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INFORMAL WATER VENDORS AND THE URBAN POOR

BY

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Introduction

Water vending is probably as old as human society and trade, but in recent centuries it has been overshadowed by the expansion of networked piped systems. Water vending is now often taken as a symptom of a failure in these piped systems, which still provide water to only a minority of urban dwellers in many parts of the world. When collecting international statistics on access to water, those who buy their water from a vendor are classified as not having reasonable access to an improved water supply, along with people who get their water from unimproved wells or surface-water sources. In many cities, water vending is actively discouraged.

Recent research indicates, however, that non-utility water vendors (henceforth simply water vendors) provide an important service. By suppressing water vending, there is a danger that authorities are making it still more difficult for deprived residents to obtain water. By assuming that vendor water is inherently inadequate, important opportunities for improvement are being ignored. On the other hand, assuming that water vending is inherently desirable is also problematic. The challenge is not to promote or suppress water vending, any more than it is to promote or suppress private-sector participation in utility operations. The challenge is to improve currently inadequate water and sanitation services, through the most effective means available, including water vending where appropriate.

The “re-discovery” of water vending was spurred by studies of willingness to pay for water. Indeed, the premium on vended water shows a willingness to pay for water that flies in the face of the claim that people believe water is a free good, which should not be bought and sold. This has been one argument for the increase of water tariffs and the capitalization of private initiatives in the water sector. Water vendors have been praised for their entrepreneurship, as well as their ability to reach the poor and areas that are difficult to develop with conventional infrastructure. At the same time, they are still often scorned for exploiting people’s absolute and basic need for water.

The understanding of, and interest in, water vendors remains minimal, however, when viewed in light of the vast amounts of research and the heady controversy that has surrounded private-sector participation in the piped-water systems, and the involvement of multinationals in particular. Small vendors are already providing water services to a large share of the world’s poorest urban dwellers, often in the face of official discouragement. Private utility operators are less significant, and it is not clear that they will be interested in serving more than the small fraction of urban poor living in the vicinity of the large piped-water networks. Better services from water vendors may still be considered inadequate by international standards, but are there cases where such services could yield a substantial improvement in the well-being of urban dwellers? If so, can the urban poor, and those who claim to want to help them achieve improved water and sanitation services, afford to ignore them?

This paper looks at how water-vending systems operate and how effective they are in meeting the needs of the poor. It raises questions about what can be done to increase the effectiveness of water-vending systems, and whether getting vendors to provide better water services to the urban poor can make a positive contribution to international water goals. The paper concentrates on the small-scale and informal vendors, most of whom work independently, with very little capital. Despite these limitations, the paper covers an extremely diverse range of vendors, some of whom are simply one part of a large supply chain, while others control a natural water source and sell the water directly to the final consumer.

Water vendors may operate water kiosks, where they sell water from a shallow well, a borehole, a commercial water connection, or a household connection to the piped network. Consumers may carry the water to their homes themselves. Distributing vendors may also collect water from kiosks. They typically carry water in containers loaded on bicycles, hand- pushed carts, or even animal-drawn or motorized carts, and bring it to households and small businesses. On a larger scale, and often serving higher-income customers, there are water tanker trucks that carry greater quantities to premises with larger storage capacities.

Different forms of water vending fill specific niches in different cities. Section 2 of this paper looks at the urban water system as a whole, and how water vending fits in into varied urban settings. This is followed by a closer look at the operations of different types of water vendors and resellers (Section 3). In Section 4, the relationships between vendors and the urban poor are reviewed, with an emphasis on who is served and who is not, what prices are paid and an analysis of the benefits and drawbacks for the urban poor. Finally, Section 5 highlights a number of possibilities for helping water vendors, and others in related activities, to provide a safer, more reliable and affordable water service to the urban poor.

The private provisioning of sanitation services is mentioned or described briefly below but more detail is beyond the scope of this paper. This is an important topic, however, that certainly deserves much greater attention. If water vendors are extremely varied and poorly documented, the same holds even more strongly for those selling sanitation services.

The urban water system

In urban settlements in low- and middle-income countries, water supply and sanitation provisioning typically leaves a lot to be desired. Poorly functioning systems and low coverage inconvenience the inhabitants and allow infectious diseases to spread. Women bear a disproportionate share of the inconvenience, while infants and small children bear a disproportionate share of the burden of disease.

The reasons for this problematic situation are many. Poverty is of course an underlying problem in virtually all urban areas where water and sanitation inadequacies are severe. Poor governance is an increasingly popular explanation for bad water management (World Water Assessment Programme, 2003). Rapid urban growth exacerbates the problem. Not everyone suffers, however. The wealthier segments of urban populations in developing countries often enjoy service levels similar to those in wealthy countries, or in any case substantially better than those available to their poorer co-inhabitants (McGranahan et al., 2001). Great differences within low-income cities give room for parallel systems and variegated supply conditions. It is the urban poor who have to make do with the worst options, and it is tempting to dismiss these options as irrelevant to the future city that all should be aspiring to. There may be cases, however, where improving services from unacceptable options (including water vendors) can make a bigger difference to the well-being of the most deprived than can striving for ‘ideal’ solutions, such as universal piped water connections.

The most convenient water supply, which is standard for all urban dwellers in wealthy countries, is water piped into the house from a reliable piped-water network. Such supplies rarely serve the urban poor of Africa, Asia and parts of Latin America. A piped connection to the yard, however, can also constitute a fairly convenient service and may, as long as the water is forthcoming, support good hygiene practices and, given adequate drainage, safe water environments. In-house or yard connections are estimated to reach some 43 per cent of the urban population in Africa, and 77 per cent in both Asia and Latin America (WHO and UNICEF, 2000).

Those without functioning water connections or wells (in many cities both water connections and wells are of intermittent reliability) have to venture out to collect water from other sources, and often need to negotiate with other people. It is in this scramble to secure daily water needs where alternative systems of water resale and vending come in.

Private initiatives in water provisioning

Given intermittent supply and low coverage of utility networks in many low-income cities, there is great scope for alternative means of water provisioning. Small-scale private water providers are especially inclined to proliferate in (unserviced) informal areas, and in cities with low connection rates and low levels of service (Conan and Paniagua, 2003).

The most common type of private initiative appears to be water vendors, including "direct" vendors or resellers selling water to consumers from standpipes or household connections, as well as distributing vendors, delivering water to people's homes. In urban areas in Africa and Asia, water kiosks – stationary water sales points – are particularly important (UN-HABITAT, 2003). It is difficult to say even roughly what share of the water market these vendors supply. Statistics often simply omit all of these vendors, even in urban centres with areas where vending is ubiquitous. Also, at the lower boundary it is difficult to distinguish between households sharing connections with their neighbours, and resellers who should be classified as vendors. At the upper boundary, on the other hand, it can be difficult to distinguish between a vendor selling water to a few hundred customers, perhaps with the aid of some piping, and local companies operating small independent water networks. Even in comparatively heavily studied cities, it is usually difficult to provide more than a very crude estimate (+/– 30 per cent) of how much water vendors sell.

A rapidly emerging business is that of bottled or pre-packaged water. This ranges from industrially produced (and internationally traded) spring or mineral waters to home-produced (presumably boiled) water sold in plastic bags on the streets. Conan (2003) estimates that 5–20 per cent of the population in eight surveyed Asian cities drink bottled water. This increase is most likely a response to higher income levels, increased quality demands and the poor quality of the water provided by many utilities. In many developing countries, increasing numbers of bottling plants of various sizes are being established (Conan, 2003; Elinaza, 2000). Khan and Siddique (2000) provide an example of a small business that could be seen as either a distributing vendor or a bottled-water producer (Box 1).

Box 1: Small-scale private bottled water supply in Dhaka (Bangladesh)

"Tiash Water Supply distributes 9000 litres of potable water to about 1500 consumers in the old part of Dhaka. A ship-cum-holding area stocks water in durable plastic containers (between 4 and 12 litres' capacity) for sale and delivery to clients. Delivery personnel in rickshaw carts and on foot do the rounds of the narrow serpentine alleys in the morning to deposit a pre-determined amount at each stop. A wholly private concern, Tiash sells water to homes and offices at prices that are so competitive that it is unable to keep up with increasing demand. While Tiash's rates are much higher than those charged by DWASA, they are more affordable than the price of bottled mineral water."

Source: Khan, HR. and Siddique, Q.I. (2000) Urban water management problems in developing countries with particular reference to Bangladesh, *Water Resources Development* 16(1): 21–33 (extract from pp. 30–31).

