

# Health Economics

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## Water for all—who pays?

One aim of the International Drinking Water Supply and Sanitation Decade is to extend water supply systems so that everybody is served, and to maintain the installations that are already available to roughly half the people in the developing world. The quantity and quality of present supplies need to be improved and better access is required. The question of who should pay, and how much, depends on the scarcity of the commodity, considerations of equity, and investment plans.

How can the burden of paying for water be fairly distributed? Although water is indispensable, it is undoubtedly wasted to a much greater extent than any other commodity or service. Half of the human race is short of water because of a lack of funds to develop supplies, yet we subsidize its consumption by those who have access to it in such a way that the poor who have water often pay more for it than do the rich.

Water is economically precious, yet at least a third of the water fit for consumption is wasted; although the remainder cannot satisfy more than two-thirds of the need, it is sold on average at only half its cost; three-quarters of it goes to the rich, while the poor, who should receive a discount, pay water-sellers at least twice and sometimes as

much as ten times the average price. Little effort is made to provide good service to the large consumers whose payments could subsidize the poor.

At least nine-tenths of the cost of drinking-water are accounted for by depreciation, supplies, wages, and debt servicing. Consumption is most often paid for in cash, yet the indebtedness of water supply systems is considerable because of the costs of treatment, storage and routing to the points of distribution. Furthermore, there is a need to make provision for future costs. It is unusual for tariffs, and, even more so, receipts, to reflect all these elements. The result is a continuous shortage of capital, not only for new investment, but even to cover operation and maintenance.

Water does not usually figure in the trading accounts of agencies and does not undergo multiple transformations, yet it has a

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considerable potential capital gain value. The water supply sector is not financially independent because of losses and wastage, low payments by some consumer groups, the lack of competition, and other factors.

### Unit costs

It is unlikely that unit costs will decrease. Virtually all of the cost of water is represented by the apparently fixed elements of labour and capital. Reductions in unit costs arising from increases in production and consumption are temporary and more than offset by subsequent expenditure on investment and operation corresponding to the exploitation of new resources to supply water to more people or, more often, to improve the service to those already supplied.

For example, the reservoirs that supply drinking-water for the city of Ouagadougou in Burkina Faso are being used to the limit of their capacity. A progressive reduction in the unit cost of the water was followed by a phase during which stopgap measures were taken to make good the shortfall created by demand in new residential districts. Whereas population and demand are increasing

**The water sector should ensure that it has the support of the Ministry of Health in promotion, regulation and surveillance.**

exponentially, supplies can only be increased linearly, by reducing losses, sinking additional wells with limited yields, and even deepening reservoirs. Such solutions would enable a relatively stable cost price to be maintained but do not confront the long-term problem of bringing water from

the nearest major resource, the Black Volta. The cost of more than 100 kilometres of pipeline and of pumping, treatment and storage should be included in the current price of water so as to adjust consumption to a level that would allow investment to be deferred. The water tariff covers existing costs, which are relatively stable, but makes no allowance for future requirements.

### Sale price

Funds will always be needed in advance for the construction, repair and replacement of water supply facilities and the price of water should cover these requirements. The sale price tends to increase wherever resource management is rational. This is a question of water resources being increasingly scarce and polluted, and of the requirements for capital resources, materials, and so on. Furthermore, in many developing countries, systems dating from before independence are now breaking down. This deterioration coincides with an unprecedented population explosion, with the result that there is a growing gap between demand and supply and an increase in costs as sources of water that are ever more remote and polluted are drawn on. The situation is particularly unfavourable where one can only rely on surface water, which requires massive investment in works that operate below capacity for long periods.

### Competition

The agency or service responsible for distribution usually has a monopoly and the consumer is not normally in a position to abstain from consumption. The market mechanisms of the private sector do not lend themselves very well to the provision of water, and rates may be fixed in relation to future production costs, far higher than

those incurred in the past, and may be artificially raised to create funds for expansion.

