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Many communities rely on water supplied by intermediate or independent providers.

Intermediate and Independent Service Providers: Filling the gaps

Private connections, standpipes and domestic reselling from the utility network may have limited applicability in many low-income situations in sub-Saharan Africa. Depending on local legislation, policy and institutional arrangements, some communities and individual households lack access to these options because they: (i) occupy marginal land; (ii) are located a considerable distance from the network; or (iii) occupy settlements formed in unstable or hazardous areas. The utility may be reluctant to get involved in service provision in any or all of these conditions. As noted in Chapter 3, other reasons include: (i) the risks associated with the lack of secure tenure (e.g. eviction or bills left unpaid); and (ii) the lack of safety for utility workers. Consequently, many of these communities rely on water supplied by another provider, be they *intermediate* or *independent*.¹ In some countries the scale of alternative provision is significant. In Mali, for instance, 80% of consumers rely on some type of alternative provider.

Intermediate service providers typically include private providers or community-based organizations delivering water in unserved areas.² Intermediate providers generally obtain water from the network and either: install and manage network extensions or water points in unserved areas; or buy and deliver water direct to customers willing to pay them. Carriers or non-network providers might include water tankers, donkey/horse-carts and handcarts. The common characteristic of these intermediate service providers is that they purchase water in bulk from the utility and retail (distribute) to a group of their own customers.

Independent service providers are distinct from intermediate service providers because they are not connected to the utility network and may even compete with it. They generally derive water from alternative sources such as boreholes and then distribute via a network, through carriers or simply through a single supply point. As they compete with the utility within its service area, many independent providers operate illegally and are unregulated. As distinct from intermediate service providers, they may not have any links with the utility and the utility may see them as a competitor and actively work against them. In some cases, innovative utilities and municipalities do however work with independent providers as they seek to augment the utility's intermittent and irregular water supply.

The following sections 5.1 and 5.2 describe the types of bulk sale (intermediate service) arrangements that have developed throughout the region – efforts that take distribution forward where the network stops. First we explore those providers developing local networks linked into the utility system; and then in relation to those transporting water from a utility water point to communities. Section 5.3 describes those independent network providers that source their own water and the utility plays no role in the production and distribution cycle.

¹ The definitions for 'intermediate' and 'independent providers' are developed further in the text. In the sector generally there is no definitive usage of these terms, but we have tried to use them respectively to describe the service provided by those working as an extension of the utility and those working separately and in competition to it. The term 'alternative' provider refers to a service that is alternative to the main one provided by the utility. The term 'small-scale providers' is a broader term that includes intermediate and independent providers and domestic resellers.

² In this usage, 'intermediate' should not be confused with 'intermediate' technology – which implies a lower level of service. This may be the case in many instances, but the term is used here specifically for the service providers that 'mediate' between the utility and the end-user.

5.1 Work with local sub-network providers to improve service

The supply of water in informal settlements through local networks (not owned or managed by the utility but by a private or civil society actor(s)) is increasingly recognized as an important means of getting water to low-income households. The utility typically installs a meter at the periphery of the settlement (on the nearest public land) and the service provider – an intermediate water retailer buying large quantities of water – takes responsibility for water distributed from the meter or the connection point.³ Depending on customer demand, the connection may feed a small distribution network or simply supply an individual water point. As compared to standpipes, which are typically installed by the utility with internal revenue or grant financing, the intermediate provider typically pays for all costs beyond the connection point.

Network extensions into informal settlements may also be financed by donors, NGOs, or community members. In some cases, for instance in Blantyre, Malawi, the network extension is funded by the municipality with donor and NGO support. In those cases that are financed and managed by a private individual or group, the capital costs are recovered through the sale of water. Although most utilities that provide a special bulk tariff also suggest a retail price to operators/managers, it is difficult to control prices charged particularly when the cost of the investment is borne by a private investor.

The intermediate provider typically pays for all costs beyond the connection point.