Note: DWASA = Dhaka Water Supply and Sewerage Authority

Privatization and private-sector participation (PSP) generally refer to the utility operations but the attention given to private operators has also drawn attention to the private enterprises that have developed to compensate for utilities' inadequacies. Private-sector involvement in water and sanitation utilities has increased substantially over the last few decades. As expressed by Bakker (2003, p. 329), "at the beginning of the 1980s, the private management of water supply was an exception rather than the rule. Two decades later, the water supply systems of over one hundred cities in developing countries are now managed by one of a handful of private multinational companies". Even though the trend towards private management has slowed somewhat in the last few years, modalities of water-system management have become significantly more diverse.

The recent movement towards more private-sector participation was also a response, and simultaneously a contribution, to the decline of public provisioning. While the international debate focused on the large utilities and companies, the providers that could respond to local market forces tended to be small and flexible. Depending on the local water-resource situation and the regulatory environment, the response may be to redistribute water from the piped network, or to develop alternative sources, such as boreholes. In urban areas with easy access to raw water but without developed piped systems, significant operations that provide house connections and some nearly continuous service have been documented on all continents (Collignon and Vézina, 2000; Conan, 2003; Conan and Paniagua, 2003; McIntosh, 2003; UN-HABITAT, 2003).

In most cases, a number of different modes of water provisioning operate in parallel and serve different user segments within one and the same city. Low-income cities typically display partial networks and mixes of artisan and industrial modes of production, and overlapping public and private solutions (Bakker, 2003). The different modalities' insertion into the country's legal framework and their relation to international NGOs and development agencies will be very different, and development policy options will have distinct effects on the different provisioning modes and their relative positions.

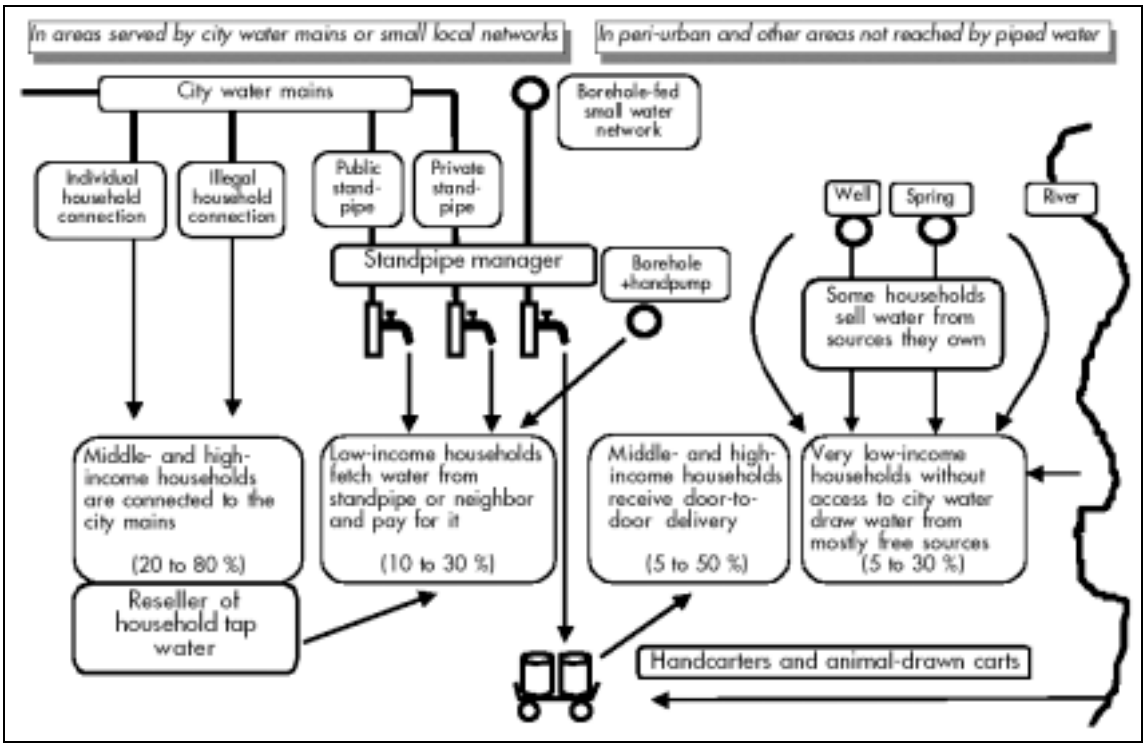
Water vending in relation to the broader water system

As the different modalities of water provisioning overlap, they also compete. If piped service were to expand rapidly, water vendors would be likely to go out of business. Conversely, while vendors typically operate as an extension of the piped system into undeveloped areas, they also supplant the piped system in areas where it is deteriorating. Indeed, many piped systems in developing countries have not only had problems in matching population growth and urban sprawl, but are also having problems with the maintenance and operations of existing distribution networks. Hence, vendors often perform a parallel service, drawing water from higher-pressure mains and conveying it along the piped network into areas with low pressure or intermittent supply. Where water volumes in the system are insufficient to keep adequate pressure, vendors may actually be part of undermining the proper functioning of the piped system. It has even been claimed that in some locations, vendors have been involved in vandalism as a means of suppressing the competition experienced from the piped system.

Figure 1 is from a study of independent water and sanitation providers in African cities (Collignon and Vézina, 2000). It shows the great variety of sources and how they intertwine and vary in different parts of the city. Within the areas covered by the piped distribution system, middle- income households are typically connected, and resell water to low-income households. In peri-urban areas the mix of sources tends to be greater, as is the potential for low-income households to find sources free of monetary charge. In peri-urban areas, vendors typically

transport the water (using hand-carts and animal-drawn carts) for middle- and high-income households.

Figure 1: Schematic view of water supply and distribution routes



Source: Collignon, B.and Vézina, M. (2000) *Independent Water and Sanitation Providers in African Cities. Full Report of a Ten-Country Study.* UNDP–World Bank Water and Sanitation Program, Washington D.C., Figure 4.3.

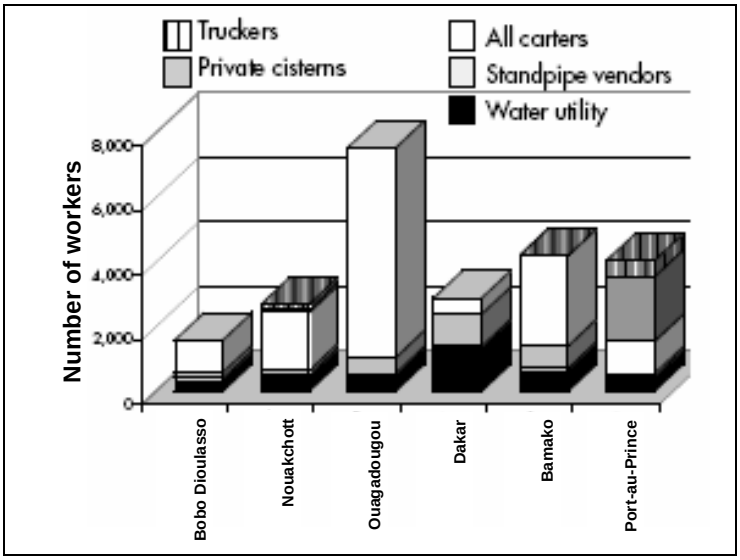
In many developing-country cities, the quantities of water flowing through the piped systems are not known with any higher degree of certainty. Moreover, large quantities are estimated to be lost through leaking pipes and theft of water. Similar magnitudes of water may never be accounted for since many users are not metered or have dysfunctional meters. The bulk supply may also be augmented through the use of boreholes, wells and springs within the urban area. There are, however, attempts to estimate the quantities of water as well as the amounts of money that circulate in the intertwined water systems.

Collignon and Vézina (2000, p. 15) provide estimates for Bamako (Mali): Some 32.4 million m^3 of water are sold per year, and the city water agency (EDM) supplies some 93 per cent of this. Some 6 per cent is sold through standpipe operators and a mere 1 per cent through water carters. (Beyond the water quantities that are sold each year, some 45 per cent of households also rely on wells, the water from which is not traded.) The unit price of the sold water ranges from CFAF 55 charged by EDM, and CFAF 400 charged by standpipe operators, to CFAF 2,500 charged by carters. Thus, although most of the water is supplied by EDM, its share of the total water sales value in Bamako is estimated at 54 per cent. Standpipe operators account for 26 per cent, and carters 16 per cent. With regard to numbers of people employed in these businesses, EDM is estimated to account for 32 per cent of employment in the water sector, standpipes for 28 per cent and the carriers engaging as many as 40 per cent of the water-sector workers.

