Centre on Regulation and Competition

WORKING PAPER SERIES

Paper No. 37

COMPETITION, REGULATION AND THE URBAN POOR: A CASE STUDY OF WATER

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December 2002

ISBN: **1-904056-36-9**

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Published by: Centre on Regulation and Competition,
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Abstract

The objective of this paper is to understand the impact of regulation and competition policy upon low-income households. A further objective is to consider how regulatory and competition policies might help to reduce the scale and level of poverty.

In order to narrow down the study to a manageable size, it has been decided to focus on a single sector. The chosen sector is water. Water has been selected because it is a basic need in maintaining life and improving well-being in the short, medium and long term. The water supply sector has a number of particular features: competition and regulatory issues are currently being reconsidered in the context of growing private sector participation, changes in competition and regulatory frameworks have been relatively well documented, large-scale providers co-exist with small-scale water vendors offering a potentially competitive environment, and finally the literature on sustainable livelihoods is beginning to consider water-related issues. The general focus of the discussion is on water supply in urban areas.

The paper is divided into a number of sections. Section II considers the significance of water for the poor. The analysis draws on the sustainable livelihood framework to understand the different ways in which the availability of water affects household well-being. Section III then identifies and summarises three "models" of water supply: large-scale formal networks, generally smaller-scale, sometimes informal, water providers and community-managed systems. Section IV to VI consider affordability, access and quality respectively. Section VII looks particularly at issues related to employment and income-generation related to the water sector.

Regulatory and competition policy directly and indirectly influence the situation of low-income households. Four emerging research themes are identified:

- Understanding the consequences of private sector involvement. Whilst much has been written about private sector involvement in the water sector, the focus has been at the level of the industry. There is little information about how the urban poor are responding to the new situation, how they are changing water suppliers (if at all), and if there are specific groups that have either been left out or who have subsequently been disconnected from the public network.
- The informal/formal sector interface. How might formal sector suppliers work with the informal small-scale water vendors to improve consumer choice? In many cases, the role of small-scale water vendors has not been recognised. If the authorities seek to integrate services, how might they maximise the advantages for the urban poor?
- How might access and affordability best be achieved for the poorest families? A number of subsidy regimes are proposed. Are there are any emerging conclusions?

Competition, regulation and political power. Private sector involvement was proposed to reduce the politicisation of decision-making in the water sector. However, emerging experiences suggest that there continues to be political involvement. How might regulatory authorities best response to this situation?

INTRODUCTION

The first objective of this study is to understand the impact of regulation and competition policy upon low-income households. The second objective is to consider how regulatory and competition policies might help to reduce the scale and level of poverty.

There are a number of anticipated influences in relation to the urban poor both as consumers, and as producers and/or suppliers of goods and services. Potential areas of influence are:

- *lower prices for basic commodities and services;*
- *better quality of commodities and services;*
- *better access to markets for commodities and services;*
- *changes in market opportunities for employment and enterprise development (both positive and negative); and*
- *changes in externalities such as environmental degradation, and health and safety.*

In order to narrow down the study to a manageable size, it has been decided to focus at this preliminary stage on a single sector. The chosen sector is water. Water has been selected because it is a basic need in maintaining life and improving well-being in the short, medium and long term. The water supply sector has a number of further features: competition and regulatory issues are currently being reconsidered in the context of growing private sector participation, changes in competition and regulatory frameworks have been relatively well documented, large-scale providers co-exist with small-scale water vendors offering an interesting competitive environment, and finally the literature on sustainable livelihoods is beginning to consider water-related issues[1]. The general focus of the discussion is on water supply in urban areas.

For the poor, the objective is access to affordable and adequate supplies of water. The significance of politics and policy in influencing access, affordability and adequacy is emphasised by Spiller and Savedoff (1999, 1-2):

> …why is it so difficult to properly manage and operate water systems in the region, and more generally in the developing world? The problem is not related to project finance or lack of technical or manpower capabilities, but rather to the political economy of the sector.

A similar theme is echoed by Calaguas (2000, 9) when she notes that: "It is important that there is recognition that basic services – who gets what, who doesn't and why – is essentially an issue of political economy." Water suppliers are likely to be subject to multiple regulations (such as in areas of environment health) and Rees (1998, 96) recognises that any regulatory process is more than a set of rules, monitoring and policing arrangements, it is also "a bargaining process which has to strike a balance between providing private companies with the incentives to invest and operate efficiently and protecting the interests of other social and economic actors." Regulation, policy and politics are therefore important variables in regard to access, affordability and adequacy.

In understanding how the competitive and regulatory context affect access, affordability and adequacy of water supply for the urban poor, a number of preliminary comments can be made:

- as already noted, alongside the large-scale public and private supplies that are generally subject to competitive and regulatory procedures are a range of smaller, often informal, suppliers. The urban poor may live in settlements that do not have a piped supply of water and hence small-scale suppliers may be the only source of water.
- Smaller, sometimes informal, suppliers may or may not be formally regulated as a part of the water supply sector.
- Policy issues outside of the water sector may influence access to supplies. In particular, land use policies and regulations regarding squatter settlements may be important.
- Local community management of water supplies extends the consideration of regulation and regulatory issues beyond government agencies into civil society.

The following sections go on to look in more detail at the impact of regulation and competition policy on urban poor households. It should immediately be recognised that issues of access, affordability and adequacy are hard to evaluate. Firstly, there are multiple indicators. Access includes issues of where the water is obtained (public standpipe, surface water, piped or otherwise delivered to the house) and how frequent are supplies (even piped networks may operate for only a few hours per day[2].) Affordability includes issues of unit cost, connection charges and methods of payment. Adequacy includes issues related to the quality of the water provided. The difficulties of assessment are indicated by Chisari,

Estache and Romero (1999, 360), when they conclude that it is not possible to estimate a quality indicator for the water supply sector in their general equilibrium model of the economy to assess the gains from privatisation. Secondly, official data appear to bear little relationship to local reality. For example, World Bank and UNDP data report that 99 per cent of the urban population of Zimbabwe has access to safe water (Hardoy, Mitlin and Satterthwaite 2001, 64). However, a community survey in the low-income settlement of Chinotimba in Victoria Falls, which is home to 40 per cent of the town's 40,000 population, finds that each water tap serves an average of 1,375 people (Chitekwe and Mitlin, 2001, 91). Interpretation of data can be difficult. As shown below in the case of Cartagena (Colombia), it is not clear if statistics include or exclude squatter citizens.

The paper is divided into a number of sections. Section II below considers the significance of water for the poor. The analysis draws on the sustainable livelihood framework to understand the different ways in which the availability of water affects household well-being. Section III then identifies and summarises three "models" of water supply: large-scale formal networks, generally smaller-scale, sometimes informal, water providers and community-managed systems. Section IV to VI consider affordability, access and quality respectively.

SUSTAINABLE LIVELIHOODS

The significance of the sustainable livelihoods framework in analysing poverty and vulnerability has been widely acknowledged (Lloyd Jones and Rakodi 2002). During the last two years, there has been some interest in applying this framework to the water sector (Moriarty 2002; Nicol 2001). The framework places considerable emphasis on assets and the contribution of assets to people's well-being and security. Assets are divided into financial, social, physical, natural and human. Water can be viewed both as an asset and as a factor influencing access to other assets.

In particular, health is an important component of human capital. The relationship between water availability and the incidence of disease has long been acknowledged (see, for example, (Hardoy, Satterthwaite and Mitlin 2001, 39-43; Thompson et al. 2000, 43; Stephens 1996, 15). It is recognised that many low-income areas lack basic services and infrastructure resulting in significant health problems. Etherington, Wicken and Bajracharya (2002, 22) report that 16 per cent of all deaths in one Kathmandu hospital between 1992-8 were due to water-borne diseases. Alcazar, Xu and Zuluaga (? 6) refer on an earlier World Bank study of

the situation in Lima, noting that "…waterborne and water related diseases are a major cause of morbidity and mortality especially in the poorer neighbourhoods of Lima. The medical costs and lost wages from such diseases were a high part of household income for the poor, 27 per cent by one estimate."[3]

The importance of water extends beyond health issues. Johnstone and Wood (2001, 5) argue that a lack of access to adequate and affordable water has several important consequences for livelihoods such as increased costs, time and physical effort to obtain water, reduced consumption, an increased health burden and lost productivity. The contribution of water to household livelihoods is described by Thompson et al. (2000, 43), when they discuss three broad categories of water use: consumption, hygiene and amenities. In a detailed study of water issues in nine East African towns and cities they identify the following priority uses: drinking, cooking, bathing, cleaning, washing, gardening and beer brewing. Reflecting on these activities, it may be useful to augment their three-fold categorisation of water use to specifically include production related activities in addition to consumption, hygiene and amenities.

The sustainable livelihoods framework is increasingly being used to analyse the needs of the urban poor and possible poverty reduction initiatives. Moriarty (2002, 4) argues that many water and sanitation programmes already have working practices that are close to the sustainable livelihoods approach with an emphasis on how access can improve people's health and economic activities. However, Nicol (2001, 7) is less optimistic; he suggests that the general move towards cost recovery and self-financing on water projects raises questions about the ability of the poor to participate. Moriarty (2002, 5) agrees that a primary challenge to the water supply sector is that of cost recovery in a context of widespread poverty. Moriarty (2002, 6) suggests that a more explicit focus on water to support productive activities, rather than water for domestic consumption, may be helpful in securing full cost recovery. Nicol (2000, 13) argues similarly that there is a major issue around whether or not the poor can afford to pay for water. He also suggests that even if they can afford to pay, there may be political costs and politicians may prefer to subsidise costs. (This issue is further considered below as it is politicisation of the water sector that emerges as one of the more challenging aspects for providers and consumers.)

Nicol (2000, 11) notes that, in a livelihood-based analysis, water can be perceived as one of a number of assets that support livelihood systems and strategies. The asset vulnerability framework offers a structure to examine the implications of water availability for livelihoods. The Table below is used to outline a framework prior to a deeper investigation below. It draws on Nicol (2000, 17) who uses a somewhat similar analysis to compare health-based approaches to livelihood approaches.

In addition to an emphasis on assets, the livelihood approach also places emphasis on differential access within the households; for example, who bears the costs of securing water, who benefits from the asset (Nicol 2000, 22). Also pertinent (although not further considered here) are issues of differential costs and benefits within the household and, particularly, the additional burden for women of having to collect water supplies over considerable distances and/or wait at water pumps.

Whilst Nicol's (2000) perspective is primarily rural, it seems likely that such issues are also relevant when considering urban areas. He also suggests that the livelihoods approach places emphasis on vulnerability, noting that some groups may be more able that others to manage with reduced supplies of water because of their financial resource or better health. Such issues are highlighted by the discussion of tenants in Kathmandu in the section below considering the issue of access. Despite the significance of the sustainable livelihoods framework, most analyses of water affordability, quality and access do not appear to differentiate between the uses of water, and/or the differential access of different groups that make up the urban poor.

Issues of regulation and competition

	Situation	Price	Quality	Access	Employment	Environmental
Natural	Options for surface water. Scale of water scarcity.	Is water available free? How much time is needed to collect surface water?	Is this sufficient or is the purchase of additional supplies required?	Open or controlled? Issues of changing water availability – dependent on state investment strategies and global environmental choices.	Use of water for enterprise activities.	What is the quality of surface water? Is there too much surface water Stagnant pools as a result of poor drainage?
Physical	Presence of water related infrastructure such as pumps, pipes, wells….	How does investment reduce prices? Costs of access to system?	Are physical investments drawing in poor quality ground water?	Who controls access to water: problems of politicians and local community leaders?	Standpipes offer vending possibilities. Piped water supplies reduce employment unless irregular supply.	Collection of waste water around water points.
Social	Capacity of community to organise to provide water and include those most in need. Water vendors organizing to protect interests.	Collective purchasing arrangements? Price of water from community managed systems?	No evident issues.	Who controls access to water? Can the poor obtain water? Who decides who is inside and outside the community?	Community managed supplies. Possible employment opportunities – likely to be control by committee.	Community management to reduce pollution risks. Community setting of water quality standards and monitoring.
Political	Political relationships needed to secure water. Ability to campaign city-wide or nationally to address interests.	Offers of free supplies. Longer term implications of such offers.	No evident issues.	Who controls access to such community supplies? What are the obligations in respect of votes that are established?	No evident issues.	No evident issues.
Human	Health status of poor. Skills in water management either private or community supplies. Knowledge of hygiene.	No evident issues.	Greater awareness of water quality issues. Health risks associated with water consumption .	Differential access to educational and training opportunities.	Opportunities to sell water or to be employed in a water company.	. No evident issues
Financial	Availability of credit? Capacity to mobilize finance. Ability to save and pay monthly bills?	Implications of cost for a variety of investments.	Different qualities of water depending on source.	Differential access to credit and other business related opportunities.	Ability to invest in	No evident issues.

Sections IV, V and VI look at issues of water affordability, access and quality in more detail. However, before considering the experience of the urban poor in obtaining water, it is useful to examine at recent changes in market for supplying households with water. That is the focus of the following Section.