Figure ix

Infrastructure and Investment Costs in Kibera, Nairobi

Village	Pipe Lengths (range meters)	Total Storage (gallons)	Investment Cost (range in US\$*)
Gatwekera	3 - 1,680	13,800	60 - 1,812
Kianda	23 - 338	2,000	6 - 83
Kisumu Dogo	19 - 375	6,750	26 - 266
Lindi	8 - 750	3,000	1 - 1,239
Laini Saba	284 - 1,166	9,600	152 - 2,971
Makina	1 - 360	11,800	24 - 472
Mashimoni	5 - 294	4,200	2 - 198
Silanga	704 - 1,061	8,000	165 - 1,450
Soweto	101 - 523	4,500	128 - 883

Note:

Exchange Rate
US\$1 = Ksh 62 (1997)

Source:

Kariuki and Mbuvi, 1997

Privately-funded network extensions may well be in the interest of the utility because it allows services to be provided to a large number of customers that would not otherwise be reached. Intermediate providers are often major customers providing the utility with economies of scale in term of customer management. The potential economies of scale fully justify a specific support programme for intermediate

³ In most cases the meter is located at the connection point, but it may be located at the point of sale.

Intermediate providers are often more familiar with the needs of the low-income customers they serve.



providers that are either private or community-based. In Port-au-Prince, the utility has set up a specialized unit to monitor and support the operations of 'water committees' established to install and manage networks in unplanned areas.

Network extensions and water points developed by intermediate providers may be managed in a variety of ways. The following discussion considers the range of management arrangements from the voluntary arrangements of community organizations to the fully commercial enterprises of private operators. Whether they are community organisations / associations, water committees or private providers, intermediate providers are often more familiar with the needs of the low-income customers they serve. They are therefore often better placed to meet their demands and recover costs.

Community network extensions – voluntary operation and management

Community-based organizations often play a role in establishing network extensions. In many cases these community systems are initiated by a few individuals within the community who mobilize others to contribute to the capital costs of installing a network. In other cases, they are developed and implemented as part of a project funded by a donor or NGO (e.g. Wateraid, Dar es Salaam, Tanzania). Where NGOs or donors are involved, support may have included the development of community management arrangements and frequently builds on the models first established in rural areas. Box 14 provides a discussion on the problems of sustainability associated with this approach to managing supply in urban areas.

As arrangements for bulk water sale to community organizations are often carried out without adequate attention to the legal status of the community organization purchasing the water from the utility, issues such as ownership, depreciation, responsibility for routine maintenance, responsibility for renewal and rehabilitation of infrastructure are key determinants of outcomes. In Ethiopia for instance, there is no provision in the existing legal framework for the formation of organizations such as water committees and this lack of legal status often exacerbates or creates a lack of accountability. Often, routine maintenance is handled by the community using revenue generated from the system. However In some cases, the utility provides staff or technical assistance for maintenance either on a contractual or voluntary basis.

Although in a few cases community network extensions are developed with public funds (almost exclusively provided by donors and NGOs), they may also be financed entirely by the community (as in Kenya) and in some countries they are jointly financed by the community and utility (as in Ghana). Typically, long-term costs of community network extensions are not always well understood. In many cases, although the utility may assume legal ownership of the network, it may not transfer these assets into their accounting books (depreciation, etc.)

Community network extensions – commercial operation and management

In some instances, community-based self help groups are formed with the specific purpose of establishing and managing water points or small networks. In Kibera, Nairobi, for instance, a number of self-help groups have been created to address local water supply needs and now act as small-scale providers. Financing is provided by NGOs or generated within the group and the service is open to both the group

members and other residents in the area. The service they provide competes with private operators. Management is carried out on a commercial basis (specific arrangements vary from group to group) and the committee members are paid for their services (i.e. they receive an income from the standpipe operation and/or receive some other form of compensation).

Box 14

Community Management: Rural Models for Urban Areas?

Following the success of rural water committees and other community-based organizations in rural areas, NGOs and donors have tried to introduce rural community water supply management models in urban projects where some form of community management is envisaged. The participation of community members is voluntary, often initiated during a planning and implementation phase. The community may be expected to contribute finance toward the costs of capital investment and time toward the establishment of the scheme. Members are often required to manage the overall operation and volunteer attendants at taps.

While this approach has had some success, it is constrained by the particularities of the urban context. Urban communities are heterogeneous and less unified than rural communities and households. They are generally dependent on cash rather than a subsistence economy. Urban households must therefore spend their time on income earning activities and there is an opportunity cost of their working on unpaid community initiatives. While community participation is frequently successful in short-term inputs (participatory planning and implementation) it is less successful and unlikely to be sustainable as a long-term arrangement. It is likely that mechanisms will need to be established to adapt the management model from a voluntary to a commercial one as soon as the project has been implemented.

