation is done with the water bailiffs at this time. It appears that fining of water sellers provides no incentive for them to manage their standpipes properly. Even though commissions are withheld, water sellers do not pay the difference when water losses exceed the commission due. The older schemes have stopped trying to fine water sellers. The WSP currently absorbs this cost. WSPs are reluctant to replace bailiffs because they claim it is not easy to find new bailiffs, and often the position of the stand pipe precludes this. According to reports bailiffs are selling water illegally – either by reselling coupons or through cash transactions. It can be assumed that the illegal water sales in some cases are exceeding their monthly commissions.

The Regional Council visits schemes once a month. The Murchison scheme claims they receive no visits from the Regional Council, while KwaNyuswa is visited weekly. Members of the community are able to request the latest financial statements and constitution of the WSP but membership lists are not made available. This could be done to prevent illegal buying of coupons.

Table 4.2 Administration Clerk Responses

| | Amahlongwa | Mathulini | Murchison | Gamalakhe | KwaNyuswa | KwaMbotho |
|---|---|---|---|---|---|---|
| Admin records up to date | YES | YES | YES | YES | YES | |
| All payments up to date | NO | NO | NO | NO | YES | YES |
| Coupon Control System: | YES | YES | NO | YES | YES | YES |
| Reconciliation | YES | YES | NO | YES | YES | YES |
| Stock Control | YES | YES | NO | YES | YES | YES |
| Audit by RC | | | | | | |
| Meter readings taken: | | | | | | |
| Weekly | NO | NO | NO | NO | NO | NO |
| Fortnightly | NO | NO | NO | NO | NO | NO |
| Monthly | YES | YES | YES | YES | YES | YES |
| Bailiffs fined for water losses | NO | NO | NO | NO | YES | YES |
| Bailiffs paying fines | NO | NO | NO | NO | NO | NO |
| Visit by Reg Council: | | | | | | |
| Weekly | | | | | YES | |
| Monthly | YES | YES | | YES | | YES |
| Never | | | YES | | | |
| Reg Council attend committee meetings | YES | YES | NO | YES | NO | NO |
| Following available to public: | | | | | | |
| Financial Statements | YES | YES | YES | YES | NO | YES |
| Constitution | YES | YES | YES | YES | NO | YES |
| Members list | NO | NO | NO | NO | NO | NO |
| Non-members buying water | YES | YES | YES | YES | YES | YES |

All respondents claimed that the Regional Council visits them – except Murchison. Interviews with Regional Council officials, however, revealed that the only schemes currently receiving support are KwaNyuswa and KwaMbotho – the two most recently established schemes. The remainder of the schemes are currently being reviewed by the Regional Council due to their large debts. Despite initial impressions that the administration of schemes is running smoothly, there appears to be mismanagement as debts on the older five schemes exceeds R1.2 million.

All the schemes are aware of community members buying coupons although they have not paid their initial joining fee. This is an extremely difficult aspect to control. In many instances, children are sent to purchase coupons, making it difficult to identify which family they are from, despite them producing a receipt. Members may also buy coupons on behalf of non-members. Where culprits are clearly identified, they are compelled to join the scheme.

General comments received from clerks were as follows:

- Coupons are cheap and members do not have to spend large amounts of money at one time to buy water.
- Water bailiffs are not being held responsible for water losses
- Conflicts between water bailiffs and consumers delay opening times and increases queuing times. Conflicts may arise over opening times and filling containers to the correct level.
- Coupon numbers are insufficient at times. If large numbers have been bought, the office runs out of coupons.

### 4.3 Maintenance Officers

The aim of interviewing maintenance officers was to establish whether any technical aspects could be improved. Poor maintenance leads to disruption in the supply of water and customer dissatisfaction.