STRATEGIES FOR WATER SUPPLY – THE MARKET IN WATER

In many cities in the South, there are one or more of three major types of water suppliers. Each of these may operate individually or may co-exist with other suppliers (of the same or different types). First, there are large-scale suppliers (public or private) that are part of the formal enterprise sector and who have some level of monopoly power granted by the state. This monopoly may be universal (for example, sole supplier in a city) or it may have spatial restrictions (supplier to part of the city), or it may be partial, being held in conjunction with other suppliers. Second, there are smaller scale (although some are still large) private suppliers who may be formal or informal. They generally do not operate piped networks, although there are exceptions. They may vary in size from companies large enough to own tanker fleets to those that are household level micro-enterprises selling water to their neighbours. Third, there are community-managed water supplies in which residents organize to supply themselves through some self-help and voluntary activity. The characteristics of the different suppliers result in different kinds of outcomes for the urban poor, particularly in relation to price and access.

Large-scale formal public networks

Many urban dwellers receive their water through public piped networks, either directly from the manager of the network or indirectly through water vendors that buy and on-sell water. Such piped supplies may be direct to the residence (as is common in the North) or to a public standpoint (in which case supplementary private sector vendor services may occur).

The major current issue in the literature is the privatisation of these public supplies, the reasons that account for privatisation, and the results of private sector participation in the water sector. However, it is very difficult to have a good sense of how widespread is private sector investment in the water sector, and whether or not the high profile cases in the literature are representative[4]. Johnson and Wood (2001, 1) quote Silva et al. (1998) to suggest that, in relation to private sector participation in the water supply industry, by 1997 "…a total of 97 projects had been implemented in 35 developing countries." Whilst this suggests that involvement has grown, it should be noted that, by implication, there are many cities, regions and countries in the South in which major suppliers remain public.

As explored below, the debate about private sector involvement is very much related to issues of access and affordability.

The privatisation of formal supply

Walker, Ordonez, Serrano and Halpern (?, 1) argue that the traditional model of service provision is one of public ownership and subsidised prices. However, they suggest that this has been associated with poor service quality and limited coverage; prices have been low but the middle classes have benefited rather than the poor. Menard, Clarke and Zuluaga (2001?, 5) provide an insightful summary of the general problems with public supply in their study of the water supply sector in Guinea. Few people were connected to the public network (less than 40 per cent of residents in the capital city), few of those connected were billed (less than 12 per cent in 1982) and few of those billed paid their bills ((12 .5 per cent of those billed paid). As a result, they suggest, public subsidies were directed at the better off that were connected to the public network but who did not pay their bills, the network was severely under-resourced and the poor had to use the private sector (Menard, Clarke and Zuluaga 2001?, 5).

Even for those with access to piped networks, there is some evidence to suggest that the quality of provision may have fallen in recent years, perhaps due to a lack of investment finance. Thompson et al. (2000, 43-4) in a longitudinal study of water supply in nine East African towns notes that piped supplies have become increasingly irregular: "Whilst in 1967 practically all sample piped households received 24 hour service delivery; today only 56 per cent of them benefit from the same level of service, almost 40 per cent receive less than 12 hours service and roughly 20 get one to five hours service per day."

The poor outcomes of public ownership and management are broadly explained by the political intervention in decision-making (Spiller and Savedoff 1999, 2; Nickson 1997, 165). "[T]hree characteristics – prevalence of sunk costs, economics of density and/or scale and massive consumption - lead to the politicisation of utility pricing" (Spiller and Savedoff 1999, 6). Such problems are exemplified by Alcazar, Xu and Zuluaga (? 5), when they argue that the water utility in Lima had little interest to extending the system to those not connected to the public network as due to high levels of political involvement the water tariff did not cover operating costs and the public company was unable to sanction non-payers. Spiller and Savedoff (1999, 2) suggest that the system tends to create incentives for governments to behave opportunistically and companies to behave inefficiently. As a consequence, they go on to argue "the sector is prone to government opportunism, triggering a downward spiral of

low prices, low investment, low quality, low coverage and high levels of corruption" (Spiller and Savedoff 1999, 29). Rees (1998, 95) agrees that the lack of a competitive market may mean that such agencies to pursue their own interests or those of their staff rather than those of actual and potential consumers.

Nickson (1997, 167-8) also argues in favour of private sector involvement both to address public sector failures and due to the intrinsic nature of the good. He notes that water has been publicly supplied because it has been thought to be a public good. However, water has neither of the two characteristics of public goods: non-excludability (supply to one means supply to all) nor non-rivalry (consumption by one person does not reduce the amount available to others) (Nickson 1997, 167-8). Johnstone, Hearne and Wood (2001, 23) agree: "In general where water is scare and valuable, access to water is characterised by high excludability and high subtractability and thus has many private good characteristics."[5] Nickson (1997, 168) suggests that in addition to reducing politicisation, private sector involvement may increase efficiency and improve the fiscal balance of the public sector (reducing subsidy costs, increasing tax revenue and providing sales revenue and investment funds). Consequently, it is believed that privatisation will provide funds to expand the network and to increase access by the poor.

Despite the interest in private sector involvement, there remain advocates for the public provision of water. Viero with Cordeiro (2002, 1) argue that the public water supply company in Porto Alegre (Brazil) provides water more efficiently and at lower cost than many other cities in Brazil: "The city water system is able to serve 99.5 per cent of the population today at a price of US $ 0.3084 per 1,000 litres." In the context of the above discussion about politicisation, Viero with Cordeiro (2002, 1) argue that it is the greater public accountability associated with the system of participatory budgeting that "…is the central factor that explains the city's efficient services." Simple electoral democracy, the authors suggest, is not sufficient to secure accountability and the Brazilian experience is that the state is captured either by its own staff or by strong external interests (Viero with Cordeiro 2002, 2). Viero with Cordeiro (2002, 2) explain that: "But in a market society with predominantly *participatory* systems of government, the debate changes. Because of the existence of a non-state public sphere, the changes of capture of the state or its institutions by private interests are significantly reduced" (original emphasis).

Despite the move to increase private sector involvement in water supply, there is also broad agreement that the nature of the market for water justifies public concerns and continuing state intervention. The natural monopoly in the supply of water, positive and negative externalities associated with consumption and the fact that water is a merit good (with the implication that consumers may under-purchase being unaware of the full benefits) are all reasons for public sector intervention. Consumers may lack the information that they need in order to make informed choices; particularly in regard to the health consequences of water consumption (Johnstone, Hearne and Wood 2001, 27). Hence, whilst the decision to privatise has been taken in part to reduce political involvement in the water, it is recognised that the characteristics of the water supply sector require public regulation. By implication, there is a continuation of public involvement with associated political interests.

Why privatise?

Changes in the water sector reflect broader changes in the way in which basic services are delivered and the relationships between the state and private sector. Manor (1999, 28-29) identifies a number of factors behind moves towards the decentralization of government services that have a resonance with changes in state intervention in the water sector. First, as existing development paradigms became less convincing, theories of linking the political demand for services with payments became more popular. Second, financial constraints on central government increased the incentive to pass on their responsibilities. Chisari, Estache and Romero (1999, 357) note the importance of reducing the fiscal burden on provincial government in the decision to privatise water services in Argentina. Such arguments reflect the position of Nickson (1997, 168) noted above.

However, whilst one interpretation of the move towards private sector involvement is to improve the service, particularly to create the resources needed to extend the network to low-income areas, a second interpretation is that private sector involvement in basic services such as water reflects inequitable patterns of development. As discussed in Loftus and McDonald (2001, 180-1) in the context of Argentina, a combination of colonial and post-colonial had resulted in the consolidation of a wealthy elite with an interest in neo-liberal policies in order to extend the sphere of their potential economic interest. In this analysis, the privatisation of basic services reflects the needs of capital to extend their sphere of activities rather than the needs of the poor.

In Argentina, Loftus and McDonald (2001, 182-4) argue that Memen's government from 1989 onwards was in favour of the interests of the economic elite. Between 1989 and 1993, the government with advice of the World Bank privatised the Buenos Aires water and sewerage network. The deficiencies in the public network were evident. *Obras Sanitarias de la Nacion* (OSN) was

> suffering from serious under investment; unaccounted for water (leakage) had reached levels of 40-50 per cent; water shortages in the summer months occurred frequently; and serious pollution resulted from too few sewerage connections and inadequate sewerage treatment. Crucially, 30 per cent of the population living in Gran Buenos Aires had no access to the water network" Loftus and McDonald (2001, 182-4).

However, Loftus and McDonald (2001, 184-5) argue that no alternative to privatisation was considered. Offering opportunities for private investment and profit was seen as the only solution to address acknowledged public failings. From a somewhat different perspective, Collignon and Vezina (2000, 10) also argue that, in general, "… the way in which privatisation has been carried out indicates that the underlying perspective is commercial rather than service orientated since any notion of a competitive market is absent from concession and leasing contracts."

The argument that, whatever the intentions, private sector involvement in water supply has served the interests of the elite also emerges from Esguerra's (2002, 2) study of events subsequent to the issuing of water concessions in Manila. Esguerra (2002, 2) argues that that the two companies that were successful made bids there were, in retrospect, "unrealistic" and that these companies were formed by "…the Philippines' two wealthiest families … back by big water and sanitation multinationals in the world. Maynilad was owned by the Lopez family's Benpres Holidngs and partly owned by Suez Lyonaise de Eaux (now Ondeo). Manila Water was owned primarily by the Ayala family and backed by Bechtel. It appears that the two companies' approach was to win the bid at all costs, and then deal with the problems of profitability later" (Esguerra 2002, 2).

Esguerra (2002) argues that once they had secured the contract, these family enterprises sought to ensure that the outcomes of the regulatory process were in their favour.

Loftus and McDonald (2001, 198) also suggest that "Power relations shifted dramatically within Buenos Aires in the 1990s and the water concession was a contributory force. Elite

international and national groups have gained, whilst poor groups have lost." Whilst not all observers would agree with their critical analysis of privatisation, their emphasis on understanding the winners and losers created by the involvement of the private sector in water services is a theme considered by others.

Haggerty, Brook and Zuluaga (? 21) identify the following winners and losers in an analysis of the proposal to offer management contracts for the water supply network in Mexico's Federal District. Their winners are "…a. private companies (domestic and foreign) who expected to win contracts to operate the system; b. residents who were unconnected or had minimal service, and might expect expanded and/or improved service and; c. connected customers whose service might improve and who valued those improvements more than any price increases. National politicians would also benefit if the federal Treasure made fewer transfers to the D.F. water systems, and thereby freed resources they could use for their constituents." At the same time, they identified possible losers as being: "…a. current customers whose costs from increases prices might outweigh the value placed on improvements in service….b. employees and heads of existing public sector agencies who might be laid off and lose stature and benefits and; c. politicians who might lose the ability to reward supporters with jobs, investment contracts or increased water services."

The experiences recounted by Haggerty, Brook and Zuluaga (? 20) suggest that whilst in some contexts (cities or countries), political processes are strongly in favour of privatisation, this is not necessarily the case. In Mexico City, they believe interests were divided; they discuss the complexities facing the PRI as they sought a solution that strengthened their political support[6]. The reduction of the role of patronage in determining access to water might reduce support for the local politicians that were themselves part of the PRI's strategy to secure political hegemony. In a second example of how political forces can result in modified or reject private sector involvement, Alcazar, Xu and Zuluaga (? 26-7) argue that reforms did not happen in Lima despite an economic crisis with hyper-inflation and presidential support (Fujimori). This was because the urban poor were an important support for Fujimori and there were public concerns about price rises (estimated to be from US$ 0.30 to US$ 0.45 per cubic metre under the concession as drafted). (Prices are particularly high in the city because of water supply shortages and the need for expensive investments in order to increase coverage of the supply network.) When the government re-considered the possibility of privatisation in 1996, public support was starting to fall rapidly based on

experience to date in other sectors. An externally financed financing package had increased the capacity of the utility to extend supplies and a regulatory agency had already been established with gains in efficiency[7].

In a further example of "winners" and "losers", Chisari, Estache and Romero (1999, 375) and Van den Berg (2000) consider the differential impacts of privatisation in the case of Argentina. In the case of the concession in Buenos Aires, households newly connected to the network had originally to pay both the cost of connection and the incremental costs of expanding the network (Van den Berg 2000). Recognised concerns led the World Bank to improve the concession in favour of consumers for the second round of bids (Van den Berg 2000). The way in which the poorest consumers may be penalised is further illustrated by the case of Parana (Van den Berg 2000). The first design for a private concession resulted in an estimated consumer loss of US$ 25 million over 30 years. The redesigned concession predicted net benefits to all consumers of US$ 3 million; however, the urban poor were estimated to lose by US$ 3 million, with anticipated benefits of US$ 6 million for better-off consumers.