Although considerations of commercial efficiency are a feature of the market for water in many poor countries, the user can deal with only one supplier, who is the sole purchaser of the materials needed to provide the service. Competition in the supply of these materials is limited, often because of a lack of commercial interest. For example, although there will be keen competition in the bidding for the extension of the water network of Brazzaville, only a few of the smaller suppliers will be interested in the construction of new waterworks at Imfondo, a small centre in the north of the Congo, despite the fact that a high degree of technical skill may be required. Consulting engineering firms have highly qualified staff and are often better geared and more inclined to deal with complex systems than with less costly ones in which good operating and maintenance conditions can be provided.

### **A costly commodity**

When provision has been made for risks, inflation, a high rate of depreciation and the need for development, the average sale price of water may be more than twice the current cost of the service. Thus, existing consumers in fact bear the brunt of costs that should be met by future generations. In addition, most of the elements in the cost price of water correspond to services and supplies that are unaffected by competition. As regards the building or restoration of waterworks, demand in general comes from a single purchaser, and local competition is restricted to the supply of building materials and civil engineering services. The risks are often high. Engineers who use complex equipment have no interest in encouraging the introduction of more appropriate

technologies. All of these factors tend to increase costs. Moreover, access to the financial market is strictly controlled. Most funding agencies, when evaluating projects, look for financial autonomy and calculate

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the cost price and the sale price on the basis of projected costs, with a view to institutional development and improvement in the distributing agency's prospects of servicing its debt and meeting its other obligations.

### **Large consumers**

Large industries and well-off residential areas have far lower growth rates than those of the poor quarters of towns. It is hard to imagine that a few thousand large consumers could fully subsidize the consumption of hundreds of thousands of poor ones. The latter use increasing quantities of water, whereas large consumers often do not because of the slowness of industrial development and restrictions caused by water losses, limited capacity, and, more generally, the unreliable nature of supplies; offsetting arrangements are limited between rich and poor consumers in the urban environment and practically nonexistent between towns and rural areas.

An annual population growth rate of 7% produces a twofold increase in ten years. Kinshasa had more than a million poor people in 1975 and undoubtedly has more than two million today; during the same

period, the number of private connections to the drinking-water supply system increased by only a few thousand, and the number of large consumers remained at a low level. Water production capacity has had to be increased considerably and the network has

**Projects that use local labour and resources to achieve gradual improvement in the quality of existing works do not generally overstrain community budgets.**

had to be extended through small-bore pipelines capable of serving water fountains and a limited number of private connections. The water agency can remain solvent only by greatly increasing charges that are already high for large consumers, whose demand is scarcely increasing at all. As regards the least privileged, whose demand increases at least in step with population growth, household budgets are limited. Consequently, it is becoming more difficult to offset between the rich and the poor. In order to alleviate these difficulties, and in particular to avoid leaving the population at the mercy of high-charging water-sellers, an attempt is being made to organize the selling of water at fountains on an official basis.

A considerable proportion of the revenue of the sector goes to water-sellers. This trade, often illicit, is uncontrolled; the least privileged consumers, who otherwise would be totally without water, often pay ten times as much per unit volume consumed as people who have a private connection to the main water supply. The distribution system and the receipts of the public enterprise can be improved by making the post of

water-seller an official one. In this way, water is made available to and affordable by more people, and job opportunities are created.

### **The poor should pay their share**

The inhabitants of the poor districts of towns often have no choice but to obtain their drinking-water from water-sellers. Even where the sale of water is prohibited, the service provided by the sellers is essential. Official recognition of their trade would be an effective way of reconciling consumer protection and service requirements. It should preferably be given to individuals rather than groups. Any form of public service concession may be doomed to failure if it is granted to groups or communities rather than to individuals. In developing countries the municipal management of water is imperfect; in addition, municipalities tend not to pay their own invoices, and this is detrimental to the financial health of distributing enterprises, unless they be given adequate powers to ensure recovery of debts from community bodies.