The problems of urban CBOs

In Zambia, several community associations acting as service providers on a voluntary basis encountered problems due to the constant turnover of membership. In Tanzania and Nigeria, some communal taps are still managed by community organizations but only offer a limited service, are not open to the general public and are thus accessible to only selected parts of the community. These systems often rely on one or two leaders to undertake the time-consuming work required to maintain the operation. In the cases of Mopti and Ségou in Mali, and Port-au-Prince in Haiti, this type of arrangement has evolved into a commercial arrangement.

Like those community organizations acting as commercial providers, many voluntary groups lack clear ownership and legal standing. They also lack accountability. Evidence suggests that organizations frequently lack skills and/or the ability to identify the auditing/accounting assistance they need. In some instances, the revenue collected from water sales is not passed on to the utility, but is used to cover a range of costs determined by water committees (including for instance payment for non-water related committee expenses). In many cases, due to the lack of a constitution, managers have adapted management practices to suit local or individual requirements; and elsewhere community management is compromised due to the struggle for power between community and political leaders.

Experience and legitimacy

It is therefore essential that organizations that manage services have a track record in implementing other public service activities. They must acquire recognition and legitimacy in the eyes of all stakeholders: the local people, the public authorities and the utility. In Zambia, community networks are now being managed by Resident Development Committees (RDCs). These RDCs have legal status (provided for in the constitution) and, with support from NGOs, have hired staff to manage the systems. In Accra, residents contribute 50% toward the costs of the network extension but the legal and financial foundations are not always in place. Although some communities have managed to recover part of these initial investment costs through joining fees charged to new-comers, others are unable to do so because the original residents have no legal standing.

Management of extensions may be carried out by self help groups that act more like small private firms.

Communities delegate to private operators who often invest their own funds and have an incentive to provide a good service.

In Port-au-Prince, the management of extensions in shantytowns is carried out by 'water committees' that are more like small private firms since just a few of the members take decisions and manage the systems in return for financial bonuses. The residents have some control over the committees in their capacity as customers rather than as members. Similar arrangements exist in Mopti and Ségou in Mali.

Community management arrangements are generally more permanent when a specific organization (such as a self-help group) is formed with the express purpose of buying water from the utility for retail to consumers than when community-wide organizations are responsible for managing the water supply on a voluntary basis. In many self-help community-managed schemes, technical management is entrusted to trained staff or professionals, hired for their abilities, remunerated and answerable to the users. In other situations however, accounting and financial management is left in the hands of voluntary workers and management is often inadequate as they lack technical skills and rarely have an appropriate level of familiarity with proper accounting procedures. This is particularly problematic where the volumes sold are large and the billing is infrequent.

Community network extensions – delegated operation and management

A less common service delivery arrangement occurs when communities responsible for local networks delegate the management and/or operation function to a private entity. As private operators often invest their own funds in the development of the system and expect to use this as a source of income, they generally have a greater incentive to provide a good service.

In cases where the installations are financed by the main service provider, the delegating authority (utility or municipality) remains responsible for renewals thus reducing the operator's responsibilities to a minimum. In such cases, operator selection should be carried out on a competitive basis, assessing commercial acumen. In the Bamako case illustrated in Box 15, responsibility for the piped system owned by the municipality has been delegated to a Water Users' Association. Through a competitive process, the association has leased the network to a private operator to operate and manage the water supply in the locality. To guarantee their performance, the operator had to pay a bond at the outset.

Private network extensions and facilities

Many private individuals also invest in and operate infrastructure and facilities. The location and actual design of private standpipes or kiosks is either carried out as a part of an expansion programme by the utility or the municipality or on the initiative of the applicant. In Nairobi, many water kiosks have been established through local private initiatives (the 'average' investment in these water kiosks is estimated at US\$70,000). In Kano, Nigeria, the municipality has encouraged private investment in the construction of washrooms that also sell water for other uses.

In Côte d'Ivoire and Kenya, these private operators install 'tertiary' networks in the heart of unplanned or informal areas. Network extensions into these settlements typically start from the mains at the periphery of the area and are several hundred meters long. The location of the meter varies. In some cases it is placed at the outskirts of the settlement while in others, it has been placed at the water kiosk. There are more than 650 resellers in Kibera for instance. In many African cities, including Dar es Salaam, Nairobi and Abidjan, some extensions are more than one kilometer long.