In a more comprehensive criticism of private sector involvement, Bayliss (2001a, 3) argues that the methods used for privatisation may have been problematic and hence few benefits of the anticipated benefits have been secured. Examining 15 major water privatisations in Africa between 1960 and 2001, she raises questions about investment in maintenance, regulatory capacity, capital investment, continued failure of the public sector to pay their bills and the possible continued lack of financial viability in the water sector. She argues that a major factor for privatisation is pressure from the World Bank (Bayliss 2001a, 4; Hall, Bayliss and Lobina 2001, 4). In a commentary on privatisation in the UK, Rees (1998, 95) suggests that the greatest productivity gains have been immediately prior to privatisation, thereby suggesting that the process of accountability and transparency may have been the critical factor rather than the privatisation process itself.

The debate about the impact of privatisation on improving conditions of poverty is particularly contentious. Bayliss (2001b, 1) argues that there are two opposing views on poverty reduction: on the one hand, the World Bank suggests that privatisation is essential to promote the growth needed for poverty reduction; on the other, she argues that the privatisation of basic services is associated with unemployment, rising prices and

contractions in service. Bayliss (2001b, 3-4) argues that the Bank's position is flawed. She suggests that the desire to make profits may result in the private sector contesting competition and regulation, reducing the anticipated benefits (Bayliss 2001b, 3). At the same time, limited domestic savings reduces the availability of investment funds and therefore privatisation is likely to be ineffective in increasing investment (Bayliss 2001b, 4)[8]. Finally, she suggests that the private sector are only likely to be interested in profit-making investments, leaving the government with loss-making concerns (Bayliss 2001b, 4).

Bayliss (2001b, 5) also suggests that there is no particular reason why the private sector performs better than the public sector; moreover, she argues that there are "…numerous cases of utility privatisation failures." However, she does not deal with the specific points raised in relation to water, particular the politicisation of decision-making in setting tariffs.

Rees (1998, 96) suggests that outcomes of privatisation are influenced by the form of private involvement, the competitive nature of the sector, the type of private company involved and the post-privatisation regulatory regime. Lewis and Miller (1987, 72) make an important point when they emphasis that the nature of water service reflects historical institutional economic and political development. In their analysis of water supply in Africa, they suggest that "…in many ex-British colonies water is seen as a right, although these assumptions are coming increasingly into question as government budgets are squeezed more tightly. In contrast, the ex-French colonies adopted the French model, and those that have retained the arrangement have relied heavily on private firms and institutions in the provision of water supply and sanitation" (Lewis and Miller (1987, 72).

Finally it should be noted that there is no single model for private sector involvement. Nickson (1997, 176), Rees (1998, 98-9), Budds (2000, 9-10) and Johnson and Wood (2001, 10-12) summarise the multiple possibilities of private sector involvement in the water sector. These include: service contracts for specific tasks, management contracts, operating leases, Build Own Operation and Transfer contracts, concessions, shared ownership and full divestiture. The consequences for the different models do not appear to have been assessed and choice may depend on local factors. Nickson (1997, 184) argues that: "… there is no particular form that is appropriate for all circumstances. The form will vary according to the political legal and cultural traditions in each country as well as with a range of institutional, financial and technical considerations."

The emerging picture is one in which the objective of improving the availability of water for the poor has been a major factor influencing changing government policies on the management of the sector. However, the solution of greater private sector involvement is also seen to be serving elite interests. Sections IV and V below consider emerging findings in respect of the extent to which prices have fallen and access has been improved.

The international market in privatised water supply services

Of further relevance in understanding how the nature of competition in the industry may be influencing outcomes is the high level of global concentration. Johnstone, Hearne and Wood (2001, 35) quote the World Bank (1998) to suggest that five firms now account for over 50 per cent of all projects involving private sector participation. Box 1 demonstrates how this high level of concentration works in practice by giving examples of some of the companies successfully bidding for recent contracts.

Budd (2000, 11) suggests that these companies may only be interested in competing for business in the larger cities. This may further restrict the choice of potential suppliers. Etherington, Wicken and Bajracharya (2002, 11-2) discuss the process of setting up a management lease contract in Nepal. In 2001, 18 companies (from 11 countries) submitted Expressions of Interest. The government of Nepal requires such companies to have experience in two operations of a size similar to Kathmandu (1.1 million urban residents, 70 per cent of which are connected to the water network), one of which must be in a Southern country. Only seven companies globally are thought to qualify. By 2002, only two companies were serious about continuing their participation in the bidding process (Etherington, Wicken and Bajracharya 2002, 11-2).

Such a high level of concentration in the international market raises questions about how freely countries and cities can set conditions and regulators can operate. Johnstone, Hearne and Wood (2001, 35) note that this high level of concentration may favour the companies who know a lot more about regulatory options and their potential consequences than the regulators themselves.

BOX 1: The international market for private sector involvement in public water companies

Buenos Aires: The concession is held by Aguas Argentinas which is owned by Suez Lyonaise des Eaux, France (35 per cent), Aguas de Barcelona, Spain (25 per cent), Anglian Water, UK (4 per cent) plus international financial institutions.

Mexico City: Seven companies were successful in bidding for service contracts in the privatisation of the city's water supply through four service contracts. Each bid involved a Mexican company in partnership with a European company: partners in the winning bids were Compagnie Generale des Eaux (France), Severn Trent (UK), Lyonnaise des Eaux Dumez (France) and United Utilities (UK).

Cordoba (Argentina): A consortium of companies hold the concession for Cordoba with the two largest shareholders being Suez Lyonnaise des Eaux, France (37 per cent) and Aguas de Barcelona, Spain (15 per cent).

Cartagena (Argentina): The municipality has a majority share holding with Aguas de Barcelona (Spain) holding 46 per cent.

Queenstown (South Africa): Water Services South Africa are responsible for water supply. Water Services South Africa is owned by Northumbrian-Lyonnaise International and a South African company, Group 5.

Source: Haggarty, Luke, Penelope Brook and Ana Maria Zuluaga. ? Thirst for Reform? Private Sector Participation in Mexico City's water sector; Nickson, Andrew. 2001a. Establishing and implementing a joint venture: water and sanitation services in Cartagena, Colombia. *Building Municipality Capacity for Private Sector Participation Series – Working Paper 442 03*. GHK International: London; Nickson, Andrew. 2001b. The Cordoba water concession in Argentina. *Building Municipality Capacity for Private Sector Participation Series – Working Paper 442 05*. GHK International: London; Palmer Development Group. 2000. PPP and the Poor in Water and Sanitation. Case Study: Queenstown, South Africa. Water, Engineering and Development Centre. University of Loughborough

The role of regulators

To reduce the problems of public ownership and supply, many (including Komives and Brook-Cowen 1999; Nickson 1998; Spiller and Savedoff 1999) argue in favour of strategy for public water supply networks that involves:

- private sector involvement to improve efficiency
- full cost recovery to enable investments
- better targeting of subsidies to avoid wasting resource
- regulatory agencies to ensure the public interest.

"Regulatory arrangements are central to the political viability of any plan for increased private sector participation." Walker, Velasquez, Ordonez and Rodriguez 1999. 79)

Rees (1998, 100) lists regulatory tasks necessary for the more comprehensive privatisation options to be: price control, promotion of operating efficiency, service standards, control of externalities, maintenance of public good functions, ensure assets can be services over time, ensure development of essential infrastructure, control over land speculation, control over unfair trading practices, safety net regulations, promote water use efficiency and ensure responsiveness to consumer needs. Rivera (1996, 62) suggests that a model for regulation needs to include the objectives for the regulatory agencies together with the design of instruments and incentives, development of expertise, enforcement strategies, and strategies to maintain the independence of the regulator and the legitimacy and openness of the process.

Who are the regulatory agency? Nickson 2001, 5 suggests that generally the municipality is the legal representative of the public sector in "partnership arrangements" with the private sector to provide water within its own jurisdiction. However, as discussed by Castro and Cruz (2002, 10) in Mexico City, they may have limited capacity to fulfil their obligations. In addition to the municipality, there may be a separate regulatory agency with specific responsibilities. Johnstone and Wood (2001, 63) point out that regulatory responsibilities may well be divided between issues of competition and prices, and those of environmental standards. In the case of the Buenos Aires concession, they identify five agencies with regulatory responsibilities.

A number of practical concerns have been raised about the capacity of regulators. Regulators have been accused of being corrupt (Loftus and McDonald (2001, 187 and 194); ineffectual (Loftus and McDonald (2001, 193; Alcazar, Xu and Zuluaga (2000: 11); insufficiently free of political interference (Alcazar, Xu and Zuluaga (2000: 11); unable to offer a sufficient profit to stop firms leaving the sector (Bayliss 2001b, 14); insufficiently strong institutional capacity (Nickson 1997, 184); and prone to regulatory capture (Johnstone, Hearne and Wood (2001, 34). Generally, these commentators appear to be pessimistic about the capacity of regulators. Rivera (1996, 61-2), in a further example, emphasises that the quality of regulation may be lacking.

Artana, Navajas and Urbiztondo (1999, 228) conclude in the case of Buenos Aires that: "A discussion of various ETOSS decisions suggests there was a bias towards the regulated company."

Experience with privatisation is now raising questions about whether or not the shift to a private provider – public regulator model really avoids the dangers of politicisation. Esguerra (2002, 2) discusses the pressure put on the regulators and the state by the two water companies that won the concession in Manila:

> Maynilad's financial woes and Manila Water's legal challenge brings out an intricate and complex debate on the status of the world biggest privatisation. The bottom line is that the process that initially appeared as an extremely successful solution now lies in serious doubt. What emerges from an investigation of this debate is a corporate muddle – a process that is not the "win-win" solution it has hyped to be after all. Rather it could well be a case of street smart companies making unrealistic and unsustainable bids just to win the tender, and gambling on the possibility that the rules of the game may be changed later on in their favour, given the weaknesses of regulation in the country and the state's historical permeability to private interests.

Perhaps critically, Rees (1998, 96) points out that regulation has to be "…seen not just as a negative set of rules, monitoring and policing arrangements but as a bargaining process which has to strike a balance between providing private companies with the incentives to invest and operate efficiently and protecting the interests of other social and economic actors." It appears that private sector involvement has not avoided political involvement in decision-making but such involvement may have made outcomes more complex, as there has been the addition of a further major interest group.

The competition: small-scale vendors

As is discussed below, large numbers of the urban poor that lack access to the public network. As a consequence, many of them use small-scale informal water providers that may offer a wide range of different services. It is perhaps surprising how long it has taken to recognise the importance of small-scale water vendors in providing access for the urban poor (and often the not so poor). Whilst Lewis and Miller (1987, 75) argued for a much greater recognition of the importance of informal water vendors in Africa in the late 1980s, there was relatively little further interest until the end of the following decade.

By 1999, Brook and Tynan (1999) proposed, in a World Bank publication series entitled World Bank Viewpoint, that those setting regulatory frameworks for water supply services should ensure that there was a potential for small-scale private providers to deliver a range of service options for low-income households. They suggest that policy makers "… need to refocus regulation on facilitating entry and monitoring quality and prices to end users."

Komives, Whittington and Wu (?,3) also recognise that "…Where the very poor do not have formal infrastructure services, informal, private and community infrastructure solutions fill the gap for many households."

Moreover, it is not so evident that private providers can be seen simply to be "…filling a gap." Solo (1999, 123) argues that such providers should not be seen simply as subsidiary to the public network; she suggests that "…small-scale water and sanitation enterprises are not simply marginal peculiarities with limited replicability. In Guatemala City, over 200 independent operations are responsible for service provision to over half of the population of the metropolitan area. When allowed to flourish, the small scale entrepreneurs are efficient, competitive and replicable – requiring no subsidies or monopolistic conditions."

There is a growing recognition of the diversity within this sector of the water supply industry. Albu and Njiru (2002, 15) make a useful distinction between wholesale vendors (who may buy a tanker or even have a small network), distributing vendors who set directly to consumers via door-to-door sales and direct vendors who sell to consumers who come to them.

There is data to show the significance of small-scale private providers. Collignon and Vezina (2000, 5) argue that in ten towns across West and East Africa between 17 and 78 per cent of household water needs are met through the formal distribution network with the remainder between serviced by informal providers (or direct groundwater sources). In Bamako, for example, only 18,000 households are served by the city water agency and 92,000 households are served by independent providers. Collignon (1999, 3) argues that such services have grown in recent decades because municipalities no longer have the revenue to provide free public standpipes.

Thompson et al. (2000, 45) suggests that, since 1967, private wells have become a more important source of water for residents in nine East African towns due to the increasing uncertainty of water supply through the piped network. In 1967, more than 75 per cent of households without piped supplies used hydrants or standpipes and 25 per cent of households using rainwater and surface water. By 1997, rainwater and surface water supplied less than 15 per cent of the water needs of those households without piped water; the private market

had grown from zero to 24 per cent and hydrants or standpipes supplied 56 per cent of households.