As mentioned at the beginning of this paper, attention (of development agencies) to water vending and other forms of independent water provision has been heightened in the last two

decades. Although water-vending practices have been documented and discussed before,[1] it seems as though the market has grown, at least in some locations. In East Africa, over three-quarters of households without piped water used hydrants or standpipes, and about a quarter used rain and surface water, in the late 1960s. Thirty years later, rain and surface water supplied less than 15 per cent of households without piped water, and hydrants and standpipes some 56 per cent. At the same time, the private market had grown from zero to 24 per cent (Thompson et al., 2001; UN-HABITAT, 2003). It seems likely, though it has not been well documented, that the decline of public utilities in many countries in the 1980s and 1990s has increased the role of small water vendors.

Figure 2: Number of people working with water in selected cities



Source: Collignon, B. and Vézina, M. (2000) *Independent Water and Sanitation Providers in African Cities. Full Report of a Ten-Country Study.* UNDP–World Bank Water and Sanitation Program, Washington D.C. (http://www.wsp.org/pdfs/af_providers.pdf), Figure 3.1.

The informal water market can be an important source of employment generation – typically more important than the water utility. Figure 2 shows the estimated number of people working with the water sector in six selected cities. The number of utility workers ranges (shown in black, at the base of the bars) from 500 in most of the cities to close to 2,000 in Dakar (Senegal). Standpipe operators or direct vendors (shown in grey) range from between some hundred workers up to about a thousand. Water carters (in white) outnumber the other types of water-related workers in most of the cities, overwhelmingly so in Ouagadougou (Burkina Faso) and Bamako (Mali). The number of people operating private cisterns is small in the African cities but estimated at to close to 2,000 in Port-au-Prince (Haiti). The truckers (shown with thick stripes, on the top of the bars) convey considerable volumes of water, but do not employ many workers.

Independent providers of sanitation services

The informal sanitation sector is probably even larger than the informal water sector in many cities. Since many low-income cities have very rudimentary sewerage systems, or sometimes

[1] See for example White et al. (1972), Zaroff and Okun (1984), Briscoe (1985), Lewis and Miller (1987), Whittington et al. (1989a; 1989b; 1991), Cairncross (1990) or Katko (1991).

none at all, most excreta and wastewater is dealt with on-site. People frequently use pit latrines and drain their wastewater on the open ground. As latrines fill, there may not be enough space to dig another hole, and consequently they need to be emptied. This work is often done manually. It appears that such work is commonly carried out by particular ethnic groups, often consisting of newly arriving migrants (Collignon and Vézina, 2000). Latrine emptying may also be carried out by means of suction trucks that deliver the sludge to treatment works (or dump it elsewhere). Such trucks are expensive, however, and less expensive motorized alternatives are currently being promoted (see Box 4 on the Vacutug in the parallel paper in this series, on local water and sanitation companies).

Septic tanks are another common sanitary solution, particularly in middle- and high-income areas that lack sewerage systems. These regularly need to be emptied by suction trucks and probably constitute the bulk of their business in most developing-country cities. The simultaneous liberalization and regulation of such services has reportedly been very successful in Dar es Salaam (Tanzania), where "the municipality decided to open the provision of emptying services to licensed private operators, provided that they complied with a common set of rules and regulations intended to ensure fair pricing and proper handling of waste by all actors. Because of the high level of competition, the tariffs charged have quickly stabilized to half of the official recommended price without reducing the quality of service, nor leading drivers to dump sludge elsewhere other than in the sludge dumping facilities. Waiting time has now been reduced from weeks to hours" (Water Utility Partnership, 2001–2003, "Providing Sanitation Services").

Private provision of sanitary services also encompasses the management of public toilets. There appears to be a trend away from the public management of public latrines, in favour of private leasing management (Box 2). As a general rule, however, latrines and bathrooms are still constructed and owned by municipalities. Often, they are funded with donor assistance (Water Utility Partnership, 2001–2003).

Box 2: Commercially operated public toilets in Kano (Nigeria)

Kano, Nigeria, has recently seen an increase of privately run toilets. Some are built and operated by individuals or organizations, and some are built by the government and rented to individuals. In Kano, the local authority started building toilets for public use in the 1950s. These were used by the public free of charge. A decade later, individual traders started to build more toilets in market places, for themselves and their customers. Initially, such facilities were also free of charge, but gradually the traders began to charge fees. In 1980, the government leased the previously publicly managed toilets to private operators, and later on started providing technical support and land onto which individuals and organizations were to build and run conveniences on a commercial basis. The majority of these pay-toilets and bathrooms are located in public places, especially around markets. Some are also found in congested residential areas.

"Many places which were eyesores and smelly have now turned into neat and safe places to conduct business due to the contribution of the local government through the provision of the conveniences. There are some lessons learnt from the study of public conveniences in Kano metropolis. As a result of these privately run commercial toilets and bathrooms, the sanitary environment of the town has greatly improved. It is now a means through which the local authority generates income. Public conveniences can be found in all the six metropolitan local authorities of Kano town."

Source: Water Utility Partnership (2001–2003) *Toolkit. A Practitioner's Companion.* Case Examples: Private Public Conveniences, Kano, Nigeria.

Although payment for the use of toilets has quite likely improved both availability and maintenance of such facilities, their proliferation also shows that increasing numbers of (often poor) people pay every time they need to relieve themselves. There is also a danger that pay toilets will encourage outdoor defecation by small children, who are not only most at risk from sanitation-related diseases, but also produce the most hazardous faeces.

Water resale and vending

This paper concentrates on informal out-of-pipe water distribution. As well as water carriers, this includes households informally (sometimes illegally) reselling water from their utility water connections. The carriers, or distributing vendors, usually employ some form of transport, with manual or animal-driven vehicles typically catering to the better-off households in low-income areas, and motorized vehicles (tankers) typically serving higher-income low-density areas. The actors are all private and driven by motives of profit or income-generation (or survival). Just as there are many forms of water vending, there are several ways of labelling and categorizing the different practices. Box 3 charts some of the definitions.

Box 3: Overlapping categories and definitions of water vending and reselling

Water "vending" (to engage in selling) can refer to any form of sale of water. Strictly speaking, utilities that charge for water deliveries are water vendors, albeit vending more typically refers to "peddling", "hawking" or "selling by means of a vending machine" (dictionary.com, 2004). In the water literature, vending does not refer to utility sales, but rather to the reselling or onward distribution of utility water, or water from other sources. One early and very important survey of water vending defined the practice as follows:

"Water vending, the sale and distribution of water by the container, ranges from the delivery of water by tank trucks... to the carrying of containers by individuals... The water may be obtained from private or municipal taps, standposts, rivers or wells and sold either from a public vending station or door-to-door. Vendors may either sell water directly to consumers or act as middlemen, selling water to carriers who in turn serve the consumers." (Zaroff and Okun, 1984, p. 289)

Whittington et al.(1989b) state that all vending systems have one or more of three types of vendors:

1. wholesale vendors – obtaining water from a source and selling it to distributing vendors
2. distributing vendors – obtaining water from a source or a wholesale vendor and selling it to consumers door-to-door
3. direct vendors – selling water to consumers coming to the source to purchase water.

This categorization is used also by Njiru and Albu (2004). Many writers, however, including Whittington et al. use the term "vendor" alone when referring to "distributing (itinerant or ambulating) vendors". See also Crane (1994), Katko (1991), Kjellén (2000a), or Cairncross and Kinnear (1991) – the latter defining water vending as "the sale of water on the doorstep or at the street corner" (p. 267). In the present paper, carters and carriers are also used to denote (artisan) distributing vendors, although these terms in themselves need not denote selling as such.

What is termed "direct vending" above is often referred to as "reselling". In Katko (1991) "reselling means that the owner of the water connection sells the water to customers who come and fetch it" (p. 63). "Reselling" is thus often limited to denote stationary water vending from standpipes, household connections, boreholes or water kiosks. Typically, it refers to households selling water (unofficially) from their own utility connections. Notwithstanding, "reselling" can

also refer to itinerant vending; the Water Utility Partnership (2001–2003) defines a reseller as "an individual who purchases water (e.g. from a network connection or private borehole), then transports it and sells it to households and/or businesses)".