Table 4.3 Maintenance Officers' Responses

| | Amahlongwa | Mathulini | Murchison | Gamalakhe | KwaNyuswa | KwaMbotho |
|---|---|---|---|---|---|---|
| Operation and maintenance manual | NO | NO | YES | NO | NO | NO |
| Operation and maintenance training | YES | YES | YES | YES | YES | YES |
| Regular maintenance procedures: Daily<br>Weekly<br>Monthly<br>When required | YES | <br><br>YES | YES | YES | YES | YES |
| Provided with sufficient equipment | YES | NO | YES | YES | YES | YES |

Maintenance officers are performing their tasks. The majority have the skills and equipment which is necessary to enable them to complete their tasks. Daily routine checks are done on the scheme to check for leaks. This is essential in trying to minimise water losses.

Maintenance officers offered the following general comments:

- Coupons are easy to lose
- Bailiffs are selling coupons
- Bailiffs do not open for consumers whom they dislike
- Bailiffs let their children operate standpipes
- The main mode of transport is motorbikes (on the two new schemes) or no transport at all. Sometimes it is difficult to transport spare parts.

### 4.4 Water Bailiffs

Water bailiffs are the key to ensuring that a coupon-attended water supply scheme runs smoothly. Responsible bailiffs will ensure that the consumer receives an

efficient service and water losses are minimised. If bailiffs are not committed to their work, water sales and losses could jeopardise the scheme.

Table 4.4 Perceptions of Water Bailiffs

| | Amahlongwa | Mathulini | Murchison | Gamalakhe | KwaNyuswa | KwaMbotho |
|---|---|---|---|---|---|---|
| Respondents | 10 | 18 | 18 | 15 | 19 | 18 |
| No. of times/day open | 2 | 2 | 2 | 2 | 2 | 2 |
| Open on requests (%) | 80 | 95 | 88 | 87 | 89 | 77 |
| Open on weekends (%) | 90 | 95 | 100 | 100 | 89 | 100 |
| Determine own opening times (%) | 70 | 55 | 88 | 60 | 89 | 33 |
| Community satisfied with opening times (%) | 70 | 77 | 100 | 93 | 100 | 100 |
| Commission important form of income (%) | 30 | 28 | 22 | 20 | 21 | 5 |
| Prefer automated standpipes (%) | 80 | 94 | 67 | 87 | 68 | 6 |

The majority of bailiffs open twice a day for four hours. Opening times on all the schemes are 7:00 to 9:00 and 15:00 to 17:00. Most of the bailiffs claim they can set their own opening times, but it appears that standard times are adhered to. The majority of bailiffs claimed they opened on special requests and weekends. Bailiffs are of the opinion that the community is satisfied with their opening times. Commission earned is small and not a significant form of family income. Commissions declared varied between zero and R35. Nevertheless job opportunities are created and income is distributed in the community.

Bailiffs were asked the question if they would prefer a change to automated standpipes. This was done to gauge their level of commitment to their function. The

majority in three schemes claimed they would prefer automated standpipes. However, a majority (94%) at KwaMbotho would prefer to retain their duties despite only a small number (5%) claiming that sales commissions do form an important source of income.

The following comments were made by bailiffs:

- Coupons are cheap and people have water closer to their houses.
- Bailiffs do not handle cash
- Coupon scheme provides job opportunities. Small income is appreciated rather than having nothing.
- When bailiffs are ill or away they need to find replacements, which proves to be problematic. Bailiffs, therefore, are not always responsible for water losses.
- Coupon sales points are located some distance from certain areas. Office opening times should be increased to allow members to buy coupons
- Commissions are low and are zero some months because of fines.
- People arrive demanding water at all hours
- Consumers argue over quantity of water discharged.
- Commissions are not always paid on time.

### 4.5 Consumers

The questionnaire attempted to gauge the level of consumer satisfaction with services offered by the water supply schemes. The average monthly expenditure on water per family is consistent at an average of R25 per month. At a coupon price of 20c/30 $\ell$ this is a consumption of almost 4 k$\ell$. If the estimated expenditure is multiplied by the number of members in a scheme, then monthly water sales have been under-reported by the administrative clerks or large amounts of water are sold illegally. It may also be that not all members buy water every month. More than 40 % of all respondents have declared that they gather water from natural sources.