Box 15

Water Users' Association responsibilities

- choose the lessee
- check adherence to specifications (water price)
- manage renewals and extensions of installations
- represent the interests of the users

Lessee tasks and responsibilities

- pay guarantee bond of 500,000 CFA
- recruit 3 standpipe attendants and station guard
- sell drinking water (quality set by regulations) to all daily, year long at 250 CFA per m³
- pay electricity, chlorination, wages of attendants, guards and other operational costs.
- pay a fee of 80 CFA per m³ produced.

A Community Delegates the Water Service: A Lesson from Bamako, Mali

The district of Yirimadio is situated in the city of Bamako in an area that is not served by the Energie du Mali (EDM) public water utility. The population is estimated to be 11,000 inhabitants. The district receives its water supply from a private water provider, whose services were originally established through the Drinking Water Supply in the Outlying Districts of Bamako Project (funded by the French Development Agency). Two other private water suppliers were established in the Sebenikoro and Sikorori districts. Both are supplied by private boreholes (of which the ownership is unclear) and are connected into the EDM electricity supply network. The Yirimadio water supply feeds a 40m³ tank and 3 standpipes. The quality of the water is ensured by chlorination at the borehole.

Water user associations choose management arrangements

In each of the three districts a Water Users' Association has been established and is given the option to manage or delegate the management of the water supply. In Yirimadio, owing to the difficulties experienced in the community management of other services, the Association decided to find a delegated operator or "lessee".

The Yirimadio Association was aware that the process of selecting an operator was important to ensure the legitimacy and credibility of the Water Users' Association and the operator. The Association established accountable and transparent procedures based on objective criteria. They called a public tender for applications based on precise specifications which the applicants were required to meet. These included the sale price of water, the amount of the fee to be paid by the lessee to the Water Owners' Association and most importantly a bond of CFA500,000 (US\$710) (to be paid on signing the contract).

The operation of the water supply is straightforward, as it is connected to the EDM electricity network and does not need an electrical generator (which is costly to maintain) or solar panels (which are costly to renew). When breakdowns occur, repairs are carried out by local repairman and spare parts are available in Bamako. But the management of the water supply requires business skills and candidates are judged on their entrepreneurial spirit. The Association has determined that the best indicator of this is the candidate's readiness to invest and willingness to pay the guarantee bond.

Efficient management makes service profitable

The profit and loss account of the Yirimadio water supply gives a good indication that the service is profitable. This has been achieved with a selling price that is half that charged by EDM standpipe operators (CFA500-600/m³ (US\$0.70-0.85)). In 1998-9 the operator's income was approximately CFA6 million (US\$8,530) while payments to the association amounted to approximately CFA2 million (US\$2,700). A key reason for this is that the lessee operating the supply is directly concerned with revenue collection and therefore makes sure that bills are paid and wastage is kept to a minimum.

To date, the tariffs set by the Regional Water Department have not been changed (nor has there been any request for an adjustment) and no major disputes have occurred between the operator and the Water Users' Association, or individual users. The operator appears keen to keep his customers happy and settle disputes quickly before they develop into conflict.

The success of the Yirimadio initiative suggests that further activities could be taken within the arrangement. This might include, for instance, building up a reserve to finance extensions and new facilities.

Note:

Exchange Rate
US\$1 = CFA 700 (2001)

Source:

Cisse, 2000

In order to develop viable businesses, many kiosks or private standpipes are equipped with tanks to extend the period of sale. This is more common in cities where supply is interrupted or limited by frequent water cut-offs, water scarcity and rationed distribution such as in Port-au-Prince, Nairobi and Accra. In most cities, these private networks/extensions are not formally authorized but they are tolerated. The investors

therefore bear the risk and often pass these on to the consumer in the form of higher prices. In Abidjan, where the municipality and SODECI place a limit on the number of standpipes permitted within a given area, illegal private connections have sometimes been demolished without compensation. A key factor in encouraging individual investment is risk mitigation. In order to reduce the element of risk (shorter cost recovery periods result in higher prices), it is essential that the investor be provided with some security for a reasonable period.

In recognition of the role these private investors play in extending the network to unplanned areas, the municipality and/or utilities could consider:

- providing written assurance (guarantee or temporary permit) to private investors who are willing to extend services in unplanned areas;
- extending guarantees to property developers (who can recover part of the investment from future consumers in these areas);
- developing commercial arrangements that enable and encourage private investment;
- delegating and/or leasing network extensions (to allow the utility to serve a large number of customers that it would not otherwise reach efficiently); and
- establishing a specific support programme to respond to bulk supply arrangements in a manner similar to that employed for large industrial and commercial customers.