A recent study of infrastructure coverage using a data set of 55,000 households in 15 countries (World Bank: Living Standards Measurement Study) includes an assessment of water consumption (Komives, Whittington and Wu, 2001: 2-3). Information on water vendors was available in the case of Cote d'Ivoire, Ghana, Pakistan and Nicaragua. Only 2.4 per cent of the sample developed on water vendors as a primary source of drinking water although 15 per cent of households in Cote d'Ivoire used water vendors. Perhaps surprisingly, less than 1 per cent of households using vendors were in the poorest decile of their countries whilst 20 per cent of households using vendors were in the richest decile.

Competition between vendors appears to vary. Collignon and Vezina (2000, 40) note that, in general, they found little strongly competitive behaviour between the informal suppliers in ten East and West African towns. In some cases, this may be because they come from the same geographical region or ethnic group; in others, because their face similar difficulties and frequent social contact. Crane (1994) quotes Shugart (1991) to suggest that competition among vendors in Jakarta may also be limited by family or ethnic links.

A third alternative: community managed services

Alongside public networks (with or without private sector involvement) and small-scale private providers, there are also community-managed services that place considerable emphasis on self-regulation. Gross, van Wijk and Mukherjee (2001 26) suggest that such models have become popular in the last ten years. However, it should also be recognised that such community models often build on much longer traditions of self-managed assets (Lammerink, Bolt, Jong and Schouten 2001, 25). The growth of community managed water supply systems appears to reflect a broadly based interest in participatory development[9].

Community management offers users a voice and choice in aspects such as technology, level of service, service provider, financing arrangements and management systems in exchange for making contributions (in cash or in kind) (Gross, van Wijk and Mukherjee 2001, 26). Such models often seek to engage community members from the beginning of the service delivery process in order to build community ownership and strengthen their capacity to manage services. They are driven by the understanding that many communities are willing and able to develop their own water supply systems rather than wait for government provision, often because their household expenditure is likely to fall if they work together to improve on existing provision (as Rahardjo and O'Brien (1994, 10) exemplify in the case of Indonesia).

There is no single model for community-managed supplies. Generally they are supported by an external agency, most probably an NGO. The attitude to subsidy varies considerably, as does the actual division of responsibilities within the project. One of the best known examples of community managed sanitation is the Orangi Pilot Project in Karachi which has assisted more than 100,000 households to manage lane based sanitation schemes that have over the last 16 years developed connections to the main sewer network. With the support of the Orangi Pilot Project, communities in Faisalabad have developed similar methodologies to provide themselves with water. Box 2 describes their work - and also demonstrates the continuing significance of the political forces in the provision of water supply.

BOX 2: Community-managed water provision: the politics and the pipes

In Faisalabad, the Anjuman Samaji Bahbood (a welfare organization run by local residents) sought to improve water provision in low-income settlements. One settlement called Hasanpura was chosen as a pilot area because there was no potable water in the settlement although (saline) underground water from boreholds was used by residents for washing clothes and some other activities. The 1,000 households in the settlement were spending a daily average of Rs.5 on water. Further costs were incurred through additional purchasing of soap due to the salinity and medical costs due to high levels of disease. The project sought to connect the settlement to mains water located 1,100 feet away from the settlement, with individual lanes then laying pipes to connect households to mains water. Each household's share of the costs of the mains water pipe was Rs 1,300. The cost of connection is an average of Rs 600 and the charge to connect to the public network is Rs 1,175.

Initially local authorities showed little interest in their work. One official demanded a bribe when the household needed a license to bring a water pipe across a road in order to provide a water network to one neighbourhood. The community decided to do this portion of their work at night, confident that once it was completed they would be able to keep the pipe and pay a fine. Through a combination of clandestine activities and occasional bribes, the community completed the connection to the mains water supply. Their first successes were judged by some to be more of a threat than an achievement. One local politician sought to undermine their activities by promising households free connections if they stopped participating in the ASB programme. The politician started to lay his own line but the work was sub-standard and once this was evident the community lost interest.

In addition to a sceptical local authority, ASB faced local households who were unwilling and unable to invest a large amount in water and sanitation. A grant from an NGO enabled the organization to construct secondary pipes, thereby establishing the beginnings of a network that families could connect to. Families were asked to pay the connection costs for their house to the lane sewer and repay their share of the cost of the secondary pipe, enabling further expansion of the network. ASB found that families were willing to do this. External donor finance and local visionaries were successful in catalysing a change in attitudes. More and more families became interested in taking part.

As the local authority began to see that families were willing to pay the cost of piped water, they also became interested. Nazir Wattoo, the leader of the organization was invited to participate in a number of government activities. Within a few months, he had been offered state funds to carry on his work, extending activities to other settlements. At the same time, interaction increased between local staff of the water authority and ASB activists. ASB offered their own area plans to assist in state financed improvements. They were asked to assist in monitoring private contractors on a state programme.

Source: Alimuddin, S., Hasan, A. and Sadiq, A., 2001. Community driven water and sanitation: The work of the Anjuman Samaji Behbood and the Larger Faisalabad context. *Poverty Reduction in Urban Areas Series.* Working Paper 7. London: International Institute for Environment and Development.

Community-managed water supplies are often contentious, in part because they overlap with the political interests of formal sector supplies and the entrepreneurial activities of the informal sector. Matin (1999, 11) further develops this point when discussing interventions

by an NGO in Dhaka to improve the water supply. "Access to scare resources is a recurring source of conflict in a slum and often provides a power base for a distinct social leadership, which dictates the terms and conditions under which residents in a particular neighbourhood have to live." In Dhaka, Dushtha Sashthya Kendra (an NGO) found their first community-managed initiative sabotaged by the local leader who stole water to sell. As a result, they developed a programme with additional resources to create and strengthen community teams that were able to manage finance and staff. Matin adds "… the main emphasis was laid on capacity building of the community and preparing them to operate a community service based on accountability and transparency" (Matin 1999, 19).

A further reason why community-managed services may fail is simply because the tasks place further burdens on communities that are already struggling to address their multiple needs. Etemadi (2001, 96) makes a study of Communal Water Associations (CWA) in Cebu City (the Philippines). These associations are provided with faucets by the city council in order to improve water provision in a city in which only 41 per cent of residents have access to piped water. She concludes: "Many CWA's are beset with management problems … such as lack of active participation by members, undemocratic if not oppressive management style, irregular or no annual election resulting to monopoly of leadership, and a lack of financial transparency and accountability. It is not uncommon to hear that a CWA official has disappeared with the association money to the dismay and consternation of the members."

Urban Waterpoints (undated, 1) emphasises the importance of ensuing community control if access to water is to be maintained by the poorest. However, Dikito-Wachtmeister (2001, 31) raises a critical point when she notes that water committees, along with other forms of social capital, can also be exclusionary and discriminatory, failing to serve the interests of all in the community.

The continuing viability of community-managed water supply systems is uncertain. Gross, van Wijk and Mukherjee (2001, 16) studied 88 community-managed systems throughout 12 countries in the South, none of which received a subsidy. They concluded that nearly half were failing to collect sufficient revenue even to meet current operating costs. Rondinelli (1991, 419-21) suggests that there has been a mixed experience with community-managed water systems with important factors being adequate incentives, sufficient skills and

resources, appropriate processes, effective inter-organizational relationships, appropriate technology and effective systems for monitoring, evaluation and feedback.

A further potential advantage of water vending for communities is to provide the association with a small supply of funds. Wegelin-Schuringa and Kodo (1997, 187) discuss how a community is hoping to earn sufficient funds from managing a water point in low-income settlements in Nairobi to pay the maintenance costs on a latrine block.

A separate issue is community intervention at the level of the city network. Nickson (2001b, 11) cites an example from Tucuman (Argentina) in which service was considered to be so bad (particularly declining water quality) that 80 per cent of residents stopped paying bills. As a consequence, the governor cancelled the concession and the provincial government took back the provision of water services. However, many residents in other cities appear to be unorganised and such examples are rare. Palmer Development Group (2000, 22) discussed this issue with residents in Queenstown (South Africa); they felt let down by their councillors and argued that they did not have a voice in influencing municipal management of their water supply.

Bringing it all together

There appears to be a growing recognition of the potential synergy between different types of suppliers within the water sector. Nickson (1997, 166) argues that there is a "…new consensus on managing UWS [urban water systems]." He suggests that this consensus is based around two principles: first, the recognition that water companies (however owned and managed) should be treated as commercial enterprises and second, that water management should be passed on a participatory approach involving users, planers and policy makers (Nickson 1997, 166). Johnstone and Wood (2001, 15) also suggest that "…the role played by NGOs and CBOs may become more important" with increased private sector participation in the market. Mazzucchelli, Rodriguez Pardinas and Gonzalez Tossi (2001, 99) conclude that "…During the past two decades, the top-down approach in water and sanitation project targeting disadvantaged urban populations has been found to be quite inefficient." Hence there has been the motivation to develop new integrated models that reach across existing experiences.

Despite these needs, the Mazzucchelli, Rodriguez Pardinas and Gonzalez Tossi (2001, 99) argue in their study of the concession in Buenos Aires that collaboration between the urban poor, concessionaire and regulator is not well developed. In Buenos Aires, Aguas Argentinas, the company with the concession, introduced a new programme three years after taking up the contract (Hardoy and Schusterman 2000, 65). This programme seeks to work with low-income communities to reduce installation costs and improve billing and collection. Such models pass over management responsibilities to low-income communities who develop their own regulatory systems for installation and management. In this case, the local government and a local NGO also have a role in providing financial resources and technical capacity respectively. Mazzucchelli, Rodriguez Pardinas and Gonzalez Tossi (2001, 99) identify four specific strategies that have emerged in Buenos Aires: "community-led" with an agreement between the community and the company; "NGO-led" with the NGO coordinating relationships between the company and community; "municipal-led" with the municipality subsidising connection charges; and "job-creation" with the state financing community involvement installation as part of a job-creation programme. Each is small-scale with initiatives in one or two places (Mazzucchelli, Rodriguez Pardinas and Gonzalez Tossi 2001, 99).

Collignon (1999, 4) is generally pessimistic about the interest in collaboration noting that, whilst there has been interest in the last five years, only Mauritania has developed a system in which small operators have concessions from the water distribution network. Collignon and Vezina (2000, 10) suggest that, in the ten West and East African cities that they study, municipalities have done little to assist the independent providers and most fine activities, restrict the informal laying of water pipes and limit the number of standpipes. Collignon and Vezina (2000, 31) noted that resale is also allowed in Abidjan where SODECI (the city wide agency) has formally licensed about 700 households for the resale of home water to those in neighbouring areas. Solo (1999, 119) notes a further example of collaboration between a public water agency and private vendors in Dhaka (Bangladesh). Nickson (2001a, 26) suggests that small-scale private vendors are permitted in regions of Cartagena (Colombia) by the company holding the concession although they are illegal. With respect to private operators in Cordoba (Argentina), Nickson (2001, 22) explains how the assumption of government is that small private water companies that supply through their own networks will gradually be absorbed into the concessionaire. In some cases, this has been achieved by court action due to the unwillingness of the enterprises themselves to abandon their activities

(Nickson 2001b, 22). In a much earlier study, Lewis and Miller (1987, 77) summarise details of public private partnerships in water sales; however, there are few examples of government interest in partnerships with small-scale vendors.

One reason for the lack of experience may be Johnstone and Wood's (2001, 52) suggestion that there is no easy route to combine formal and informal systems. Solutions by community groups or private vendors "…are usually short-term response to the crisis resulting from inadequate access" Johnstone and Wood's (2001, 52). They go on to suggest: "… perhaps the most difficult task facing the regulator is to ensure that positive aspects of the small-scale operators are preserved, while ensuring that services are provided efficiently and do not generate externalities elsewhere" Johnstone and Wood's (2001, 52).

Devas (1996, 38-40), in a study of water supplies in Battambang (Cambodia), argues that potentially the municipality, private sector and NGOs all have a role. The municipality might usefully expand the piped water supply although there would be initial high costs and uncertainly over whether or nto the state could manage the project. Secondly, communities could, with NGO support, establish wells and handpumps that would quickly deliver improvements. (Although the history of Cambodia (especially in the mid 1990s) means that community collective capacity might be hard to establish.) Finally, some private companies might be interested although it was not clear that there were sufficient resources in the private sector and the state had limited regulatory capacity. However, Devas (1996, 38-40) notes that there is probably not sufficient capacity in the municipality to manage improvements, even if they are made incrementally.

In general, it appears that, except for pilot programmes, there has been relatively little experience of collaborative systems to date, either between large companies and community-managed models or between large companies and small-scale enterprises.

As evident from this discussion, the supply of water may remain inadequate but the market for water appears to be highly contested. A major reason for this appears to be that water is a critically important basic need. As a result, there may be interventions by both politicians and government officials who are under pressure (for a multitude of reasons) to change the distributional impacts of policies and practices. At the same time, deficiencies in public supply combined with the scale of need mean that there are many opportunities for private

entrepreneurship and such enterprises may seek to control their markets to increase their profits. At the same time, the significance of water for the livelihoods of the poor has resulted in a number of other social initiatives to address water need through community management. However, as shown above, these have to struggle for space among political and private interests.