Beyond household resellers, these direct vendors also include various forms of kiosk, standpipe, or hydrant operators. Depending on the degree of investment, legality and recognition, Collignon and Vézina (2000) divide these vendors/resellers into three categories:
1. standpipe vendors: small entrepreneurs who operate standpipes installed by the city water concessionaire
2. licensed water resellers: micro-entrepreneurs contracted to resell water piped to their homes and who may invest in standpipe installation and network extension
3. unlicensed household water resellers, who are not seen as professionals, although they do provide water to a major share of the market.

A water kiosk may be any stationary vending location. It is typically staffed by an attendant (Water Utility Partnership, 2001–2003). A manager of a water point may (particularly in Francophone countries) be referred to as a *fontanier* (Collignon and Vézina, 2000; Water Utility Partnership, 2001–2003). A *fontanier* would typically be a standpipe manager, responsible for collecting fees from users, dispensing water and potentially also maintaining the standpipe.

This paper employs most of the denominations mentioned above, although resellers most often refer to households unofficially selling water from utility connections, and standpipe operators or kiosks most often denote officially recognized resale activities.

A lot of the recent water literature refers to "independent providers". This can refer to any form of non-utility water (or sanitation) service, including vending as well as operations of small networks and water bottling and packaging. In some cases independent providers are taken to include all vendors that are institutionally and contractually independent of the utility, even if they do rely on water from the utility.

Household resellers and standpipe operators

As, often, only a part of the population is directly connected to the water network, some cities have public standpipes supplying free water to unconnected households, or water kiosks where collecting households pay for water by the bucket. Such services, however, are typically insufficient and cover only part of the water needs of non-connected households. Hence, in areas where some households are connected to the network, and others not, water is typically obtained from neighbours. Such neighbourly water resale services range from supplying just a handful of nearby households, to more established services operating as water kiosks.

Informal (unlicensed) water resellers have no official status. Thus, they do not get any discount for larger purchases of water from the utility, if such discounts exist. Where tariffs increase as volumes go up, resellers may instead be penalized by paying a higher price per volume than low-volume users. In many cities, however, connected households pay flat rates to the utility. Hence, the volumes sold to others will not affect the household's monthly bill, and water reselling can be a rather lucrative business. In some cases, even where reselling is illegal, utilities tolerate and even adapt their services to the resellers. In Accra, for example, although reselling is formally illegal, many households that resell have been put on a commercial tariff, effectively acknowledging current practice.

Water may be delivered through a rubber hose extended into the street, or customers may tap water from inside the compound. Where pipe-water is rationed, those aiming to sell on a regular basis must construct storage facilities in order to be able to sell water during "off-turns". Also,

to ensure that the storage facilities are filled, it may be necessary to connect a booster pump in order to suck (often low-pressure) water out of the network. Many households, particularly in peripheral areas, also sink wells in order to match sources and ensure a continuous supply. As long as there is electricity, they are able to continue pumping.

Box 4: Licensed standpipe operators in Ouagadougou (Burkina Faso)

Ouagadougou, Burkina Faso, has a network of close to 500 standpipes. Most of these are located in peri-urban areas and at the entry of unplanned settlements. They constitute an important source for the public, as there are few alternatives. In order to be selected to manage a standpipe, one must deposit CFAF 30,000 and sign a contract with the National Water and Sanitation Office (ONEA). Standpipe operators buy water for CFAF 187/m^3 and sell it at CFAF 300/m^3. Average monthly sales are in the area of CFAF 360,000, or 30–50 m^3/day. Operations are closely supervised by ONEA, and any deviation from contract conditions can lead to the reassignment of the standpipe to another manager. There is an association of standpipe managers that seeks to bring common concerns to the attention of ONEA. Such concerns include improved transparency in the selection of standpipe managers.

Source: Water Utility Partnership (2001–2003) *Toolkit. A Practitioner's Companion.* Case Examples: Standpipe Operators, Ouagadougou, Burkina Faso.

Licensed water resellers or standpipe vendors have some form of contract and may operate standpipes built with public funds (as is the case presented in Box 4). The water is still sold to the public by the bucket or jerry can, or to distributing vendors. The contract may specify resale prices, hours of operation, terms of payment and conditions of rescinding the contract, although actual practices often deviate from the written terms. The wholesale price (of water purchased by resellers from the utility) may be different from that of consumer households. In Dakar, *fontaniers* buy water from the utility at CFAF 240/m^3, which is below the average charge of CFAF 325/m^3 for household connections. In this city, the resellers are free to charge what the market can bear, generally CFAF 800–1,000/m^3 (Snell, 1998). In other places, resale prices are regulated (but difficult to control). In Cameroon, where standpipes are rare and the set resale price very low, water is commonly sold at twice the official rate (Collignon and Vézina, 2000).

Some sources of water may be regarded as of inferior quality, and acceptable for use but inappropriate for trading. In Bamako and Ouagadougou such activities were found to carry social stigma – "one does not sell the water from one's own well" (Collignon and Vézina, 2000, p. 20). In Dar es Salaam, on the other hand, well water has historically been traded. Mosques would typically sell water from their wells to residents not connected to the incipient piped network. When the British colonial authorities, for health reasons, wanted to banish such sales, representatives of the "Islamic Community of Dar es Salaam" wrote a letter (dated 25 August 1938) to the Governor and Commander in Chief, defending their right to sell water. They insisted that water-selling had long been practised, and that the German authorities had always respected it. And, since the Muslim community was poor, the revenue from the water was needed for the maintenance of the mosque.

Distributing vendors – carters and carriers

People with very little money need to make do with free sources, potentially combined with better-quality water purchased from neighbours (resellers) or official kiosks. In some cities, good-quality water is supplied for free from public standpipes. However, considerable queuing is typically required in order to access free or moderately priced sources. Thus, even in poorly

serviced areas, there are plenty of people with jobs or some form of income-generating activity that keeps them from queuing or carrying their own water. Hence, they employ water carriers (Box 5 presents an example from India).[2]

Box 5: Pushcart water vendors in Delhi (India)

"Pushcart providers mostly operate in low-income areas that depend mainly on public standpipes for water. The number of users at these public standpipes is large, and often people have to stand in long queues and spend many hours to retrieve water. While those who are very poor have no choice but to stand in these long queues to collect water, those who can afford the expense use pushcart providers to get water delivered to their doorsteps. This water is mainly used for drinking and, in some cases, for cooking. For the remaining uses, water is obtained from hand pumps. Not all households purchase water every day, some purchase water only once every 2 or 3 days and use stored water for the remaining days...

"Pushcart businesses are generally family enterprises, as these require three to four workers. All the cans are lined up at the standpipe at night. Since the water pressure is generally high only at night, one member from each provider's family works all through the night to fill the cans with water, and in the morning another takes over. Other family members transport water to the client-households. Cans are also filled during the day, but it takes a very long time to fill each can, as the water pressure is very low.

"There are a large number of private providers in each locality, and each one has his own clientele. While they do not have any problems with the water utility, there are local problems, such as fights at the standpipes and the general struggle to collect the water. Pushcart providers are a necessity in areas where only standpipes are provided and the supply pressure is low. Moreover, they prevent more people from queuing at standpipes, which could result in more fights."

Source: McIntosh.A. (2003) *Asian Water Supplies. Reaching the Poor.* Asian Development Bank and International Water Association, pp. 192–193.

Paid water carriers, vendors, are typically male, and use some form of equipment in order to carry the heavy load of water. Plastic or metallic cans are loaded onto bicycles, tricycles or hand-pushed carts. Water carting, like water collection for own use, is a heavy and physically demanding activity. Distributing vendors may collect water from resellers and kiosks, often at the same prices as households collecting water for themselves. The price to end consumers is typically determined by the cost and effort of procuring water, and the distance between the source and the point of delivery. Also, road conditions and elevation affect the effort that needs to be compensated by purchasing households. Water carriers are typically poor people themselves, supplying to other low-income people. In Dar es Salaam, pushcart vendors complain of pains in the chest and joints, and that they often fall sick with fever. Their earnings are generally low, and at times they go hungry. Average earnings are less than the minimum wage for the country (Kjellén, 2000a). The toughness of the job is illustrated by the example in Box 6.

[2] As mentioned above, it appears that even though there are adult males in the household without jobs, due to entrenched gender roles these males are not prone to engage in water collection. See also Box 8 in the next section.