5.2 Work with carriers and tankers to improve service

Water carters, carriers, hand carters – manual distribution

All over Africa and Asia it is common to find water vendors who collect or purchase water from communal or private network water points and then provide a door-to-door delivery service to their customers. They often provide water to communities situated a long distance from the network and to informal settlements where private connections and standpipes have not been installed. Owing to the low volumes (0.1-0.5m³) transported daily by an individual carrier, the unit cost of this type of service is very high at US\$2-5 per m³. Yet, for many households these water carriers offer a convenient service, especially those households that prefer not to collect water themselves. They are often the preferred option for women who may not be allowed, for religious reasons, to fetch water from communal water points.

Some utilities have adapted their services to facilitate or directly promote this mode of distribution downstream of their networks, although most see it as a temporary solution until extensions are installed. This is the case in Mauritania, for example, where the utility, SONELEC, set up large-flow water points for carters to collect water for redistribution. In most other cities, vendors use standpipes and other facilities near to their customers (private connections, boreholes, etc). This has the effect of reducing the distance from the point to house and thus the price of the water supplied. Vendors prefer to use standpipes that are built for the purpose of supplying large volumes of water to reduce the time spent waiting for water.

Water carriers provide a door-to-door service to their customers.

Box 16

The Teshie Tankers Water Association in Accra, Ghana

In order to limit water theft from fire hydrants by tanker drivers in Accra, the utility supported the creation of tanker-owner associations and developed a means to supply these associations with bulk water through specially installed large flow hydrant filling points. The **tanker filling points are managed by tanker associations** (one per association), to which the utility, GWCL, sells bulk water, measured by the meter. Associations also ensure that tankers are sufficiently clean for the transport of drinking water. The bulk rate is US\$0.45 per m³ (virtually the production cost of water delivered). However, this rate is higher than the social band for domestic customers (GHC 1,880 per m³ (US\$0.40)), applicable from 1 to 27 m³/month).

Several individual tanker operators initiated the establishment of the first association. The founding association has since been split into 3 separate associations, one of which is the Teshie Tanker Owners Association. As a direct result of the establishment of the association, a **growing number of tankers** have since formally entered the water supply market. In 2000, the main tanker association in Accra had a membership of over 100 tanker owners, while the Teshie Tankers Association has a membership of 24 tanker owners. The association offers improved conditions of service for tankers, including regularization of previously illegal operations, access to a reliable water supply and a favourable bulk rate through association service stations.

Through their membership in the association, the tanker owners:

- guarantee payment to GWCL for water consumed at the negotiated tariff – the association invoices its members according to volumes individually obtained and pays the invoices made out by GWCL.
- improve the service provided to the customers – by committing tankers to standards of cleanliness agreed with the utility.

Note:

Exchange Rate
US\$1 = GHC 4,700 (2000)

Source:

Kariuki and Acolor, 2000

Water tankers – motorized distribution

Water tankers are likely to be the most expensive means of supplying water. Freight costs constitute as much as 75% of the price or at least an additional US\$1-2 per m³. Tanker services are typically offered to customers with large storage tanks such as households, construction sites or water kiosks and vendors. They are common in countries with growing middle and high-income households but where network supply is still very limited (e.g. Ghana, Kenya, Haiti, Tanzania and Mauritania). However, in some cities (e.g. Accra, Port-au-Prince, Addis Ababa, Luanda and Johannesburg), tankers are also used to supply low-income households. Water supply to tankers is often provided through overhead tanks constructed by the utility linked to a filling point or through a household connection / private borehole.

In those cities where tankers provide water to a sizeable segment of the population, medium-term arrangements should be put in place to regularize and regulate the quality of this service. Efforts should be focused on reducing the distance between filling stations and consumers (to reduce freight costs) and improving customer access to information about the service and price. However, in the long term, tankers remain an expensive service and should not be seen as an alternative to the development of more affordable network services that reach a majority of the population. They are however a vital means of supplying informal settlements where land tenure remains a significant constraint. The role and development of tanker associations is discussed in Chapter 7 and illustrated in Box 16.

Water tankers are likely to be the most expensive means of supplying water.

Utilities are gradually recognizing the efforts of independent providers.