The following sections below look at water availability in more detail. Issues related to water prices are considered immediately below with a major area of enquiry being the consequences of privatisation on price. Section V then turns to access to water and Section VI considers issues of water quality. The importance of water supply as a source of income generation and employment is considered in Section VII. Finally, Section VIII looks forward at some of the research questions raised by this review.

WATER PRICE

This section is divided into three: prices charged by small-scale water vendors, prices charged by formal networks and tariff structures. There is little information about prices charged by community-managed systems so unfortunately it has not been possible to consider this area of pricing.

Water Price: Informal sector supply

The major issue in the literature is comparative pricing between informal water providers and companies supplying through the public network. There is little agreement about whether or not the small-scale vendors charge high prices. Perhaps this is not surprising, there are many contexts with significantly different supply conditions and markets. For example, supply may be constrained by arrangements with the formal water sector or by the physical supply of groundwater, the capacity of private vendors may be constrained by a lack of credit to enable an expansion of suppliers or by legal difficulties, consumers may face a choice of alternative supply systems or may be dependent on a single entrepreneur.

In some cases, small-scale informal water providers are included within the regulatory systems that apply to larger companies and hence prices may be controlled. However, even where the informal sector has been brought within the regulatory system, there is reason to believe that formal controls are weak. Collignon and Vezina (2000, 11) found city-wide formal contracts with private operators to manage publicly funded standpipes in nine of ten

cities in an East and West African study. Contracts specify "...resale prices, official hours of operation, terms of payment, and conditions for rescinding the contract." Despite these details, Collignon and Vezina (2000, 11) argue that written terms have little relationship with actual practice. "The fontainiers' relationships with their customers are largely determined by the conditions of supply and demand and other non-contractual factors" Collignon and Vezina (2000, 11). They note that retail prices may be twice as high as that specified in the contract; at the same time, payments made by the private operators to agents of the public company may include bribes to ensure that they are allowed to keep their contract.

Johnstone, Hearne and Wood (2001, 27) summarise six city studies and suggest that the ratio of unit costs between vendors and piped connections is between 5.5:1 to 300:1. Hardoy, Mitlin and Satterthwaite (2001, 48) draw on studies in 14 cities to suggest a narrow differential of 4:1 to 83:1. In a longitudinal study in East African towns and cities, Thompson et al. (2000) suggest that the average real costs of piped water supplies fell from 0.095 US cents a litre in 1967 to 0.077 US cents a litre in 1997. At the same time, real costs of non-piped supplies rose slightly from 0.15 US cents in 1967 to 0.17 US cents in 1997; as noted earlier, this reflects a significant growth in the market for small-scale private vendors.

Crane (1994, 72) summarises a number of other studies in respect of price. He concludes that evidence is mixed: "…Whittington et al. (1989) argue that vending is often sufficiently competitive to keep vendor profits low. However, this is not universally agreed. Crane (1994, 72) argues that high profits appear to be related to the ability of truckers to control entry to their market. Drawing on examples from Haiti and Indonesia, Crane (1994, 73) argues that the private sector is important to the poor many of whom only access public water through private vendors. The price of water for consumers is dependent on market structure that is in turn influenced by "both the regulatory environment and private market characteristics."

Reporting on a project to change market outcomes in Jakarta (Indonesia) through investing in household connections and hydrant (private standpipes) systems and through legalizing resale, Crane (1994) draws on a survey of 291 households to conclude:

- Prices for vended water were generally three to 12 times that charged by PAM Jaya (the municipal water authority) for per cubic metre delivered through the piped network (Crane 1994, 74).

- After the changes, 73 per cent of the sample bought water from private vendors, 27.5 per cent bought from public hydrants and 10 per cent bought from household resellers, 13.4 per cent obtained water through the municipal system and 10 per cent on-sold water to their neighbours.
- Customers of water vendors buy less water than others. They pay a cost that is over 14 times the average cost of water through the municipal water network. For those households in the sample buying from vendors, water accounts for an estimated 7.4 per cent of income. This falls to 4.8 per cent for those buying from hydrants, 3.2 per cent for those buying from other households and 1.8 per cent for those with household connections. (Crane 1994, 75-6)
- The changes in the water supply policy are believed to be responsible for preventing increases water prices. However, the full effects are not well understood. Whilst there has been an increase in household resale, it appears that this water source is a supplementary rather than a primary provision. Use of the facility of purchasing from neighbours is also limited by a lack of knowledge among households that the practice of household resale is legal (Crane 1997, 80).

Collignon and Vezina (2000, 21) argue that in ten selected East and West African towns, water delivered to the door costs US $ 0.6-6 per cubic metre, four times as much as water from a public standpipe (US $ 0.6 to 1.5 per cubic metre) and six times as much as water from a home tap (US$ 0.3 to 1.00 per cubic metre). On average, households spend 1-3 per cent of their income on water (Collignon and Vezina 2000, 21). Collignon and Vezina (2000, 42) argue that:

> Independent providers are sometimes criticised by public authorities or NGOs for reaping high profits on the backs of their low-income customers. But the surveys carried out for this study found no evidence to support this view. On the contrary, the survey results indicate rather that the market for water and sanitation services is extremely competitive and profit margins low. Most operators surveyed earn just enough to maintain and replace equipment and pay themselves a modest wage.

Broadly, this discussion suggests that prices are sensitive to competition between providers. However, the nature of this competition varies across different towns and cities.

Water Price: Formal sector supply

Formal sector prices are regulated prices; while there may be exceptions to this rule, they are not identified in the literature. It appears to be accepted that in industries with a degree of monopoly power that supply goods essential for basic needs, some regulation is required (Chisari, Estache and Waddams Price 2001, 2). The major present issue is the consequence of privatisation for price combined with related issues of cost recovery and subsidy.

One premise underlying the current model of privately provided, publicly regulated supply is that many of the urban (and rural) poor are able to pay the market price for an adequate supply of service and that subsidies can be effectively targeted on those that cannot. However, as noted by Nicol (2000) and Moriarty (2002), this might not be so easily achieved. Chisari, Estache and Waddams Price (2001, 1) highlight that this subject is one of the remaining questions for advocates of privatisation; how can the responsible authorities ensure that the poor can afford to pay the operating and amortization costs related to coverage, whilst at the same time ensuring increasing access for the poor.

As noted above, one of the criticisms of public provision is the failure of prices to cover costs. However, as discussed by Viero with Cordeiro (2002, 1) in the case of Porto Alegre, this is not a universal problem and there are public systems that are managed effectively. Generally little is written about them, with the majority of the literature concentrating on price experiences with privatisation. Whether public or private, it appears that the majority of systems involve two separate charges: a price for connection followed by a regular fee for use.

Prices and price setting

Looking specifically at the experience following privatisation, Bayliss (2001, 6) argues that in Guinea prices rose rapidly, resulting in payment difficulties even for the higher income groups. Menard, Clarke and Zuluaga (2001: 10) also note that price rises exceeded expectations in Guinea; by 1997, the minimum payment for a two-month period was US$13 (for 20 cubic metres of water). Whilst comparisons are difficult, prices have risen from US$ 0.14 cubic metre in 1988 to almost US$1 per cubic metre in 1994 (Menard, Clarke and Zuluaga 2001: 31). (The price to connect to the system is US $ 90.) Menard, Clarke and Zuluaga (2001: 10-31) note that: "The most common complaint during field interviews was that the price of water was too high." In a comparison with prices in four Latin America

cities and seven African countries, Guinea has the second highest price with the tariff for low-income customers being particularly high (Menard, Clarke and Zuluaga 2001: 12).

In Buenos Aires, Loftus and McDonald (2001, 189) note that Aguas Argentinas promised consumers a 26.9 per cent reduction in the tariff when they took up the concession. The contract also stipulated that prices should only fall in the first ten-year period. However, Loftus and McDonald (2001, 190) explain that prices rose 33 per cent in the run up to privatisation; they suggest this was to enable reductions after privatisation and thereby reduce opposition. Under the concession, prices have been increased twice following the initial fall (Loftus and McDonald 2001, 190). The first increase was justified by the government's requirement for immediate connections in some of the poorest neighbourhoods and accelerated expansion in one municipality (Loftus and McDonald 2001, 191). Connection charges were also introduced of between US$ 43-600 for water, depending on the property area and location with an additional six-monthly water services charge of US$ 6 plus tax (Loftus and McDonald 2001, 191). Discussions with the regulator in 1994 resulted in a 30 per cent reduction in connection charges but costs were still too high for many residents (Hardoy and Schusterman 2000, 65). Hardoy and Schusterman (2000, 66) explain that further difficulties in payment by the poor resulted in the introduction of universal service charge for all customers instead of a service connection change; this is currently US$ 2-3 every two months for those with a water supply and double this for those with a water and sewerage connection. Mazzucchelli, Pardinas and Tossi (2001, 97) note that it is still not clear how low-income families will pay for internal infrastructure costs within their plot (estimated to be US$ 50 for water) as the connection fee is from the mains supply to the boundary of the plot. Levels of non-repayment are not specific but Pirez (2002) suggests that they were significant enough to result in requests for reduced investment requirements by the company. In another Argentinian example, Nickson (2001b, 15) suggests that, in Cordoba, prices fell by 8 per cent following privatisation.

Price setting with private sector involvement focuses attention on the role of the regulators. As already noted, there are questions about their independence. In the case of Mexico City, responsibility for prices remains with the Federal District; Saade Hazin (1998, 190) suggests that "….companies are often consulted." In Mexico City, a shift to metered consumption combined with the abandonment of fixed tariffs has resulted in consumer fears that prices are soon to rise. Esguerra (2002) explores the realities of regulation when he notes that the

original prices offered in the Manila bidding process have not been maintained. He concludes that "…. these were dive bids that were meant to win the tender at whatever costs and would have resulted in huge losses for the companies" Esguerra (2002). Subsequent negotiations, including a legal challenge in the courts, have resulted in amendments to the contract that will result in increasing prices.

As described by Nickson (2001a, 26) the inability of the poor to pay even a reduced connection charge is a very real issue for the concessionaire in Cartagena (Colombia). In order to improve payment, the company is now considering shifting to a weekly billing system (Nickson 2001a, 27). This issue of payment systems is further considered below.

Subsidies for water

There is a general consensus that subsidies are likely to be necessary for the poor to be able to afford sufficient quantities of water. In some cases, there is a presumption that this should be financed through a cross-subsidy and higher prices for higher-income consumers. In other cases, it appears that alternative government funds might be available. These arguments are elaborated below.

Chisari, Estache and Waddams Price (2001, 2) argue that there is a real difficulty for regulators in ensuring that the poor pay sufficient to cover consumption and amortization costs whilst at the same time ensuring that there is a reasonable return on capital. They cite examples from the cities of Buenos Aires and Tucuman in Argentina to suggest that the companies of Arguas Argentinas and Aguas del Aconquija respectively faced a direct conflict between financial viability and extended coverage (given levels of affordability). This lack of affordability associated with the importance of water for basic needs and public health has resulted in the acceptability of water subsidies.

Foster, Gomez-Lobo and Halpern (2000) argue that, whilst there may be a need for subsidies, targeting can be very difficult and expensive; they quote a study in Panama to argue that a direct subsidy on connection costs may be more efficient than a subsidy on water consumption. Walker, Ordonez, Serrano and Halpern (2000) find that in four of six Central American cities, the poor are offered few subsidies despite the stated goal of pricing policies. In two of the cities, Sonsonate and San Miguel in El Salvador, there is a subsidy for the poor; but, in the others, there is none (Walker, Ordonez, Serrano and Halpern (?, 8-9).

Gomez-Lobo (2001) further explores the issue of efficient water subsidies in the case of Chile. Each year, the Ministry of Planning determines how many subsidies are to be granted and how they are to be applied. The broad criterion for assessment is that "no household should pay more than 5 per cent of its monthly income in water and sewerage charges" Gomez-Lobo (2001). Subsidies have to be renewed every three years; even households that receive the maximum subsidy have to pay a minimum of 15 per cent with subsidised consumption being limited to 15 cubic metres a month. In 1998, almost 13 per cent of household benefited by an average of US$ 10 a month; on average, 52 per cent of benefits in each region accrue to the three lowest-income groups (Gomez-Lobo 2001). For the lowest income group, the subsidy is worth an estimate 8 per cent of household income (Gomez-Lobo 2001). However, the scheme has high associated costs as household water is metered, there has to be a strong institutional capacity for means testing (in this case, at the municipality) and potential high administration costs (Gomez-Lobo 2001).

Present discussions about private sector involvement in Nepal suggest the use of a tiered tariff with a basic supply being priced to cover operational and maintenance costs and consumption above that basic figure being priced more highly to cover all financing cost and cross subsidies (Etherington, Wicken and Bajracharya 2002, 9). Connection charges are currently a severe disincentive for the poor as they cost US$ 143-257; the poorest 34 per cent have a monthly household income of US$ 86 (Etherington, Wicken and Bajracharya 2002, 10). At present, it is estimated that 63 per cent of the poor are not connected (Etherington, Wicken and Bajracharya 2002, 14).