For spontaneously formed groups in communities there is frequently a problem of double allegiance: on the one hand to the residents, who may want their water to be free, and on the other hand to the distribution undertaking. In the poor Carrefour district of Port-au-Prince in Haiti, for example, an attempt has been made to install a drinking fountain by a group representing the community. For legal reasons it is often difficult for water undertakings to exercise pressure on such groups, while they, for their part, have to respond to the demands of their fellow-citizens, to whom they owe their existence. Also in Port-au-Prince it was found that the most effective distribution

## To avoid profiteers

“... the President... has instructed us... to examine the possibility of setting up stand-pipes in various public places...”

“Everyone is aware of the long-standing system under which some individuals exploited the mass of the people, profiting from their ability to pay the water authority for supply pipes and to sell the water at an exorbitant price without control or competition... The commune will be in charge of both distribution and receipts... When the commune has difficulty over paying... the water authority should be patient so as to allow the commune to gather the funds...”

— Extract from a directive issued by a water authority in a Third World country.

- development centres can be created where the sale of water is associated with that of other goods or services.

In this context, a drinking fountain takes the place of a booth or even a small shop; its cost is far higher, but the advantages are immense. Such installations are solid and durable, may be run in the same way as small businesses, are easy to monitor and control, and serve as meeting-points and activity centres. A long preparatory stage is sometimes required before these benefits can be fully achieved. The key activities are health education and the promotion of community participation. It is also necessary to have monitoring and a mechanism for imposing sanctions, and the population must be convinced of the need to pay penalties.

Two abuses should be guarded against: the charging of excessive rates by concessionaires and wastage by users. A simple legislative provision setting a ceiling price should deal with the first problem, since any contravention would probably be reported without delay. As regards misuse and wastage, the sellers themselves should be responsible for monitoring their sale points, and the total consumption recorded at their main meters should be charged on a sliding scale similar to that applied to all large consumers.

In some African satellite towns, rich proprietors and others connected to the drinking-water supply network may, in the absence of a public drinking fountain service, resell water without being subject to any control. This becomes a problem if official sale points are installed at water fountains. Market prices then have to be adjusted, i.e., the prices charged by the water sellers must be competitive, and private users close to water fountains must be heavily penalized for excessive consumption. This cannot happen, of course, unless all

from a drinking fountain was provided by a charitable nongovernmental organization in the Cité Simone district. Such organizations, particularly the missions, play a similar role in many of the smaller centres in Zaire.

As regards individual resale, it has four main advantages:

- the water authority covers all its costs in the consumption bracket as indicated by the reseller's water meter;
- the price paid by users is between a quarter and a half of that paid to water-sellers;
- new jobs are created;

private connections and all water fountains are reliably metered.

### **Loss, wastage and illegal consumption**

Water that is lost, wasted, consumed via illegal connections to the distribution network, or obtained from private installations clearly does not yield revenue. It is therefore desirable to take such measures as the reconditioning of supply systems, preventive maintenance, and the strict application of regulations and penalties designed to reduce wastage and fraud and to control private use.

In large cities such as San José in Costa Rica and Port-au-Prince in Haiti, where the demand for water is rapidly increasing, a large part of the potential income of the sector is lost because private installations are not adequately controlled. San José, for example, receives treated surface water from a distant mountainous area, yet the city stands over an aquifer capable of providing all the water required without any need for treatment. The aquifer is exploited, but not entirely by the public system: every industry taps it by sinking wells without contributing in any way to the income of the public undertaking. A similar situation exists in Port-au-Prince, where the ground water of the Cul-de-Sac aquifer is exploited almost exclusively by private bore-holes without the payment of any fee, although hundreds of thousands of people in the immediate vicinity have practically no public drinking-water supply service.

### **How should small farmers pay?**

The money earned by small farmers often amounts to only a low proportion of their total income. Consequently, there is no

certainty that they will stop drinking water from the springs they have traditionally used at no cost. They would rather spend their money on goods that could not otherwise be acquired. However, it may be possible to persuade them to work on the construction, operation and maintenance of drinking-water and sanitation works.