5.3 Enable independent water service providers

In most African countries it is now common to find a wide range of actors involved in the delivery of water supply. In some situations they may be working 'alongside' the main service provider (or utility) and municipality with no contact or recognition, but in many cases, utilities and local authorities are actively building partnerships with other actors involved in providing services. As a result, over the past few years there has been a growing acceptance and recognition among utilities and municipalities of the efforts of independent providers. This recognition has led, in some cases at least, to efforts aimed at regularizing their activities in a manner that results in more accessible and affordable services for urban low-income households. The key issues concerning regularization are discussed in Chapter 7.

Recognition of the important role of independent providers is increasing but has not always been the norm. Independent service provision is often still considered contrary to the long-term interests and 'culture' of utilities. First, it draws attention to the deficiencies of utilities and their failure to create sustainable solutions for all urban residents. Secondly, it introduces competition into an environment that operates as (or is perceived as) a monopoly; and thirdly, it recognizes, and perhaps enables a private entity with a profit motive to deliver that which is often considered to be a 'public service' and a 'social good'.

An Independent Water Supply System in Lusaka, Zambia

Chipata Compound is one of many unplanned settlements mushrooming around the city perimeter of Lusaka. Approximately 45,000 residents (6,500 households) live there in an unplanned settlement that was initially served through standpipes dispensing free water installed by the public water utility (Lusaka Water and Sewerage Company). Over time, the utility has proven unable to maintain the free service and has begun to shut down standpipes.

In 1997, at a cost of ZMK1,110 million (US\$600,000) (provided primarily by the NGO, CARE), a **parallel piped water supply network** was developed from a borehole source, quite independent of the existing utility network. The water is distributed through 39 public standpipes and is managed by a Resident Development Committee (RDC) established voluntarily by the community with assistance from CARE.

Residents' associations manage water supply

RDCs replaced Ward Development Committees after the introduction of a multi-party system in 1991 and were intended to be non-partisan. Established under the Societies Act, RDCs have legal recognition. Moreover, their statutes enable them to own infrastructure developed within their jurisdiction and to directly operate and manage the service or enter into contracts with a provider. Their role is not limited to the water sector but extends to all development activities in the community.

Through a three-tier system of committees at zonal and ward level, the RDC is able to work with community members by consulting, planning and feedback systems regarding those development projects for which they are responsible. The RDC can also use these structures to collect contributions and report on financial matters.

Legal status promotes better management

Given its formal nature (achieved through legal status, constitution, regulations and democratic membership) Chipata's RDC was able to avoid many of the pitfalls associated with informal community organizations. The formalization process has ensured that the community management is not plagued by the high turnover of elected representatives, personalization of functions and resources, lack of proper financial management, transparency, discipline and professionalism found elsewhere.

Box 17

Note:

Exchange Rate
US\$1 = ZMK 1,850 (1998)

Source:

Taylor et al, 1998

Box 18

The Aguateros in Asunción, Paraguay

The Aguateros (independent water providers) operating in the city of Asunción started springing up 2 decades ago in rapidly growing neighborhoods of the city and then spread outward to increasingly difficult locations. Aguaterias fill the gap in the coverage of the publicly operated water service, mainly in peri-urban areas that might otherwise go unserved. They operate with little or no government regulation, supervision or oversight which affects Aguateros' (aguaterias' owners) decision-making and economics, financing and risk-taking. That this in turn affects their relationships with their customers is reflected in how the two groups rely on financial and political leverage. The way customers respond to poor service, for example, is by trying to shame the Aguateros in the press rather than filing formal complaints.

It is estimated there were 400 Aguaterias operating in Asunción in 1997. These providers fell into three broad categories:

- (i) small (vecinos) neighborhood systems with no employees and 5-40 connected households;
- (ii) medium-size systems with one to three entrepreneurs who often build without first conducting proper studies;
- (iii) large systems characterized by operators with 3-20 systems, sometimes connected to one another. Each system averages about 800 households.

Aguaterias are very entrepreneurial in nature – flexible and driven by incentives and trial and error. The majority, the "mom and pop" operations serving close neighbors, often begin without a business plan. Typically though, when large-scale Aguateros hear of a prospective location, they conduct a feasibility study of supply and demand to see if the location is viable. This requires that at least 300 households are willing to pay for water. They calculate the prospects for expansion (e.g. the number of nearby lots) since the presence of an Aguateria can generate its own growth. They also weigh the availability and cost of bringing water to the customers: a high initial investment in the water source will scare many Aguateros away.