In a further example of a cross-subsidy system, Nickson (2001a, 22) comments on the water tariff in Colombia and specifically the city of Cartagena. A national law specifics the basis for pricing and requires all households to be divided into six levels depending on the nature of housing construction. Level four households pay a charge that covers the costs of service delivery, levels one to three receive a subsidy, whilst levels five and six pay an additional charge. In 1999, AGUACAR, the company with the concession in Cartagena had 53 per cent of its customers in levels one to three.

Mazzucchelli, Rodriguez Pardinas and Gonzalez Tossi (2001, 86) note that five years after the granting of the concession in Buenos Aires, the company is meant to offer a uniform free

consumption of 30 square metres per connection. As discussed below, this strategy of offering a fixed free amount is now being used in some South African municipalities.

Palmer Development Group (2000, 17-20) illustrates recent changes in South Africa with a study of Queenstown. The provision of water supplies has been taken over by a private company (Water Services South Africa), whilst billing remains the responsibility of the municipality (Palmer Development Group 2000, 9). Following the integration of services between the black and white areas, prices increased. There is a fixed monthly charge for a minimum supply of ten kilolitres of R24.20 (US$ 2.4). The municipality offers a rebate of 40 per cent for households earning less than R1,300 a month but only 7,000 households receive the rebate (although XXX households, 50 per cent of those in the town, have an income of less than R800 a month and would be entitled to the rebate). In practice, low-income households are paying 100 to 200 per cent more than was previously the case. Palmer Development Group (2000, 9) conclude that whilst the municipality has benefited from private sector involvement due to improved provision, these benefits are not evident to the "…ordinary poor residents… their experience is one of increasing bills due to the shift from flat rate charges to metered charges and stricter enforcement of credit control measures."

In another South African City, Palmer Development Group (2000b, 26) describe the changes in water supply systems in one low-income settlement when Durban Water decided in 1997 to provide households with 6 kilolitres of free water each month. This decision happened because "… it was more cost effective to provide the service for free than to recover the costs from households, especially when the subsidy provided to poor households via a national government transfer (Equitable Share) was taken into account." Whilst there were many positive comments from members of the community, there were also concerns. Some felt that now water was free, the resource was wasted and pipes that were broken were not mended. Durban Water told the community that mending pipes was their own responsibility but it appeared that the structures were not in place to manage this issue (Palmer Development Group 2000b, 28). One further consequence was that the small-scale water providers that had been responsible for managing a local network no longer had a job.

Chisari, Estache and Waddams Price (2001, 2) note that the poor may be particularly vulnerable to economic shocks. Given the continuing level of economic instability in the South, they suggest it is necessary to design systems that seek to take account of such shocks

and assist the poor to manage the consequences whilst remaining connected to the public water network.

Whilst subsidies may be designed to help the poor through a process of restructuring of the water industry, Chisari, Estache and Waddams Pricen (2001, 4) note that the privatisation process may be part of a general reform package that may reduce employment, raise prices and reduce social security safety nets.

Non-payment and disconnection

The issue of disconnection due to non-payment of bills is related to both access and affordability. Disconnection is one potential outcome that most authors think has increased as a result of the increasing involvement of the private sector in water supply. Looked at the other way, and as described above, one consequence of high levels of political involvement in water supply was the reduced risk of exclusion through disconnection especially for organized communities. Castro and Cruz (2002, 7) suggest that in Mexico City "… up to February 2002, once you were connected, you were never disconnected." (However, the limits to the network meant that this benefit was not enjoyed by all.)

It is very difficult to understand what is happening in regard to disconnection and privatisation. Simply, there is little reported data in the literature.

A related problem is that of non-payment. In the South African city of Studderheim, Plummer (2000, 26-7) notes that only 28 per cent of low-income households pay their bills. Whilst there are obvious problems for the continuing viability of the company, Plummer (2000, 26-7) argues that the present tariff structures are regressive as the better off can pay less each month than the poor if the latter are connected to the public network but consume more than 7 kilolitres a month.

Nickson (2001a, 25) notes that in community-managed schemes established by the private sector company to reach low-income settlements within the concessionaire area in Cordoba (Argentina), only one in ten of the regions had collected more than 50 per cent of the money owed to the water company.

Water Price: Tariffs and payment systems

The issue of tariffs has been considered above through cross-subsidy systems. An issue of concern is that unit prices increase according to use, multiple household dwellings with shared water points face rising block tariffs with perverse distribution consequences. Johnstone and Wood (2001b, 216) suggest that the concessions in Manila and Buenos Aires have sought to avoid this.

Households that resell water to their neighbours may face a similar problem. Collignon and Vezina (2000, 31) note that in Cotonou and Abidjan "…most resellers are billed according to standard progressive tariffs, which rise steeply as volume of water consumed increases. This penalises the resellers and low-income families who are their customers." Whilst the intention behind high volume customers paying more is that there should be a cross subsidy to favour small-scale users, the lack of household connections among low-income neighbourhoods means that it is generally the middle-class that benefit from such tariff structures.

The payment system emerges as being of some significance in the literature with particular reference to the frequency of payment and to metering. Both issues are related in regard to the ease with which the poor may meet their water costs.

Generally speaking, there appears to be some interest in metering. Saade Hazin (1998, 187) describes how one of the first tasks of the tasks of the companies securing contracts under the privatisation of water services in Mexico City was to install one million meters between 1994 and 1997. Marvin, Laurie and Napier (2001, 213) consider the experience with metering in South Africa. Despite the democratic government taking up office in April 1994, in March 1998, only 78 per cent of residents were said to be making regular payments of their water bills. As a result, municipalities have begun to look at meters in order to improve payments.

Walker, Ordonez, Serrano and Halpern (2000) report that in six central America cities, over 50 per cent of people believed that the fairest way to charge for water was through metered consumption; at the same time. However, in cities in which service quality was poor, there were reservations about meters because it was thought they would be inaccurate. Walker, Ordonez, Serrano and Halpern (200, 3) argue that metering is beneficial as it enables households to adjust consumption maximising their household benefits with respect to

quantity and cost. However, they suggest that whilst users are generally positive, politicians may be hostile. In this finding, they re-emphasise the inherently political nature of the water supply process.

In the case of Mexico City, Castro and Cruz (2002, 14) suggest that metering may be a flawed process with people of all incomes finding ways to falsify readings.

Meters offer the possibility of flexible payment systems. Solo (1999, 126) and Collignon and Vezina (2000, 21) argues that one of the advantages of the small-scale private operators is their ability to offer flexible payment systems suited to the needs of the poor including daily payments. For households whose economy is dependent on the informal sector, it can be difficult to meet fixed monthly bills. In the case of SODECI in Abidjan, bills are every quarter and one commentator notes notes that "The infrequency of billing makes it difficult for households with low and irregular incomes to manage since they are unlikely to be in the position to save regularly" N'Gbo (2001, 201).

One of the advantages of meters is that they can be linked to systems of pre-payment as well as the regular distribution of a fixed free or subsidised amount of water. Marvin, Laurie and Napier (2001, 213) suggest that there are a number of ways in which pre-payment meters may be used to assist authorities to influence consumption and assist in affordability. However, they are concerned about some of the consequences and suggest that "…marginal users have a voice in shaping new innovations in metering systems."

ACCESS TO WATER

As is evident from the earlier discussion, access to water is an important issue for the poor and policy makers alike.

There are three issues with regard to access. The first, and perhaps the most important, is where the pipes are laid and how many low-income settlements are connected. Second, there is the issue of connecting to the public network from the house (or living space) and the associated cost of connection. This issue has briefly been considered in the discussion of price above. A third issue is the frequency of supply as, in many cases, water is not available 24 hours a day through the public network.

Deficiencies in the public network to supply water

Deficiencies in the extent of public networks and households connections are not in doubt. Hardoy, Mitlin and Satterthwaite (2001, 44-62) summarise the extent of piped water supplies across cities in Africa (10 cities), Asia (14 cities) and Latin America (8 cities). Whilst it is difficult to provide a simple assessment, the estimated proportions of those living in low-income settlements without household connections are, respectively for Africa, Asia and Latin America, 66 per cent, over 50 per cent and 33 per cent (Hardoy, Mitlin and Satterthwaite 2001, 44-62). In some cases, such households benefit from public standpipes in close proximity to their homes but, in many cases, standpipes are a considerable distance from the public network. Figures are invariably for the larger conurbations and give little idea of provision in the smaller towns.

Chisari, Estache and Waddams Price (2001, 11) suggest that "…in most countries the supply of services to shantytowns and poor neighbourhoods, and the upgrade, rehabilitation or construction of networks have become a problem for poor people." As exemplified by Ferguson (1996, 178) in the case of Jamaica, informal neighbourhoods suffer from particular bad supplies. Along with similar authorities, the National Water Commission required proof of land ownership before being willing to install a connection (Ferguson 1996, 178). Now the law is being changed so that those squatting on public land can receive water and for other households it is sufficient to have verbal permission from the private landowner. Nickson (2001b, 21) argues that the absence of land titling in Argentina is a problem for the urban poor as the lack of a legal title means there is no legal requirement for the concessionaire to extend the service to these families. In a further indication of the extent of this problem in Argentina, Mazzucchelli, Rodriguez Pardinas and Gonzalez Tossi (2001, 96) note that of the 770,000 households prioritised for service access in the Buenos Aires concession, 240,000 households were in areas that were not formalized. There are similar problems elsewhere. In Central America, contractual rights can be transferred between properties but not between persons (Walker, Velasquez, Ordonez and Rodriguez 1999, 39). Consequently, public utility companies do not want to extend service contracts to those who are squatters for fear that they will face legal action from the owner.

The uncertain status of these citizens may result in disputes between the company and regulator over who should and should not be included in targets to extend the water supply network. In a case study of Cartagena (Colombia), Nickson (2001a, 21) notes that the World

Bank suggest that one-third of residents did not have running water and sanitation in 1999 whilst the company with the concession argued that over 90 per cent of residents were reached by the water network as they excluded squatters from their calculations.

The difficulties that squatters face in secure water result in a number of consequences. First, and as already noted, residents may illegally tap mains water if it is in reasonable proximity to the settlement. This may make them vulnerable to legal action or the payment of bribes. Second, patronage systems may offer communities access to water in return for votes. Such systems enable community leaders to act as arbitrators between residents and access to services. At the same time, the lack of access means that politicians may have an interest in limiting supply. Nickson (1997, 166) notes that there has been a deliberate resistance on the part of government to providing services to those squatting on private and public land. As exemplified in the case of Manila, private sector suppliers focus primarily on the opportunity to acquire customers and have fewer concerns about increasing the claims of squatter communities (Walker, Ordonez, Serrano and Halpern (2000: 11). Thirdly, unable to access alternative supplies, residents may use ground water with detrimental impacts on their health.

In part for reasons such as these, in many cities of the world there is only limited coverage provided through the public network. Mazzucchelli, Rodriguez Pardinas and Gonzalez Tossi (2001, 70) emphasise equity issues in water connections to the public network in Argentinian towns and cities are associated with social economic status. Ninety per cent of those in the high-income category had water connections whilst less than 25 per cent of households in the low-income category enjoyed household connections. In total, an average of 57 per cent of households in the Buenos Aires Metropolitan Area had water connections.

Even when an area is supplied with water, the benefits may not be shared equally. Tenants may face particular difficulties in accessing services. Etherington, Wicken and Bajracharya (2002, 23) report that an estimated 29 per cent of the population of Kathmandu are renters who negotiate their water situation with their landlords. "Unlike many south Asian cities, man of the poor live in socially heterogeneous communities rather than in well-bounded slum and squatter areas. Despite this, their access to water services is not comparable to that of their wealthier neighbours" (Etherington, Wicken and Bajracharya 2002, 24). In South Africa, to give a further example, renters normally also have to negotiate their water and

sanitation status with their landlords and it is common to restrict access, for example, to an outside tap (South African Homeless People's Federation, Cape Town).

Reaching the poor

In seeking to extend supplies to low-income neighbourhoods, Collignon and Vezina (2000, 18) argue strongly in favour of a water supply network based around standpipes especially if the network is limited. They contrast the experience in Ouagadougou (Mali) with that of Cotonou (Benin and Conakry (Guinea). In the former, the city water company reaches 86 per cent of households with one-third reached through standpipes; in the latter two cities, there are few standpipes and the city network only reaches 40 per cent of households (Collignon and Vezina 2000, 18).

Whilst access is usually simply referred to in relation to whether or not networked suppliers are available, also important is the time taken to secure water from public standpipes. Thompson et al. (2000, 48-9) find that average time spent collecting water for those without piped water in nine East African towns has increased 3 times between 1967 and 1997 to 90 minutes a day per households. The distance has only increased 2.3 times but longer queues are reported.

Access and privatisation

Whilst one of the motivations for privatisation has been to extend public networks to low-income settlements. However, some of the emerging difficulties are reflected in the literature.