The majority of consumers interviewed felt that the water was reasonably priced. The percentage was slightly lower at Mathulini where the price is 25c/coupon. This is supported by the general finding that few households gather water from natural resources because they are of the opinion that the potable water is too expensive. In terms of the reliability and quality of the water, the majority of respondents were satisfied. This indicates that maintenance officers are performing their function

ensuring that any breakages are promptly repaired. There was a much lower response to the quality of water a KwaNyuswa (56%). This may because it is a stand-alone scheme and quality may vary due to inexperienced management of the purification plant.

Respondents felt that standpipe opening times were reasonable but stated that it could be improved by opening the standpipes more often – three times a day rather than twice a day for example. This is ratified by a small number of households gathering water from natural resources because the standpipes aren't always open.

There does not appear to be a strong relationship between the community and the water committee. In most projects the majority of the community knew who the water committee was. However, the majority of respondents did not receive any feedback on water committee meetings. It may also signify that the majority of respondents do not attend community meetings when they are called.

The community had the following general comments:

- Price is reasonable for clean water close to homesteads.
- Coupons are easily lost.
- The coupon office is far away.
- Office is closed during weekends.
- Containers are not filled to the satisfaction of the customer.
- Bailiffs do not give good service because their commissions are too low.
- Bailiffs do not open sometimes.
- If there is a long queue, the bailiff might close before serving everyone.

Table 4.5 Consumer Responses

| | Amahlongwa | Mathulini | Murchison | Gamalakhe | KwaNyuswa | KwaMbotho |
|---|---|---|---|---|---|---|
| Respondents | 15 | 19 | 19 | 18 | 23 | 20 |
| Monthly expenditure on water (R) | 25 | 24 | 27 | 25 | 27 | 23 |
| Water is reasonably priced (%) | 67 | 58 | 68 | 72 | 65 | 65 |
| Water supply reliable (%) | 80 | 79 | 84 | 78 | 82 | 100 |
| Water quality good (%) | 93 | 100 | 63 | 94 | 56 | 85 |
| Standpipe opening times reasonable (%) | 60 | 68 | 68 | 61 | 78 | 60 |
| Standpipes open more often (%) | 93 | 95 | 100 | 94 | 100 | 90 |
| Water committee known (%) | 53 | 47 | 68 | 44 | 61 | 80 |
| Water committee decisions reported to community (%) | 40 | 68 | 26 | 28 | 35 | 55 |
| % gathering water from natural sources | 40 | 47 | 53 | 33 | 39 | 95 |
| Reasons for gathering water from natural sources (%): Free | 20 | 37 | 32 | 17 | 22 | 65 |
| Water too expensive | 7 | | 5 | 6 | 4 | 25 |
| Standpipes aren't always open | 13 | 10 | 16 | 11 | 13 | 5 |

# CHAPTER 5

# DISCUSSIONS ON FINDINGS

As stated at the beginning of the paper, the aim of the research is to identify areas where the efficiency of attended coupon-operated water schemes can be improved. This section attempts to capture the main problems associated with the sampled water schemes and proposes possible solutions.

## 5.1 Community Involvement

The research found a high level of competence and understanding amongst staff and committee members. During all phases of the project these groups have been kept well informed and are aware of their duties and obligations. Water sellers also understand their duties and responsibilities and, as a result of consistent contact with WSP officials, appear to be well-informed of developments surrounding the water project. Customers, however, do not appear to be as well-informed of WSP activities and developments and appear to be relatively distant from WSP policy and management issues.

Community members on the projects appear to have been well-informed on the objectives of the water project during the planning and implementation phases and there is in most communities a feeling of ownership. This is evident from the fact that levels of vandalism on the projects are low and leaks and pipe bursts are reported to the WSP. It could be argued, however, that in the post commissioning period, information dissemination to the community has dropped off considerably.

An important institution to ensure accountability and transparency is the annual general meeting. It is apparent that these meetings are not held when they should be and, for a number of reasons, these also do not appear to be well-attended. Capacity-building agencies tend to take information dissemination between elected committees and the community for granted. They assume that committee members report to their ‘constituencies on a regular basis and that community members give regular feedback on their requirements as well as service levels. The research shows that this is not taking place and communities are not as informed of water project developments as they should be. More attention should be given to this issue in the post implementation period.