The typical water supply system consists of one or more deep wells with a submersible pump, a ground-level reservoir, centrifugal motor(s) and a hydro-pneumatic tank. The distribution network consists of polyethylene pipes typically one or two inches in diameter. Some systems, mostly those built in the 1980s, use an elevated tank between the reservoir and distribution system. Commonly, there are 40 meters of pipes per household (with a maximum of 60 meters per household for the system to be viable).

Typically, the contract between the Aguateria and the user is for five years, the legal maximum allowed. Customers have the option of paying for connection fees in instalments (usually 10-24 months). The most common complaint from consumers arises when prices do not reflect service levels. The strongest factor affecting demand is whether a house is metered. The highly personalized nature of the Aguateros business permits a great degree of flexibility in the Aguateros' relations with clients. When customers find it difficult to meet payments the aguateros generally recognizes problems quickly and can find ways to work out solutions, accepting delayed payment plans and even canceling accumulated debt.

Source:

Drangaert et al, 2000;
Trayano, 1999

However, many local authorities and utilities now realize that the main reason for the growth in the alternative service market is their own failure to deliver an adequate public service. They have acknowledged that their continued ignorance about the nature and potential of these providers and the lack of recognition of these services, works against the very consumers that they aim to serve. As a result, a substantial number of municipalities and utilities (e.g. Lusaka, see Box 17, Addis Ababa, Dar es Salaam) are now supporting independent water supply arrangements within their area of service aimed at improving coverage in low-income areas. These include efforts to encourage and support independent providers generally and to extend their service delivery into unserved areas.

Independent water supply systems (production and distribution)

Most utilities expect to deliver water through a single network to all customers within their service area, thus achieving economies of scale and lowering the cost to the consumer. However, for a variety of reasons including inadequate supply, insufficient capacity and inadequate finance for upgrading and extension, some utilities or municipalities have supported or allowed the construction of independent water supply systems for production and distribution within their service areas.

The concept of independent distribution networks supplied by a borehole within the utility service area is generally considered unconventional. Although common in rural areas and small towns in Africa, this form of supply is less prevalent in urban Africa. Those that are found have often been allowed to develop as a solution to water shortages and they are invariably private or community initiatives. In Lusaka, Bamako, Addis Ababa and Dar es Salaam for instance, these independent initiatives are often funded and managed by donors, NGOs and CBOs. Elsewhere in Kenya, Paraguay (see Box 18), Uganda and Yemen privately installed independent networks are common.

As with the community-managed distribution networks discussed above, it is critical to clarify the legal status and ownership of the production and distribution facilities and infrastructure. Given that many arise in an emergency, the legalities of the network are rarely addressed at the outset and consequently legal status only becomes an issue at a later stage. In Burkina Faso for instance, the utility, ONEA, integrated several dozen independently owned and operated facilities into its own network without adequate dialogue over compensation. In order to promote and not dampen private initiatives, efforts should be made to protect investor/service providers in the event of expropriation, integration or demolition. At the very least, owners should be given time to amortize their investments.

Owing to the unregulated and ad hoc nature of independent systems, standards and specifications vary and often do not match those employed by the utility. This may need to be addressed to ensure water is of an acceptable quality and that independent systems do not create problems for the larger network supply. As many rely on borehole sources, convenient arrangements for regulating abstraction and water quality are essential.

Boreholes situated in the heart of urban areas are often subject to contamination from on-site sanitation systems. The installation of systematic and reliable chlorination systems that fight against bacteriological pollution may therefore be essential. In Bamako, Mali, some facilities have been equipped with continuous chlorination micro-pumps, while in Kano, Nigeria and Lusaka, Zambia, during cholera epidemics the local authorities have supplied free bleach or chlorine to households with on-site water points.

Where independent systems are deemed acceptable, standards and guidelines should be developed to focus on objectives rather than methods and provide incentives to encourage investors to meet user demand. Some utilities (e.g. Blantyre) expressly prohibit borehole sinking in urban areas. Instead, they define and enforce standards and specifications for community networks connected to the utility network. As independent providers operate in parallel and in competition with the utility rather than as an extension of the utility (as is the case with intermediate providers), they should be regulated on the same terms as the utility.

Where independent systems are deemed acceptable, standards and guidelines should focus on objectives.