Box 6: A pushcart water vendor in Manila (Philippines)

"The water vendor starts work each day at 3:00 a.m., 7 days a week. He buys water from the concessionaire at 1 peso per 16-liter container and distributes it by pushcart (a bicycle with a large sidecar) to 20 customers, living an average of 2 kilometres from the source. He sells 40 containers per day at 5 pesos per container... He pours water from his containers to his customers' containers when he delivers. Working an 84-hour week, he earns 5,000 pesos per month, whereas the poverty line is more than 9,000 pesos per month. He has a family of five to support. He says his biggest problem is always money, and he receives no tips and no year-end bonus. It is surely a tough job pushing water with little reward. Still, he has been a water vendor for 9 years."

Source: McIntosh, A. (2003) *Asian Water Supplies. Reaching the Poor.* Asian Development Bank and International Water Association, pp. 194–195.

In some areas, vendors use donkey- or horse- carts. In Karachi (Pakistan) about a fifth of the population is served with vendors using tankers, donkey carts, or manually transported leather bags (McIntosh, 2003). Low-income urban dwellers in Nouakchott (Mauritania), Dakar and Bamako are able to buy small quantities from donkey- or horse-pulled carts (Collignon and Vézina, 2000). Water vending with animal traction requires more complex organization than bicycle or pushcart vending; there may be cart owners, animal caretakers and (often hired) cart operators involved. With the larger investment, there may be more entrepreneurs with access to capital involved, as is the case in the tanker-based vending business.

Regulation, control and competition

Water vendors typically operate outside or at the margins of established legal frameworks. While household water resale may not be illegal, households engaging in such a trade would technically speaking be commercial water vendors. In such a case, higher volumetric tariffs typically apply. However, most utilities choose not to "punish" reselling households, but rather acknowledge that such trade is a consequence of the utility's inability to reach all customers.

Ambulating vendors are difficult to regulate or tax, partly due to their great number and mobility, and partly to the low level of earning – taxation may be more successful in halting business and driving up water prices than for bringing in tax revenue. In Tanzania, pushcart vendors are supposed to carry small-business licences (of the most inexpensive sort) but none of them do. And the authorities seem not to be bothered by this (Kjellén, 2000a). From Khartoum (Sudan) however, Njiru and Albu (2004) report that one of the constraints faced by donkey-cart operators is the persistent harassment from local officials in respect of up to five different taxes or licences that they are meant to pay. Confiscation of carts is a common occurrence, as is health checks on animals, carts and operators, apparently carried out in order to extract dues rather than to improve basic hygiene.

With regard to water quality, vendors are often blamed for supplying unsafe water. The consumption of packaged water purchased from vendors in markets in Ibadan (Nigeria) has been found to be associated with diarrhoea among children (Oyemade et al., 1998). In Accra (Ghana), water from "ice-water vendors" was found to have alarmingly high counts of coliform bacteria (Benneh et al., 1993). It is quite likely that all the pouring from one vessel to another (which is not necessary in a piped supply) exacerbates the risk of contamination. Still, Kjellén (2000a) found pushcart water vendors in Dar es Salaam to be surprisingly quality-conscious. Moreover, a study covering several places in East Africa found water from vendors and kiosks as well as

that which is piped to the house to be relatively safe in terms of low diarrhoea prevalence among children in families relying on those sources (Thompson et al., 2001; Tumwine et al., 2002). In any case, the fear of poor water quality is there, fairly or unfairly, despite the fact that most vendors display their goods as “clean water” or “pure water”.

Some municipalities engage in the limitation of standpipes, arbitrarily in the view of Collignon and Vézina (2000), but potentially also to protect a “reasonable” level of profit for already-licensed standpipe operators. Where standpipes are not sufficiently spaced from each other, there is a risk of insufficient business to keep operations going. However, it seems reasonable to doubt the skill of municipal authorities in determining the appropriate size of each standpipe’s “geographical monopoly”, or why, in a market that already has a tendency to create natural monopolies, authorities should create artificial monopolies. Furthermore, if authorities do manage to protect profits for standpipe operators, there is always a danger that officials will expect unofficial payments in return. In Jakarta (Indonesia), it has been claimed that gains from the unofficial market for standpipe operations were actually inhibiting the utility from extending house connections to some neighbourhoods (Lovei and Whittington, 1993).

Water vending is normally a competitive business. Often, there are many people without jobs, and entry into the (artisan) vendor market is easy (although achieving profitability is more difficult). Pushcarts as well as containers can be rented on a daily basis, implying that little or no investment is needed in order to enter the market. As expressed by Collignon and Vézina (2000, p. 2): “In contrast to parastatals or multinational companies that seek new urban service concessions, these independent entrepreneurs reap no monopolistic benefits or rents. They must win their customers’ loyalty and maintain their equipment on a daily basis. They must be ready to innovate and adapt in order to stay in business in this competitive market.”

However, existing cartels may not be apparent until there are attempts to challenge them. Cairncross and Kinnear (1991, p. 269) tell of an Oxfam project facilitating the purchase of donkeys and carts for water vending among Southerners living in a squatter area in Khartoum. The aim was to assist in income generation, as well as to allow certain control over the price of water. However, the Southerners were effectively barred from using the water source, which was controlled by Northern Sudanese. Moreover, in another area, existing vendors lobbied (unsuccessfully) against the extension of piped water into the area.

The commonly insufficient public water supply – exacerbated by the excessive preoccupation of many utilities with the production of water rather than its distribution – may favour collusion among vendors. In Guayaquil (Ecuador), Swyngedouw (1995) found the utility’s overwhelming concentration on supplying central (wealthy) areas of the city to be safeguarding tanker suppliers’ monopoly rent extraction in marginal settlements. In such cases, independent suppliers attempting to challenge the situation may even be met with violence. Otherwise, kiosk operators are in a better position than itinerant vendors to avoid competition and make excessive profits. Many kiosk operators, notwithstanding, are dependent on the goodwill of the surrounding community, and are thus discouraged to charge prices generally held to be exorbitant. Nonetheless, the level of profit appears to be higher among resellers than itinerant vendors (Katko, 1991).

The characteristics of markets may shift with changing circumstances. In Dar es Salaam, for example, pushcart water vendors usually operate from more or less fixed stations, and adhere to the going price in the area. This is when the level of piped and borehole supply, the sources of the vendors’ water, operate at the normal level of accessibility. However, if there is a break in the system, or extreme seasonal drought, the vendor market changes. The “price-taking” vendors

become “price hikers”, doing their best to eke out a higher return on the suddenly volatile market. Under such circumstances, they typically also leave their “fixed” stands, as they prefer to deal with anonymous customers rather than their usual constituency (Kjellén, 2000a).

The level and harshness of competition in water markets may vary, but the earlier stereotypes of water vendors as highly exploitative in the prices they charge has been replaced with a recognition that the prices charged generally reflect real costs (UN-HABITAT, 2003). Moreover, while exceptional supply conditions may upset the water market, vendors generally appear to be faithful to their customers. In a household survey of Jakarta, Surjadi et al. (1994) found those relying on vendors to be the least likely to face supply interruptions. People relying mainly on pump-wells and public hydrants, on the other hand, were those most likely to face day-long interruptions. Indeed, vendor systems often appear to be more robust than piped systems in developing countries.

Gender relations and drawers of water

Water collection for household use, as well as other housework such as cooking, cleaning, laundering, caring for children, elders and sick household members, is primarily carried out by women (Kynaston, 1996; Levy, 1992; Moser, 1993). Where water is not available in the home, women carry water for own use as well as for other household members (Matiza, 1994; Thompson et al., 2001; White et al., 1972). The markedly different roles that men and women have in their communities have long since been socially reinforced, and may be justified by religious or cultural traditions. Moreover, the water that women fetch is usually carried on their heads or their backs, resulting in a wide range of health impacts from headaches and general fatigue to pains in the chest, neck, back and waist (Thompson et al., 2001). And where water facilities are unreliable, girl children are frequently kept out of school to ensure that the household water needs are met (UN-HABITAT, 2003).

Whereas females are consigned to the private sphere of unpaid work, males dominate the paid work sector. This gendered division of labour is found in the water sector. In Tanzania for example, women and children are almost universally responsible for carrying water to their homes (Mujwahuzi, 2002) but water vendors in Dar es Salaam are almost invariably men (Kjellén, 2000a). Collignon and Vézina (2000) also found that water and sanitation trade in African cities was practised by men (with the notable exception of Ouagadougou).