For any community-managed project, it is essential that AGM's are held to inform community members of progress, reveal the financial statements as well as give members an opportunity to elect new members to the committee. We would recommend that community mass meetings be held bi-annually.

There appears to be a lack of on-going institutional capacity-building in the post implementation period. The committees require on-going support. Due to funding problems the majority of the schemes received limited capacity-building and no on-going support. Consequently, the community institutions managing the schemes have had difficulty in maintaining discipline particularly over water sellers. The Department of Water Affairs (1977) acknowledges that the implementation and support to a WSP can take 10 years. An observation from these seven projects is that there is considerable turnover and natural attrition of staff and committee members. This has resulted in a lack of continuity and new members coming in with out being properly inducted and trained. Local political issues have had a substantial influence in destabilising the Amandawe WSP. Community leaders sometimes do not have the capability of resolving disputes timeously and this can severely affect the management and viability of projects. External institutional and social development support is necessary on a continuous basis to ensure that these issues are adequately dealt with.

In future projects, the institutional support required does not imply that the WSA must become more involved in the running of water supply schemes. Rather, the Department of Water Affairs and Regional Councils should focus on establishing democratic, accountable and transparent community institutions that have the capacity to manage their own water supply schemes. Government resources should be focused on providing institutional support to WSPs – over a longer time period - and less emphasis should be placed on day-to-day management of schemes. The current provision of a twelve-month training period is inadequate and should be reviewed.

### 5.2 Affordability

Although there is still considerable use of traditional water sources the response from the community was that the water services offered by the projects were of an acceptable level and affordable. Although existing boreholes and hand pumps do detract from a project's viability, none of these existing sources have been removed

from supply areas and communities still have access to these where they are available. Large seasonal fluctuations in water demand on projects show that customers still make substantial use of natural water sources when these are available in summer months. On most new projects potable water is probably largely used for drinking and cooking purposes and other water is used for washing.

Water services, generally speaking, are expensive to provide and in poor rural communities affordability is a large consideration and every attempt must be made to keep water costs as low as possible, whilst still ensuring long - term project viability. In order for cost recovery to take place, an administrative system needs to be put into place to manage and control cash, coupons and water. This administrative system in itself adds substantial cost to providing water services, but this element is essential. The attended coupon system itself has an additional recurrent cost associated with it being the wages or commission of the water sellers. If water sellers were to be paid wages, these costs would be fixed irrespective of sales. Sales vary seasonally and one would anticipate a reduction in sales through standpipes over time as people upgrade their service and apply for house connections. For this reason commissions are considered a more appropriate form of water seller remuneration.

The appropriate value of the commission, however, is a highly debated issue in the industry. On these seven projects the commission is set at 3c per drum, representing 12-16% of the retail cost of water. When these projects were started in 1993 the commission represented 20% of the water price. The price of water has been increased over time and on most projects (excluding Mathulini) the commission has not followed suit, diluting the water sellers' earnings. Paying water sellers a small sum to provide a service in terms of dispensing water effectively pulls a number of additional people into the ambit of the WSP and increases the number of eyes and ears representing the interests of the water project. This increases substantially the number of community members with a stake in the project. The human element that water sellers bring the management of water systems should not be under-estimated.

Only a few water sellers felt that their earnings contributed significantly to family income. Their seems to be an understanding that they are providing a critical community service and appear to be content with doing this. We recommend that water sellers be paid on a commission basis up to 20% of the retail cost of water and that this proportion be maintained over time. All aspects of control of water and

coupons and monthly reconciliation are, however, the most critical aspect that determines the financial success of the system.

### 5.3 Gender Representation

Water projects serve the rural household and, being a domestic service, largely benefit women within a community. The fetching and use of water is traditionally a function performed by women. The planning and management of water schemes should, therefore, allow for maximum input and representation from women within the community. In most cases, this is, however, not the case and only recently is the issue of gender representation receiving more attention. In the water projects surveyed, representation of women in the WSP committee varied between 25-45%. DWAF recommendations new committees being set up and stipulates a minimum of 30% representation of women. On none of the seven projects, however, has a woman been elected to the position of chairperson; thus it would be fair to say that men still wield most of the power and authority in terms of general water project and related affairs.