Some of the practical issues involved in extending supply within private concessions are illustrated by the case of El Alto in Bolivia (see Box 3). Komives and Brook Cowen (1999) look at this example in more depth to consider "…whether service area boundaries and exclusive provisions, expansion mandates, technical specifications, and tariff structure and connection fees help or hinder service expansion." They conclude that the exclusive rights that have been granted to the concessionaire are likely to reduce access for the urban poor because of reduced competition. The contract requires that the concessionaire eliminate standpipes but household connections are not required (and may not be affordable). Hence, those living in low-income areas that cannot afford in-house connections face major difficulties. Komives and Brook-Cowen (1999) also suggest that the concessionaire may face

particular difficulties in cost recovery because the first 30 cubic metres supplied monthly to each house has a charge well below the cost of supply. Hence there is little financial incentive to extend supply in low-income areas. At the same time, the charge made for connection does not vary depending on costs and therefore the company will prefer to infill connections in areas that are already well-provided for. (Although they are not allowed to use in-fill connections for more than half of all new connections.)

BOX 3: Extending supply in El Alto (Bolivia)

The private company supplying services (Aguas del Illimani part of the Suez Lyonnaise des Eaux consortium) promised to increase coverage in the water network from 87 per cent to 100 per cent between 1997 and 2001. To do this they used the condominial system. The condominial system had been sanctioned by the regulator for low-income area. The system uses smaller pipes in shallow trenches that are often laid under yards rather than along roadsides. It further reduces costs by allowing households to provide their own labour for part of the installation and offering backyard and pavement connections as alternatives to indoor connections. Cost reductions are estimated to be 10 or 20 per cent. Water and sanitation connection charges were around US $500 with a micro-finance institution offering loans for 5 years at 14 per cent. The scheme appears to have been successful with a revenue recovery rate of 98 per cent even in the low-income areas.

Source: Chisari, Omar, Antonio Estache and Catherine Waddams Price. 2001. Access by the poor in Latin America's utility reform. *WIDER Discussion Paper No. 2001/75.* World Institute for Development Economics Research, United Nations University: Helsinki.

In Lima (Peru), Alcazar, Xu and Zuluaga (2000: 15) find that improved regulation, operating conditions and investment finance for the water public utility for Lima resulted in an increase in supply by 200,000 connections between 1989 – 1996. (However privatisation did not take place due to the scale of resistance and this reflects improvements in the public company.) However, "…this growth in connections only allowed the company to keep pace with Lima's rising population." Under conditions of increasingly urbanization, expanding supplies are required just to stand still; a point often forgotten. Castro and Cruz (2002, 4) reinforce this point when they suggest that 1,000 people a day may be coming to Mexico City.

In Guinea, Bayliss (2001, 7) notes that coverage rates did increase following privatisation but not by as much as anticipated due to the high price of water and increasing migration into the city. In 1989, prior to the contracting out of maintenance and operation, fewer than 40 per cent of Conakry's residents had access to piped water; 29 per cent of residents used well water as a primary source and even 50 per cent of those with access to piped water used well water as an alternative source as the service was so poor (Menard, Clarke and Zuluaga 2001,

2-3). Changes in water supply resulted in the creation of two enterprises: a state owed enterprise to manage sector infrastructure and a private operator with a ten year contract (Menard, Clarke and Zuluaga 2001, 6). Bayliss (2001, 7) suggests that disagreements between the state-owned water agency and the commercial company that won the management contract resulted in further delays in the expansion of the system. Menard, Clarke and Zuluaga (2001, 12) confirm that few new connections have been installed; by mid-1997, only there were only 11,000 new connections, against a target of 15,000 new connections by 1995.

Loftus and McDonald (2001, 188) note that in Buenos Aires (Argentina), Aguas Argentinas claim to have increased the area covered by the water supply network from 70 per cent at the start of the concession in 1993 to 82.4 per cent in 1999 with an 11 per cent increase in new water connections. This is less than that which was originally promised; but substantial increases do not appear to be in dispute. What is not known is the number that has been disconnected because of failure to pay their bills. Loftus and McDonald (2001, 198) suggest that these are likely to be considerable. Mazzucchelli, Rodriguez Pardinas and Gonzalez Tossi (2001, 106-7) argue that110,000 of the poor in Buenos Aires have gained access as a result of the agreements associated with the concession. However, they note that many other disadvantaged families living outside of the currently serviced area will not receive services for at least 10 years.

In order to more effectively extend supply, private companies are being encouraged to explore collaboration with low-income groups (Mazzucchelli, Rodriguez Pardinas and Gonzalez Tossi 2001; Nickson 2001b, 17). Nickson (2001, 17-19) summarises information about four such schemes in Cordoba (Argentina) and suggests that their success has been varied. Whilst costs have been reduced, there have been difficulties with the control of funds within the community organization, capacity to manage communal billing and hence levels of repayment, and control of illegal connections together with the resale of water. Perhaps more significantly, there are also issues in relation to the objectives of the communities organizations themselves. Nickson (2001a 25) notes: "… there is a danger that community leaders will become viewed by residents as "tax collectors" on behalf of AGUACAR and thereby lose their legitimacy."

Collignon and Vezina (2000, 48) emphasise the anomaly whereby formal water companies may resist supplying low-income areas without additional financial support from the state. They suggest that whilst 80 per cent of housing connections in Abidjan are subsidised with donor assistance, independent providers service these areas spontaneously with no subsidy funds. Collignon and Vezina (2000, 48) argue that many independent entrepreneurs would be interested in extending their services but they are preventing from bidding for civil works contracts because of the large size of the jobs (which may only be suitable for national and international firms) and corrupt allocation procedures.

Finally, one strategy to secure access is the illegal tapping of water pipes. As noted above, in Section II, illegal tapping is extensive. Menard, Clarke and Zuluaga (2001, 17) quote one official from the private operator in Guinea who suggests that it is hard to prosecute such individuals.

Frequency of service

The third issue is the frequency with which water flows through the piped network. Alcazar, Xu and Zuluaga (2000: 4-5) note that, in Lima, 48 per cent of the connected population received water services for less than 12 hours a day[10]. As a consequence, families that can afford to invest in water storage tanks at a cost of about US $ 1,000.

Water Access – Maintenance

Whilst apparently somewhat peripheral to the theme of how regulation and competition influences urban poor livelihoods, maintenance of facilities is important to access. Maintenance of public networks under public control was an identified problem as discussed above. There is little discussion about maintenance under private sector involvement, presumably due to the short period of most agreements.

An apparent advantage of community management is greater likelihood of maintenance and repairs. Gross, van Wijk and Mukherjee (2001, v), in a study of 88 community managed water projects in 15 countries, argue that gender and poverty sensitive demand-responsive approaches are better at maintaining improvements in water supply.

As significantly, Gross, van Wijk and Mukherjee (2001) conclude that community management systems that addressed the needs of the poor and of women were the most

successful, maintaining a regular and predictable supply of water with at least half of projects. As a result, Gross, van Wijk and Mukherjee (2001, 19) argue that "…communities that had a more equitable division of burdens and benefits along gender and poverty lines during operations scored higher on sustainability." In the 13 communities that had little success in maintaining their water systems, there was relatively little participation of women in management and the lowest-income residents had little involvement in decision-making.

WATER QUALITY

There are problems with water quality in many areas of the South. For example, Asia's rivers contain more than 50 times the WHO guidelines for the median faecal coliform count (Asian Development Bank (1997) quoted in Hardoy, Mitlin and Satterthwaite 2001, 107). Such a very low quality of surface water is indicative of the health problems that the poor will face if they can only afford such water sources. The problems associated with the low quality of ground water are added to by the water storage required as a result of infrequent piped supplies or standpipe systems; water being stored in the home is associated with further risks to health (Hardoy, Mitlin and Satterthwaite 2001, 42-3).

However, whilst poor quality reflects the poor standards in water management, the issue of standards is a difficult one. Johnstone and Horan (1994, 45) argue that "In the developing world, into which falls the greatest proportion of the world's population, life is a continuous batter for survival and the prime requirements of the aquatic environment is for basic water and sanitation. Standards and regulation have neither meaning nor importance, yet it is this part of the world that is often subjected to the greatest environmental damage." Johnstone and Horan (1994, 451) argue that increasing environmental standards related to water quality are associated with economic development and increasing aspirations; they exemplify this proposition by noting that in the US, the number of regulated water quality parameters increased from 9 to 110 between 1925 and 1988.

Box 4 demonstrates some of the difficulties in setting standards and securing compliance. It has been known for some years that arsenic is present in the groundwater in Bangladesh. What should be the response of development agencies seeking to improve access to water in the country? Box 4 describes the response of WaterAid, a UK NGO that works with local organizations to improve water supply through providing community-managed tubewells and enabling families to have access to an alternative to surface water.

BOX 4: An example of the difficulties involved in setting standards Arsenic in Bangladesh

Arsenic in the ground water in some regions of Bangladesh was first found in the 1980s. The problem is now accepted as being considerable. The Bangladeshi government has adopted the standard of 50 ppb (parts per billion) for arsenic rather than the WHO guideline of 10 ppb. The standard of 50 ppb is that currently prevailing in Europe and the USA. However, the standard is rising and by 31 December 2004, the European standard will fall to 10 ppb and the USA is committed to achieving the WHO guideline within five years (although communities of less than 3,300 people have 15 years to comply.)

WaterAid have adopted the standard of the Bangladeshi government for the community-managed tubewells that they support for a number of reasons. In particular, they believe that the health benefits of shifting to a higher standard will be offset by the health costs that will be incurred. Using USA government estimates of the reduced incidence in cancer as a result of the improvement in standards, a reduction in the standard from 50 to 10 ppb in Bangladesh would result in between 50-70 fewer deaths from arsenic related cancers each year. However, UNICEF estimate that 260,000 children under the age of five die each year from diarrhoeal disease and some 26 per cent of these deaths are likely to be caused by drinking poor quality water. The closure of tubewells that would result if high arsenic related standards were imposed would result in more people using bacteriologically less safe alternative water sources, and hence more deaths.

Handpumps with a water supply above the permissible limit are painted red and those with water below the permissible limit are painted green. Along with other agencies, WaterAid have been involved in developing health education tools to explain the meaning of these colours to local communities. There are some general concerns about the extent of knowledge in the more isolated settlements in the country. If the demarcation of standards is not understood, compliance is unlikely.

Source: WaterAid Bangladesh Arsenic Testing Protocol: Instructions for Partner Organizations (3 February 2002)

Box 4 describes some of the difficulties related to setting standards. First, what standards are appropriate, given the cost of securing those standards and the alternative uses to which such money might be put. Second, how might compliance be ensured? As already noted in the discussion of regulatory agencies above, there are issues about capacity and competence. The example in Box 4 suggests that lack of understanding and knowledge may be a problem. As noted in the context of competition regulation, there are also issues of corruption and capture. For example, in a bitter fight for the limited inward foreign investment for Africa, the Namibian government recently secured the multimillion-rand Ramatex textile factory for Windhoek against its competitor in the Eastern Cape (South Africa). It now appears that environmental assessments were not completed despite current policy in Namibia (*Business Day* 31st December 2001). The factory is being constructed adjacent to a low-income

residential area to the north east of the city and there are acknowledged problems related to the disposal of wastewater.

What might be appropriate approaches? Howard (1997, 3) emphasises the need to develop new approaches when there are multiple sources of water with a relatively weak enforcement capacity. He suggests the zoning of areas to enable regulatory bodies to focus on areas of greatest need and assistance to communities to enable them to "evaluate their surroundings, identify remedial actions – and the people to carry them out…" Howard (1997, 3). Howard (1997, 3-5) suggests that NGOs can play an important role in advocacy and presenting low-cost safe approaches to improve water supplies. Water quality monitoring may be used as a tool for communities to improve existing supplies and health education practices. Communities, he argues, can actively participate in monitoring by undertaking sanitary inspections and basic testing but they are unlikely to be able to undertake this process without support and training (Howard 1997, 5). An alternative approach to standards is that used within the Million Houses Programme in Sri Lanka during the 1980s in which community groups themselves decided the standards that they felt were appropriate given their income levels and attitudes to risk.

The water quality of informal providers has been criticised. However, Collignon and Vezina (2000, 49) argued that the quality of water provided by independent providers is similar to that of the mains (from which it is obtained).

Despite a concern for standards, relatively little reported about water quality in the literature that considers water prices and water networks. One reason is that there is little data. Morande and Dona (1999, 165-6) note that in the case of Chile, one of the Southern countries with better information capacity: "[L]ittle information is available on service quality." However they go on to argue that a past study identified several serious problems, raising issues of how compliance to standards is secured. In 1992, Morande and Dona (1999, 165-6) report that an analysis of the quality of monitored services (90 per cent of the total) identified the following problems:

8.3 per cent of the total services monitored had bacteriological problems.

6.3 per cent had chlorine waste

26.7 per cent did not comply with chemical quality standards

40.7 per cent experienced turbidity.

EMPLOYMENT AND INCOME GENERATION

Two particular issues emerge in relation to employment and income generation. The first is the nature of income generation opportunities among small informal providers; the second issue is the change in the labour force introduced by larger providers following privatisation.