Still, household water resale is often a family business, and may involve household members of both sexes in the sharing of work as well as revenues. Moreover, female water-kiosk attendants appear to be fairly common, and at times are preferred, having a reputation of being less corrupt than their male peers. There are also cases where women have seen the higher earnings of men in the water-vending trade, and decided to take it on (Kjellén, 2000a). In Dakar there are women water carriers, but they carry the 20–25-litre water basins on their heads. Their male competitors employ horse carts (Snell, 1998). In Honduras, water needs and the perceived exploitation by vendors appear to have prompted the initiatives mentioned in Box 7.

Box 7: Women water vendors in Honduras

United by their collective need for reliable and affordable water and the burden faced from high water prices incurred by private vendors, women in low-income urban neighbourhoods throughout Honduras have developed and managed their own licensed water-vending stations. The project benefits include lower and fixed water prices and the provision of part-time employment for poor single women with children.

Source: Espejo, N. (1993) *Gender and the Management of Drinking Water Supply in Low Income Urban Communities in Latin America.* IRC International Water and Sanitation Centre, The Hague (http://www.genderandwateralliance.org/english/arc_casestudies.asp?query=espejo#honduras).

Vendors and the urban poor

In most developing-country cities there is a variety of sources and modes of water supply. Many poor households decide, on a daily basis, which sources to use, depending on how much time and money is available in the household, and on where water is available. "It costs more to buy water from a door-to-door carrier but using the time saved to earn money may more than cover the difference in water cost. And water supply from different sources will vary depending on rainfall, network down time, and other factors" (Collignon and Vézina, 2000, p. 17).

Box 8: A vendor water customer in Manila (Philippines) – weighting time, cost and water quality

"Winnie Flores... is the sole breadwinner in a family of six. She works for foreigners as a daytime domestic helper. Her husband, a former messenger, has been out of work for 2 years. She has to buy vended water, since the closest source of piped water is 2 kilometres away, and it costs her 900 pesos per month for 6m^3. If she were connected to the concessionaire, she would pay about 100 pesos per month for 20 m^3...

"Each day she buys four containers of good quality water from the water vendor... at 5 pesos per container, spending a total of 20 pesos per day. She also purchases eight containers of groundwater (poor quality) from an entrepreneur with a well. This individual lives about 200 metres away, and the water costs Winnie 1.25 pesos per container, or another 10 pesos per day. She uses the well (bad) water for washing, bathing, and cleaning. She uses the vended (good) water for cooking, drinking, washing white clothes and rinsing the children after they bathe in the well water."

Source: McIntosh, A. (2003) *Asian Water Supplies. Reaching the Poor.* Asian Development Bank and International Water Association, p. 195.

For the very poor, cost is a major constraint, and where possible they will access free sources. Nonetheless, many poor people still need to buy some water in order not to have to drink or cook with very poor-quality water. And time is also a very real constraint in the urban economy (Box 8). How to ration such water of different qualities is probably a science of its own in such circumstances. Moreover, even quite poor households will want to avoid the social stigma attached to some of the free water sources. In Khartoum, for example, women from very poor households are generally allowed to come directly to the water yards, where the donkey carts are being filled, and collect some water for free – but this can be considered demeaning.

Who buys water from vendors?

Even though most pushcart water vendors operate in poor areas, their clients are those with some form of income and ability to pay. Given the problematic situation of many networks in

developing countries, many more than just the poorest of the poor are excluded from reliable piped water. And, there is of course the full range of households with varying levels of income, and preferences and priorities in their lives.[3] Still, vendors of all kinds typically operate in areas where piped water is not forthcoming or accessible. This is also where the urban poor most often live. Hence, there is a geographical overlap between urban poverty and water vending, even if the poorest of the poor may not be the most important clients.

Komives et al. (2000) point out that it is generally assumed that the poor have fewer infrastructure services than middle- and upper-income households but that there is "surprisingly little information on the actual empirical relationship between household income and infrastructure services coverage in different countries" (p. 1). Even if surveys have been conducted, it is difficult to quantify the informal service options, since these are often ignored in the surveys as well as by government policies. The prevalence of standard (piped-water) connection is far easier to establish. Here, the relationship between income and coverage is straightforward: the lower the income, the less likely the access to piped infrastructure.

It is well established that the poor are more likely to be excluded from conventional infrastructure. In Accra, however, this exclusion is partially compensated by the use of vendors, or reselling households. As expected, indoor piping completely dominates among the wealthiest but is used by a mere 6 per cent in the lowest wealth quintile. Private (yard) standpipes are used by all wealth groups and over a third of the households in the middle wealth quintile. Communal standpipes (where water is collected for free) are most common among the poorest 20 per cent of the population, and so is the use of vendors, in this case largely household resellers. Actually, close to half of the very poorest households primarily used water purchased by the bucket. The litre price of the water purchased from water-vending neighbours was more than double the litre price of the metered supply (Benneh et al., 1993).

In Jakarta, a household survey in 1991/92 showed higher dependence on vendors among the poor. While the majority of the population in Jakarta used groundwater for most purposes, in areas where this is saline the wealthiest households more often had piped water to the house, whereas the poorest were faced with a higher dependence on (ambulating) water vendors. A smaller proportion (of all wealth groups) made use of public hydrants from which householders themselves carry their water (Kjellén et al., 1996; McGranahan et al., 2001; Surjadi et al., 1994). An earlier household survey of Jakarta, reported in Shugart (1991), had similar results with vendors proliferating in areas with brackish groundwater, and being slightly overrepresented among the water sources of the lower-income groups.

Notwithstanding, information on the use of water vendors in Côte d'Ivoire, Ghana, Pakistan and Nicaragua shows only 2.4 per cent of the sample depending on water vendors as primary source of drinking water, although the figure was as high as 15 per cent in the case of Côte d'Ivoire. Interestingly, less than 1 per cent of the households using vendors were in the poorest decile of their countries, while 20 per cent were in the richest decile. Moreover, median expenditure for water among vendor users was not significantly higher than among households using in-house piped water (Komives et al., 2000; UN-HABITAT, 2003).

While the evidence on the actual use of water vendors among the urban poor is patchy at best, the exclusion of the urban poor from direct access to piped services is well established. As noted in the next section, the volume price of vended water is typically very high, and that should be a

[3] Also, people with money will do their utmost to access free sources of reasonable quality. For example, in Dar es Salaam, Tanzania, vendor water sales drop during rains, indicating that many households that habitually purchase water also make use of rainwater when available.

deterrent for poor households. However, poor people may be using very small quantities of dearly purchased water. The poorer one is, the less likely one is to be able to pay others to carry water. However, with very few free sources being available in urban areas, the urban poor are quite likely the major users of water sold from reselling households, public standpipes and kiosks, from where one carries the water oneself.

Price inequalities: it is expensive to be poor

The urban poor rarely have large sums of money, and the daily purchase of small quantities is easier to manage with irregular and often unpredictable incomes. Notwithstanding, minute purchases typically entail a higher unit cost than what wealthier households pay for their utility-provided water.[4] In cities with very poor network water distribution, however, households of all income levels may turn to the open market for supplies. As mentioned above, tanker trucks and independent piped-water networks typically cater to such needs.

Different types of water sources vary in their price level and payment structure. Table 1 displays the prices of different sources in Dar es Salaam, in the late 1990s. Connected households would generally pay a flat monthly bill, based on a tariff equivalent to US$ 0.34/m^3. When such households sell to their neighbours at 20 shillings per bucket, the price per cubic metre is almost quadrupled. This is the price that the majority of the city dwellers and most of the urban poor in Dar es Salaam have to pay.[5] As mentioned above, the price of water from pushcarts often depends on conditions of supply and the location of the consumer's premises. In areas with sufficiently reliable water nearby, vendors may deliver a jerry can for 70 shillings, but when they have to climb uphill, the price climbs as well. The price of tanker-delivered water also depends on distance and availability of water, ranging between some $7.50 and $10 per cubic metre.[6]

Table 1: Water prices in Dar es Salaam (Tanzania)

Source	Price/payment	Shillings/ litre	US$/m^3
Own connection	Monthly lump sum, flat rate, based on:	0.27	0.34
Neighbour's tap / water kiosk	20 shillings per 20-litre container	1.00	1.25
Pushcart water vendor	70–200 shillings per 20-litre container	3.50–10.00	4.38–12.50
Tanker truck (10,000 litres)	60–80,000 shillings per truckload	6.00–8.00	7.50–10.00

Sources: Kjellén, M. (2000a) Complementary water systems in Dar es Salaam, Tanzania: The case of water vending, *Water Resources Development* 16(1): 143–154; and Kjellén, M. (2000b) *Uuzaji wa Maji katika Jiji la Dar es Salaam.* Environment and Development Studies Unit (EDSU), Stockholm. Data source: Water Vendor Survey 1998/1999.