In terms of staffing, all the projects have women in the position of Office Manager/Clerk and men in the position of maintenance officer/plumber. This gender mix of staff would be considered ideal and no changes would be recommended.

More could be done, however, in the planning of new schemes to ensure the input of local women in the planning phase of a project. One way of achieving this would be to convene participatory planning workshops with community members to ensure their active involvement in the early stages. These workshops could be aimed at womens groups and participatory rural appraisal techniques could be used in order to ensure effective community input. We feel that the DWAF stipulation of 30% representation of women on water committees should be adhered to or even increased. Women should be encouraged to play a larger role in terms of leadership and executive roles on water committees.

### 5.4 Technical Issues

Some projects have been established in rural communities in KwaZulu-Natal that allow for private connections only and no public standpipes are provided. From and administrative view point, this would be considered ideal as private connections are

far easier to control and administer. This, however, can only effectively if there is a substantial subsidy on their costs of the private connection. Costs of house connections are R 800 - R 1 200 per homestead. This would not be affordable for most poorer households. Most funding agencies and Local Authorities would not be in a position to provide the level of subsidies necessary to fit private connections to all households. This level of service is considered to be beyond the responsibility of the sate as stipulated in the Water Services Act. We are aware of projects funded by Umgeni Water where high levels of subsidy have resulted in most households being fitted with private connections and as a result no public standpipes have been installed.

It, therefore, needs to be assumed that private connections are going to be a normal component of most water projects, albeit for and interim period until all households can afford private connections. For the purposes of this study the only technical issue that requires discussion, is what is the most appropriate technical solution for the supply of water through public standpipes. The three available alternatives are all prepaid sale systems and include:

- The manual system of the sale of water by an attendant in exchange for coupons.
- The electronic system where a magnetic tag is used to activate an electronic tap.
- The mechanical system where a coin or coupon is used to activate a mechanical tap than then dispenses a pre-set amount of water.

The advantages and disadvantages of the coupon system and the two automatic dispensing units (ADUs) have already been discussed in Section 1.6. Presently none of the systems shows a clear advantage over the others. We would venture to say that given the fact that the two types of ADU's are new and relatively untested in field conditions, that the coupon-attended system still has a major role to play in water projects in the foreseeable future. Lack of controls and continuous support on some coupon-attended projects has resulted in this system losing popularity amongst some design engineers. This has resulted in some of them favouring the use of ADU's and these are being recommended in a number of new projects. Coupon systems also lack active promotion by commercial interests, as is the case with ADU's.

Coupon-attended systems still have some clear advantages in that they are cheap to install, contain a strong human element, ensure community participation, provide

cash income for a number of community members and are easily adapted. This system's major detraction is that, in order to be effective, it has to be accompanied by a high level of control and administrative discipline. This is, however, necessary requirement for all water projects.

### 5.5 General Recommendations

By and large, there appears to be a good understanding amongst the clerks of the administrative duties and the coupon and cash controls appear to be well-maintained. In some of the five older schemes, the clerks and the committees have not been able to maintain discipline of some water bailiffs. The rules that water bailiffs should be charged for all their unaccountable water losses and replaced by a new candidate if losses persist for more than two consecutive months, have not yet been enforced. A factor aggravating this situation may be that some standpipes have been placed in people's yards to reduce vandalism. This makes it difficult to replace water bailiffs who are abusing the system. The attended-coupon system is reliant on these controls taking place and being strongly enforced. External support, monitoring and auditing would have resulted in this critical control being carried out.

A concern has been accessibility to coupons. Certain households are located some distance from the administration office. They are not always able to purchase, or may be reluctant to walk the distance to purchase coupons. These households may end up paying the bailiff for 'illegal' water at a higher tariff. Alternative points of sale through agents throughout the supply area need to be established.