### **Complete or partial recovery of costs**

Barely ten years ago many countries were in agreement that water should be free for some categories of users. This idea was justified by politicians in the name of equity, while philosophers explained that the right to water had been recognized in the oldest religions and cultures. Very few countries make the same mistake today. The principle of applying a general charge was initially accepted in urban areas and gradually extended to rural areas; the problem is no longer whether to charge but of deciding to what extent the cost of the service should be covered by receipts.

In tackling this question, some people raise the possibility of complete recovery at the national level by the charges levied. Others, more preoccupied with immediate concerns of equity, advise caution: in the context of a health-for-all policy, assessment criteria based on the principle of recovering the total cost may lead to the rejection or slowing down of the most useful projects, those designed to provide for the least privileged. Lastly, there are those who hold that the financial stability of the institutions concerned is a prerequisite for the equitable distribution of services, an argument deriving from the failure of many attempts to extend services and from the lack of financial autonomy in existing ones. Water supply officials have now realized that continuous government subsidies are not to be expected.

There are many ways in which costs can be reduced:

- use of appropriate technology;
- the carrying out of preventive maintenance;
- the detection and reduction of losses and wastage;
- improvement of conditions for procurements and loans;
- community commitment;
- intersectoral cooperation;
- improvement of assessment methods;
- invoicing and collecting amounts due;
- control of illegal connections;
- regulation of private industrial supplies;
- improvement of the facilities and machinery of distributing companies;
- supervision of installation and repair of drinking fountains;
- handing over to the private sector of duties that cannot be carried out economically by a public service.

The water sector should ensure that it has the support of other agencies. This applies particularly to ministries of health, whose role in quality monitoring and health education should enable the best possible use to be made of the services provided.

Some measures have to be taken at market level so as to diversify and increase transactions for the mobilization of funds and other resources. This is a matter of encouraging competition and increasing receipts by adapting services to the real needs and means of the consumers.

Most poor people are unable to pay the full cost of water if it exceeds roughly 5% of their family budget. It is therefore necessary

to have differential scales of charges so as to serve the least privileged at prices corresponding to their means and to recoup this subsidy by applying higher rates to other consumers. For example, consumers whose demand exceeds production capacity should be charged in relation to the future cost of installations. On the other hand, low income groups whose consumption is small should only have to pay cash to meet costs for which they are directly responsible, and then only if these costs correspond to real expenditure, with deductions for contributions in labour and kind.

The need for water companies to have financial autonomy makes it essential that average charges should cover average costs. It is not necessary for everyone to pay the same tariff, nor need tariffs cover future costs of expansion. On the other hand, a distributor's revenue must cover all his expenditure, including that on repairs.

The general aim of the water sector is to derive the greatest possible benefit from the available resources. This requires tariffs high enough to discourage excessive consumption that would require costly increases in capacity. The aim of the community is to obtain the most beneficial results for its

**Everyone should contribute to the cost, but not necessarily in the same proportion, in the same way or at the same time.**

members, and this requires the greatest possible mobilization of resources that would otherwise be unemployed. Projects that use local labour and resources to achieve gradual improvement in the quality of existing

works do not generally overstrain community budgets.

Of course, not all transactions in the sector should be restricted to exchanging water for money. The important thing is for the economy as a whole to cover all its investments in the sector through health and

other benefits, in which cash receipts naturally have a part. Everyone, therefore, should contribute to the cost, but not necessarily in the same proportion, in the same way or at the same time. More research is needed into the apportioning of costs between individuals with different needs and resources. □

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## *And so it goes on*

*“He sat down... and did his sums over again. No matter how many times he added up the figures, the answer was always the same. He would not be out of debt until the harvest in four months’ time. And even then there would be nothing left over for building a latrine. With a little twinge of shame he remembered he hadn’t even paid back the money for the water jar yet. How was he going to manage through the coming year?”*

– *A tale of two villages* by Debbie Taylor. Oxford, New International Publications, 1986, p. 50.