[4] The major barrier for accessing utility-piped water is the cost of connection (fees and material). It may also be that the household is located far from any suitable point of connection to the often underdeveloped water networks in developing countries, a factor further adding to the cost. The household's location may also be in an unauthorized settlement, which may make a legal connection unattainable. Moreover, beyond the cost of connection and its potentially cumbersome and intimidating paperwork, the bills from utilities typically come monthly (if one has a postal address). Again, these constitute problems for the urban poor, particularly as they lack steady incomes.

[5] In the peri-urban areas, however, there are several community-based schemes that sell groundwater for 10 shillings per bucket, or half the going 'kiosk price'.

[6] In the years following this survey, complaints from tankers about low profitability, and the decreasing sales from the official service points have made the utility substantially lower the tariff charged to tankers. While the present charges have indeed been translated into lower prices for consumers, as well as a notorious increase in the number of operating water tankers, the (illicit) water collection from fire hydrants and unmetered households appears to continue.

The tendency of volumetric prices to be lowest for house connections, next lowest for users of (paid) public taps or standpipes, or household resale users, and highest (by far) among those paying to distributing vendors is illustrated in Table 2. The price from standpipes (public taps), however, is not always higher than house connections. In Bandung, Colombo and Shanghai, for example, it is lower. If the cost of having to carry the water home were added to the public-tap price however, having a house connection is likely to be the most economical option in all cities.

That vended water is more expensive is easily explained by its different cost structure. For example, the utility in Delhi (India) operates both tankers and piped distribution. The operating cost of the former is Rs 46/m^3, and for the latter Rs 5/m^3 (McIntosh, 2003, p. 190). Price comparisons between piped and vended water are sometimes complicated by the variation in terms used for different types of water vending and resale. The price of water carried to the doorstep or inside the house by a distributing vendor may often be compared with the price of water collected by the user from a household reselling piped water. When one price is far higher than the other, this often implies that the type of service is of another kind. Notwithstanding, extremely high prices are sometimes found on the vendor markets, quite likely signalling either severe water shortages, some form of collusion among vendors, or a tendency on the part of some researchers to pick the most extreme examples. Nonetheless, the high volumetric prices of water sold in small quantities constitute a great inequity in low-income cities today.

Table 2: Prices of water from different sources in Asian cities

City	**Cost of water per cubic metre (US$)**		
	House connections	**Public taps**	**Water vendors**
Bandung (Indonesia)	0.38	0.26	3.60
Bangkok (Thailand)	0.30	–	28.94
Chennai (India)	0.30	0.58	–
Chonburi (Thailand)	0.38	–	19.33
Colombo (Sri Lanka)	0.04	0.02	–
Dhaka (Bangladesh)	–	0.08	0.84
Hanoi (Vietnam)	0.09	0.55	–
Karachi (Pakistan)	0.10	–	1.14
Kathmandu (Nepal)	0.18	0.24	2.61
Lae (Papua New Guinea)	2.20	5.96	–
Malé (Maldives)	5.08	–	11.20
Manila (Philippines)	0.29	–	2.15
Mumbai (India)	0.07	0.07	0.50
Phnom Penh (Cambodia)	0.13	–	0.96
Port Vila (Vanuatu)	0.42	0.86	8.77
Seoul (South Korea)	0.25	14.13	21.32
Shanghai (China)	0.08	0.06	–
Tashkent (Uzbekistan)	0.01	0.02	–
Thimphu (Bhutan)	0.03	0.05	–

Source: UN-HABITAT (2003) *Water and Sanitation in the World's Cities. Local Action for Global Goals.* Earthscan, London, Table 2.8. Based on consumer surveys by Asian Development Bank, reported in McIntosh, A.C. and Yñiguez, C.E. (1997) *Second Water Utilities Data Book.* Asian Development Bank, Manila.

Closing the gap – getting vendors to provide better services to the urban poor

According to the official indicators, progress towards the water target of the Millennium Development Goals is achieved as people switch from vendors (and other "unimproved" sources) to piped-water connections, or to free public standpipes, boreholes, or rainwater cisterns within a kilometre of their home (WHO and UNICEF, 2000). Experts lament the "myth" that water is a free good, but when people treat it as a normal economic commodity, this too is unacceptable. Given the prices that vendors often charge, many low-income households cannot afford to purchase sufficient water to meet their hygiene needs. But for the most part, high vendor prices are the symptom, not the cause, of insufficient water provision. Not only do vendors provide an important service but also there may be ways of improving this service that make an appreciable difference to the well-being of the urban poor (McGranahan et al., 2006).

In the first sub-section below, we discuss how vendor services could be improved through gaining more recognition. Second, there is a review of some constraints on informal water markets, and how these could be addressed. This is followed by a sub-section examining how relations between water vendors, consumers and utilities could be actively improved. The paper ends by giving some consideration to the role of expanding infrastructure, and getting more water onto the market as well as directly to people's homes.

Recognizing the role played by water vendors. In theory, there is nothing particularly contradictory about the fact that vendors provide an important service, and that most vendor users are not getting sufficient water. Nor is there anything particularly contradictory about a water strategy that aims to get vendors to provide improved water (and sanitation) services to the urban poor in the short run, and to drive vendors out of business by way of providing better utility services in the long run. For governments and other formal agencies, however, working with vendors under such conditions can be a real challenge. In the cities and towns where water and sanitation problems are at their worst, a large share of the population lives in what is generally acknowledged to be "unacceptable" poverty, and cannot buy "acceptable" water and sanitation services on the market, however efficient the vendors become. If governments take a negative attitude towards water vending, and enforce strict regulations, they are likely to reduce the amount of water available on the market, driving high prices up still further. But if they take a positive attitude towards water vending, this may be seen as condoning a situation in which the poorest segment of the population has to pay the highest prices for water and sanitation. It is hardly surprising that many governments just ignore vendors altogether.

Seeing resellers and vendors as an integral part of the water system may help in the design (and implementation) of more comprehensive policies that better serve (poor) end-users. Policies and interventions with relation to drinking water need not stop at the tap, but rather with the ingestion of the water. With such a view, allowing vendors (and other indirect means of accessing water) to be a recognized extension of the piped system, the real outcome of policies and investment decisions may be better predicted and directed. Bringing drainage, sewerage and independent informal providers of sanitary services into the picture, chances of holistic policies as well as environmental and health improvements on the ground are far greater.

Recognizing resellers and vendors as official partners in the water system can also build trust and accountability. Interests of customers, vendors and utilities may potentially be better

resolved through open dialogue and official recognition of roles and responsibilities. Official recognition may also improve the legal protection of vendors and their equipment against corrupt, discriminatory or arbitrary practices on behalf of different authorities. Moreover, overall system security may be enhanced, as vendor systems are not as prone to "breakdowns" as are piped systems.

Addressing existing constraints on informal water markets. A major problem for consumers is the high price of water on many informal water markets. In order to understand how to bring down the price of water, it is necessary to understand how the local market is operating. Regulating the price charged by itinerant vendors is rarely an option. Regulating the price of water at kiosks and household resellers can also be difficult, particularly if there is no community support for such regulation. Even if prices at kiosks are reduced, there is no guarantee that the benefits will be passed on to consumers; they may just as well lead to long queues. In some cases, however, it may be possible to remove constraints that keep vendor prices high. These constraints tend to be interrelated, but it can still be important to distinguish them. To take just one example, efforts to increase competition between water vendors is unlikely to reduce water prices if there is a binding physical constraint on the amount of water available.

Changing counterproductive laws against water vending. If selling water is illegal or if standards are set too high, and water vendors are penalized, the net result will often be smaller quantities of water being made available at an even lower standard on what amounts to a black market. The important principle here is that it is important to consider the actual effects that laws and their enforcement will have on the vendor market. In practice, informal vendors are often tolerated despite not operating strictly within the law. Legal constraints such as high taxes, expensive business licences and standards that are difficult to attain are problematic in this regard. Moreover, if water vending is illegal, then it is difficult for utilities to develop closer relations with vendors, and to justify policies to improve the functioning of the vendor market.