Community members have complained that the office is closed on weekends. The administration office is only open during the week during normal office hours. A possible solution is to open the office on a Saturday morning. The administration clerks may, however, demand higher wages, increasing the operating costs. If coupons are sold through local shops this problem may be partly alleviated.

Maintenance officers appear to be fulfilling their work commitments satisfactorily. Consumers have commented that the water supply is reliable and that the quality of water is good. In some cases, maintenance officers do not have operation and maintenance manuals. It is recommended that if manuals exist they be distributed to all schemes. If not, manuals should be developed. This will assist in easier training when maintenance officers are replaced.

On the older schemes we detected a number of public standpipes with dysfunctional water metres. It appears that maintenance officers do not have readily available replacement stocks. The proper functioning of water meters is essential for any cost recovery system to be effective. This issue needs to be given more attention.

## CONCLUSIONS AND RECOMMENDATIONS

Public standpipe facilities are going to be a feature or rural and peri-urban communities for many years to come. The take up of private connections at an unsubsisidised cost of R 800 – R 1 200 will be reasonably slow for peri-urban schemes and very slow for poorer rural areas. On the five older peri-urban schemes private connection up take over 4-6 years as a percentage of paid-up member households has been as follows;

| | |
|---|---|
| Amahlongwa | 19% |
| Amandawe | 54% |
| Mathulini | 36% |
| Murchison | 25% |
| Gamalakhe | 20% |

We estimate that less than 50% of *de facto* households are paid-up members of each of these projects. If this is the case, private connection adoption over a five-year period has on average only been 15%. On the more rural projects, private connection uptake as a percentage of membership in the 17 months since commissioning has been;

| | |
|---|---|
| KwaNyuswa | 2,3% |
| KwaMbotho | 1% |

These figures show that the public standpipe will continue to play an important role in providing water to poorer rural families. For this reason, an effective system of cost recovery at the public standpipe needs to be found. We are of the opinion that a flat rate system is not only inequitable, but there is no way of preventing abuse and free rider problem. This leaves the attended coupon system and ADU's as the only alternatives.

Critics of the coupon system feel that the cost of the water bailiff commission adds unnecessary costs to the supply of water and that ADU's running costs are effectively lower. Other comments from practitioners are that water sales commissions, which represent, on average, 15% of the retail water price or R20 – R 60 per month per bailiff are too low to ensure the desired level of commitment from the attendant. Other coupon schemes pay fixed salaries to bailiffs, but this was specifically avoided on these projects so that bailiff costs were a variable rather than a fixed cost. The main reason for this is there are substantial seasonal fluctuations in demand, a

variation in demand between taps and it was anticipated that demand would reduce over time with the adoption of private connections. Our survey found that commissions were not considered by attendant respondents to be an important source of cash income. Clearly, the issue of bailiff remuneration is critical to the success of coupon schemes and is an issue that requires additional attention and consideration. Our recommendation is that water sellers commission should be set at 20% of retail water price and that this rate should be maintained as water prices increase.

The important human element should not be forgotten with coupon schemes. The attendants potentially give the WSP a spread of loyal staff throughout the supply area. These additional hands, ears and mouths are very effective in terms of reducing vandalism, reporting leaks and encouraging discipline and participation by customers.

For a coupon system to be effective, it is essential that all the cash, water and coupon controls are put in place and maintained over time a period of time. It is critical that controls at the standpipe are maintained and that attendants are held responsible for losses. In order to achieve this, the WSP needs constant institutional and administrative support. The need for external monitoring cannot be over-emphasised. Had this been in position for the five older schemes, the bulk water debts could have been controlled.

The level of clerical staff hired by the WSP's cannot be expected to produce income statements and balance sheets for the service provider. These are essential to measuring the financial position of the institution and need to be undertaken by an external specialist. Another important element is that a financial audit is necessary as part of the transparency requirements of a stable institution.

Attendant coupon systems have an important role to play in community water supply in the future and that local government's role should be the provision of training, support, institutional capacity - building and auditing. There is a potential for greater efficiency if projects are managed by well-constituted CBOs, rather than by local government. If certain services are contracted-out to private agencies, these should report to a CBO structure rather than to local government.

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