Employment in the informal water providing enterprises

Informal provision is often highly intensive particularly among the smaller enterprises where there is little capital investment required. Collignon and Vezina (2000, 15) estimate that, in 10 West and East African cities, the water sector provides between 1 to 2 per cent of the active labour force and 70-90 per cent are employed by independent providers - "the greatest number are found in the informal sector." Collignon (1999, 4) describes the occupations and related rewards provided by small scale vending. He notes that pump operators of small stations in Francophone Africa generally have a low status and relatively low incomes. Water carriers (wagons, carts and barrows) require some source of capital and this may be only a part-time or seasonal activity. Standpipe managers enjoy the highest status and are found throughout Francophone Africa. He suggests that "…this activity tends to be monopolistic rather than competitive" Collignon (1999, 5). Managers "… are likely to be people of note, respected and relatively advanced in years, often related to local politicians" Collignon (1999, 5).

Access to some types of water vending requires financial capital. Collignon and Vezina (2000, 14) suggest that handcarts and donkey-drawn carts in West Africa cost between US$ 50 and 150. Investments for the smaller-scale private water providers appear to be financed by own and family savings, thereby excluding those with very few assets. There are generally limited opportunities for credit and residents may participate in rotating savings and credit associations with the proceeds being used to finance hand carts or other necessary equipment (Collignon and Vezina 2000, 38).

Generally, informal water providers do not appear to work together. Collignon and Vezina (2000, 41) cite some examples of associations of such informal entrepreneurs, however, these seem to be targeted at the larger and more formally inclined of such enterprises and they may not well represent those with lower incomes and small levels of investment.

Employment and Privatization

Reductions in the labour force following privatisation appear to be relatively common. Nickson (2001a, 17), for example, notes that in Cartagena (Colombia), the number of employees fell from 494 to 262 following the introduction of private sector participation in 1995. Hall, Bayliss and Lobina (2001, 7) argue that, despite initial impressions, over 3,000 employees in Manila lost their jobs through redundancy, retrenchment and failing medical tests. Loftus and McDonald (2001, 195-6) note that the privatisation of Buenos Aires' water and sewerage works has resulted in a reduction in the workforce from 7,600 to 4,000 employees. The company argue that many more jobs are been created through sub-contracts but Loftus and McDonald (2001, 195-6) suggest that such jobs may have lower pay and lower health and safety standards. However, in Lima, where privatisation was rejected in favour of public sector reform, Alcazar, Xu and Zuluaga (? 13) report that the workforce fell by 3,769 in 1988 to 1,359 in 1996 due to the intervention of the regulator in the management of the water utility.

However, opinion about the net impact of reform is not unanimous. Chisari, Estache and Romero (1999, 377) argue from a different perspective and conclude that ".. the significant increase in unemployment observed in Argentina between 1993 –1995 is unlikely to be due to the privatisation of utilities. On the contrary, privatisation probably increased employment and generated significant gains for the economy and all income classes." (They reach this conclusion through a general equilibrium model of the Argentine economy in order to study the impact of privatisation among services including the water sector.)

Whilst numbers of employees may have fallen, the rewards for those who remain may have increased. Alcazar, Xu and Zuluaga (? 13) suggest that average real wages in Lima have been increasing in the last five years. In some other cases, share allocations have been made to the workforce to increase their willingness to support the privatisation process. In Buenos Aires, the employees received 10 per cent of the shares and in Corrientes, also in Argentina, employees received 2 per cent of the shares and 15 per cent of the profits (Artana, Navajas and Urbiztondo (1999, 211).

CONCLUSION

Returning to the initial research themes, there are a number of ways in which regulatory and competition policy influence the situation of low-income households.

First, with respect to the direct influence of regulatory and competition policy, there are consequences of policies such as private sector involvement in water provision for the urban poor. The affects on price, access and quality are still emerging but it is clear that the situation has changed. It appears that the public network has been extended into more low-income areas. However, the impacts on price are more ambiguous. Whilst many of the policies seek to influence the urban poor as consumers, they are also affects for livelihoods. Government policy towards small-scale vendors of water, for example, has a direct impact on those who make their living providing these services. Increasing private sector involvement appears to be associated with declining employment opportunities among formal providers.

Second, there are less direct, possibly even perverse, influences. Whilst the emphasis on public sector provision and affordable prices was intended to benefit the poor, the consequences do not appear to be so positive. As argued above, many of those on the lowest incomes were excluded from access and the available subsidies benefited those on middle and upper incomes. Equally environmental health regulations may be seeking to benefit the poor but, as the example of arsenic in Bangladesh demonstrates, identifying optimum policies involves difficult decisions. In addition, regulations can be difficult to enforce and, despite good intentions, may be used to determine illegality rather than extend benefits to the poor.

One reason why outcomes may be different from those that are intended is because the mechanisms for implementation are weak. Stated policies may bear little relationship to final outcomes. As illustrated above, water vendors may bribe officials to obtain pitches and may disregard price controls; communities seeking to extend water supplies may face difficult negotiations with local politicians; and regulatory authorities are thought to be in danger of being "captured" by commercial interests.

Many of the poor appear to live outside of the state regulatory framework. Many live in informal settlements (either as squatters or in illegal sub-divisions of land not zoned for residential areas). Others live as tenants in formal parts of the city. Their access to services depends on their (generally informal) agreements with those who own the property or land on which they are living. Nevertheless, as discussed above, the policy framework, and the degree to which it is enforced, are important in influencing possibilities for access and the price at which water can be obtained. Many small-scale vendors purchase supplies (legally

or illegally) from the public network. The possibilities for community-managed services are influenced many factors, including the political system, the urban development framework and the attitude of the existing provider (as illustrated by the example from Faisalabad). All of this suggests that the objectives and strategies of regulatory and competitive policies are a significant influence on the opportunities of the urban poor to secure water.

There are a number of specific future research issues that emerge from this review of the literature.

Understanding the consequences of private sector involvement

Despite considerable interest, it is difficult to say what is actually happening in respect of price and the extension of services as a result of the increasing involvement of the private sector in water supply services. Most of the discussion about the extension of services and changing prices appears to rely on data provided by companies and regulatory agencies. As such, it gives little indication about how the poor are responding to the changing nature of the competitive market. More specifically, the data do not distinguish between the different incomes of customers and hence the different strategies being followed by different income groups.

As a consequence, there is very little information about a range of issues relevant to understanding the impact of privatisation on the poor. For example, how many households have failed to connect to the public network because of the cost? And of those that have joined, how have they afforded the connection costs? For those households that have not connected, how they secure their water supplies, how much do they pay and what is the role of small-scale enterprises in providing services? For those that have connected, what is happening in respect of disconnection and non-payment especially as regards the very poor and those with irregular incomes?

Has privatisation helped to reduce the difficulties that those living in informal settlements face in accessing water from the public network? If it has not, or if it has only partially addressed this issue, are there further measures that might help such groups be included in formal service delivery? Are there other problems that specific groups of the urban poor now face? For example, do small-scale enterprises meet their water needs in the same way that low-income households meet domestic needs?

A related issue is that of community level management and regulation. As noted above, there are a number of initiatives to help to private sector concessionaires more effectively provide services to low-income settlements. Such initiatives appear to pass on regulatory and management responsibilities on to the communities itself. What are the consequences of such arrangements for community organizations and their ability to address the needs of the poor? Few of these initiatives appear to have been expanded to a significant scale. What are the problems that they have experienced in expanding their activities? Is there a future for such cooperation and if so what is the implication for the role of grassroots organizations in addressing the needs of their members? If such agreements prove untenable, how are private concessionaires currently seeking to effectively extend supply to low-income settlements?

The informal/formal sector interface

One of the most interesting and little understood issues in urban development is how to integrate formal and informal sector service enterprises. As discussed above, a considerable informal sector exists in basic services such as transport and waste collection in addition to water. For the most part, such an informal sector exists because of the lack of municipal or state capacity. Without the state to provide essential services, private entrepreneurs develop a range of alternatives.

On the one hand, there are evident advantages for the poor. As shown here in the case of water, such services may be delivered in small amounts with flexible payments and hence are affordable for those on low and irregular incomes. In some cases, the informal sector is in competition to the formal; as shown above, the increase in competition due to an alternative supplier in the market appears to be important to keeping prices low. In many cases, the informal sector is simply the only provider.

On the other hand, the informality of the sector brings some disadvantages. Investment may be small due to the uncertainty of the market and perhaps limited investment capital. Low investment may result in higher costs and therefore prices. Formal regulatory controls, already weak in the formal sector, are non-existent. There may be a single supplier maintaining their monopoly position with violence and coercion. Subsidies are restricted to those receiving services through the formal sector and, as a consequence, many of the urban poor do not consume sufficient water to maintain good health.

The challenge for policy makers is to find a way to work with both formal and informal provision. If it is accepted that the informal sector provides complementary services to the formal sector, how might the benefits for the poor be maximised, and their interests protected and advanced? What might be an appropriate regulatory framework to achieve these goals? What role might the informal enterprises themselves play in regulation?

How might access and affordability best be achieved for the poorest families?

As noted above, there is a broad agreement that subsidies are necessary to support access for the poorest households once household connections are commonplace. (When there are only community standpipes, targeting subsidies appears to be impossible.) What are the alterative subsidy regimes and what are the winners and losers associated with each regime?

It appears that a number of networks are experimenting with a free fixed amount of water for each household. What are the advantages and disadvantages of this approach? How does it serve the interests of tenants, a significantly large group in many cities of the South? Are their other vulnerable groups that may struggle to have their needs recognised under such a system? How, in particular, might households be assisted to pay connection charges?

What role might community organizations play in addressing the needs of the poorest families? Might they play a part within subsidy systems and if so what would be their role? How can community management reduce costs thereby enabling prices to be lower without the need for subsidies? IF they have a role, how can they operate within publicly managed networks in addition to privately managed initiatives?

Competition, regulation and political power

Support for private sector involvement in the water supply industry was introduced to address some evident shortcomings in publicly managed provision. Given emerging experiences, it is becoming possible to assess the alternative in practice.

The experience in Manila suggests that the gains may be less than anticipated because the assumption that the involvement of the private sector would remove political interference from the water sector was wrong. It may be that processes and outcomes have simply become more complex because the water supply industry now has the interests of private

capital in addition to a remaining level of politicisation and an acute level of need among the poorest citizens.

Is there the continuing involvement of political interests in management of water supply services and, if so, what are the consequences for the poor? What have been the experience with regulation with private sector involvement? Are regulatory agencies serving the needs of the private entrepreneurs or the citizens? Do they face more fundamental problems of independence and capacity?

How do regulators balance the needs of those already connected to the system with the needs of those waiting to be connected? Are there particular groups of the urban poor whose interests are not being taken into account by the regulators?

Are there special issues faced by municipalities when they become involved in water supply, either with or without private sector involvement?

Notes

1 The focus of the analysis is on water rather than sanitation. This is simply in order to reduce the task in hand. It should be noted that the sectors are overlapping in regard to both the larger suppliers of water services and the needs of the poor. Equally, the extent and nature of the supply of available water to the retail sector and the quality of supply are clearly influential to the nature of competition in the sector. However, for reasons of space, such water management issues are not considered here.
2 Tamayo, Barrantes, Conterno and Bustamente (1999, 124-5) analyse supplies from 42 companies in 24 departments in Peru; in ten cases, supply was for ten hours or less.
3 Such problems reflect both the availability of water of sufficient quality and what happens to waste water.
4 The literature focuses on larger towns and cities but 61 per cent of the urban population in the South lives in cities of less than one million (United Nations 2001, 247). It is difficult to gain an understanding of changes in water supply in these smaller cities.
5 One difficulty with this analysis is that it takes no account of the problem of illegal tapping of water lines. Ferguson and Maurer (1996) quoted in Hardoy, Mitlin and Satterthwaite (2001) suggest that up to 70 per cent of the water entering the supply system may be illegally tapped in some cities.
6 The PRI is a political party that has dominated Mexican politics for many decades.
7 Alcazar, Xu and Zuluaga (? 37) conclude that "…the higher tarrifs combined with connections charges would make water unaffordable to many unconnected poor consumers even compared to water from vendors." Their figures suggested that costs for a minimum consumption of 22 cubic metres a month would be about US$ 5 or 2.5-3 per cent of income for the 43 per cent of Lima's residents who fell into the lowest income category. Connection charges were estimated to be US$ 850, to be repaid over 5 years with a interest charge of 1.2 per cent a month. With private sector involvement, water costs were estimated to rise to 16 per cent of income.
8 The issue about how private investment might be stimulated appears to be complex. Rees (1998, 98) suggests that the nature of risk in the water supply sector may reduce investment below optimal levels. Tamayo, Barrantes, Conterno and Bustamante (1999, 91) note that the specificity of assets in the water sector is three or four times higher than for other public utilities such as telecommunications and electricity thereby increasing the risks for private sector investors.
9 See, for example, a recent review of community contracts for the maintenance of basic services for a further example of the extension of community participation into areas previously reserved for formal public or private agencies (de Silva 2000).
10 75 per cent of the population have connections to the piped network.

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