Removing constraints on water supply. Supply constraints can take many forms, and may involve access to groundwater and surface water, as well as to supplies from the utility network. In the urban locations where water vendors operate, access to the piped-water network is limited. If there is insufficient water to meet demand at the official price, there will be market pressures pushing up the price of water at the source above the official price, or pushing up costs through, for example, excessive queuing on the part of vendors. In order to ensure that the official price does influence the vendor price, it is important that supplies at this price be sufficient to meet demand. In some cases, developing alternative sources, such as boreholes, can alleviate supply constraints. Such sources can have the added advantage of providing an alternative when there is a breakdown in the piped-water network. Unfortunately, in most urban locations, the surface water is very heavily polluted. Groundwater is also often polluted, or there may be problems due to groundwater depletion (e.g. a falling water table, land subsidence or saline intrusion). As such, the best strategy for removing water-supply constraints depends on local circumstances. It may require putting in more standpipes, reducing down time when the water pressure falls to zero, or promoting the use of more groundwater. If, however, the underlying problem is not supply constraints but the price at which utility water is sold to vendors, then this cost constraint must be addressed directly.

Reducing water tariffs for vendors. In many cities commercial vendors and household resellers face higher water tariffs than households with standard connections. Commercial

tariffs are often higher than domestic tariffs, and increasing block tariffs (which charge higher rates for higher volumes of consumption) penalize households reselling water. In effect, water tariffs often result in middle-income households with water connections paying less for water than do the vendors who supply low-income households. As long as there is sufficient water being made available at the official tariff, and vendors are not colluding to keep up the price of water, reducing water tariffs for vendors can be a straightforward means of assisting those who depend on vendor water – often, but not always, among the poorest groups.[7]

Preventing monopolies or collusion among vendors. As indicated above, few studies have uncovered collusion among vendors, and many have noted how itinerant vendors appear to operate with minimal profit margins and under considerable competition. It is nevertheless important to be aware of the dangers of having strategically placed water sellers developing monopolies or engaging in collusion, and raising the price of water to their customer groups. In some cases, the legal environment may actually favour monopoly pricing – if, for example, water reselling is illegal, then water vendors may be in a better position to limit water quantities and drive up the price of water. In other cases, water vending may fall into the hands of local groups capable of and willing to drive up the price of water, and withhold supplies. Moreover, the heavy physical weight of water relative to its (market) value is not favourable to the challenging of "geographical monopolies". By ensuring sufficient quantities of water near to the market area, utilities can assist in challenging monopolistic practices.

Reducing cost constraints. In most cases, itinerant vendors operate in a competitive market, and the price of water from distributing vendors primarily reflects the costs they face: they have a high mark-up, but only because they have high costs. There may be ways of reducing these costs. Paved lanes in low-income settlements may, for example, reduce the costs of delivering water. Measures to enhance traffic safety may reduce the risk of accidents, which constitutes an occupational hazard for ambulating vendors. Improvements in the technologies employed by the water vendors may also reduce costs. This may reflect difficulties accessing finance, and in some circumstances microfinance may be an effective means of reducing the cost constraints. In others, vendors may be loath to invest, not because they do not have access to the finance, but because the returns are too uncertain.

Reducing uncertainty for vendor investment. To the extent that vendors are filling gaps in utility provisioning, they run the risk of losing their market when the utility expands. In some cases, the uncertainty of not knowing the utility's plans may inhibit investment – for example, in boreholes, or in extensions from the water network. In some cases, uncertainty about how relations with the utility will evolve may also inhibit investment – there is little point in investing in water pipes, for example, if this might draw attention to water vending, and lead to a crackdown. This is one of the many constraints that should, at least in principle, be possible to alleviate through better relations between vendors and water utilities.

Improving relations between vendors, consumers and water utilities. Useful ways to address issues raised above could come from the mere establishment of fora for discussion. In some areas, as found particularly in research on tankers and operators of small piped systems, there appears to be strong interest among vendors in organizing themselves. Potentially,

[7] On most consumer goods markets, it is standard that the wholesale price to retailers is below the official retail price at which consumers can access the good.

officially recognized associations of vendors, as well as consumers, can help to voice concerns of these groups and improve the quality of water services.

Trust and cooperation among consumers, vendors and the utility can improve services, as they encourage markets to function more smoothly. Trustworthy and open information is paramount in this regard. Utilities can keep vendors informed of, or even seriously discuss, plans for piped system extension and rehabilitation. Inconveniences caused by planned interruptions to supply may be reduced by advance information to vendors and consumers. Consumers can also be informed, by vendors as well as the utility, about the source and quality of the water being supplied to them (and others).[8] The establishment of fora for discussion can help the flow of information and the voicing of concerns of different groups. Newspaper, Internet and radio messages and discussions can be complemented by group meetings for interpersonal discussions of specific problems and issues.

The formation of associations of vendors as well as consumers can enhance natural focal points and facilitate the exchange of information between different constituencies in the water system. Vendor associations may also take on certain responsibilities for training and potentially licensing members, implying that association members can be held accountable to live up to certain standards of conduct and service. Professional associations may be tempted to reduce competition from non-members or to help members collude in driving up the price of water. However, provided this can be avoided, they also have the potential to address justified concerns from customers and authorities.

Regulators are playing an increasingly important role in the urban water sector, particularly in the past few decades, with instituted private-sector participation at the corporate level. Sector regulators are to reconcile interests of several parties, including utilities, consumers and the government. It is advisable that regulators also look at the interests of vendors, and how they can be enabled to benefit consumers. Regulators, vendor associations, or open discussion fora can all become places to discuss problems and potentials of vending and other water services.

More water to poor areas – improving conventional infrastructure. Much can be done to help both vendors and consumers at the same time. However, interests do not always coincide. The preferred type of supply for most consumers is a private connection to piped water, with no need to rely on vendors at all. Indeed, piped supplies are generally the most economical and convenient source for consumers, and where these can be made attainable, this is likely to contribute to the well-being of the population. Thus, while ensuring not to suppress alternative supplies, it is also important to remove as many constraints as possible that bar the urban poor from connecting to the piped network and enjoying sufficient and reliable supplies of water.

More poor households can be helped to connect to the piped system by ensuring that fees, costs and application procedures stop discriminating against these groups. Lump-sum connection fees can be amortized over longer time periods. Costs of plumbing can be shifted between the privately financed and the publicly extended network, principally through the extension of mains into disadvantaged areas, but also through structuring tariffs to compensate infrastructure development through volumetric charges. Moreover, payment

[8] Moreover, the resolution of seemingly minor practical issues, such as whose water (and premises) should be used to clean vessels and containers, can greatly improve hygiene in water deliveries. At another level, systems to exchange containers rather than constantly pouring water from one vessel to another could be instituted.

procedures can be made flexible to allow payments to be effected when money is available rather than strictly following monthly (or even bi-annual) schedules.[9]

Greater supply priority to disadvantaged areas can relieve water constraints for connected households, their neighbours and also for the vendors operating in the area. Ensuring reliable and predictable supplies and sufficient water pressure in the poorest areas is beneficial to all alternative means of accessing water at lower cost and reduced effort. To prioritize supplies to disadvantaged (poor or informal) neighbourhoods is probably the best thing water authorities can do for the urban poor.

[9] Moreover, many wealthy households prefer to pay even larger sums in advance in order to be relieved from what they consider frequent and cumbersome payment procedures.

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While large private water companies grab the headlines, it is more often small private vendors that bring water to the urban poor in Africa, Asia and Latin America. This working paper looks at how water-vending systems operate, how effective they are in meeting the needs of the urban poor, and how this effectiveness might be improved. The paper concentrates on the small-scale and informal vendors, most of whom work independently with very little capital. Nevertheless, they display enormous diversity and flexibility, and are adept at responding to the needs of all but the very poorest household In urban settlements in low- and middle-income countries, water supply and sanitation provisioning typically leaves a lot to be desired. Poorly functioning systems and low coverage inconvenience the inhabitants and allow infectious diseases to spread. Women bear a disproportionate share of the inconvenience, while infants and small children bear a disproportionate share of the burden of disease. The reasons for this problematic situation are many. Poverty is of course an underlying problem in virtually all urban areas where water and sanitation inadequacies are severe. Poor governance is an in Though urban informal water markets have the potential to deliver water to the unserved poor, they can also trap the poor in highly unjust water delivery arrangements. More must be done to prevent this from happening. Last, better option.Â But more must be done to prevent corruption and the creation of cartels.Vendors must also develop their strength through association and business training to help them lobby and defend their rights. Creating a union will also create rules for water transactions and prices. Finally, when providing licenses, the government should demarcate the areas where vendors operate to reduce conflict between vendors.