

# Cost Recovery

## Session Objectives

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- To highlight the need for cost recovery by some mechanisms in the water sector to ensure sustainability and to highlight the consequence of under-investment in water supply.
- To describe some of the commonly used mechanisms for recovering costs, including the use of tariffs and subsidies.
- To describe some common charging policies and highlight the need to implement charging mechanisms which promote both universal coverage and the rational use of water.
- To highlight the need to keep water charges affordable and to highlight the dangers of disconnection policies for public health.

# **Cost-Recovery**

## ***Introduction***

The production and provision of clean water to consumers entails a cost both in terms of initial capital outlay and in ongoing operation, maintenance, management and extension of services. However, because of poor planning for cost recovery, a lack of government funding and inadequate tariff rates, the ability of the sector to recover costs is often limited even for routine operation and maintenance. This has led to problems in providing sustainable water supplies.

Cost-recovery and application of water charges is a very political issue as many consumers have been used to provision of water supply as a free service or one for which only nominal payment is made. There is still a widely held view (in developed countries as well as less developed countries) that water is 'free' and that water supply should remain a free social service.

To a certain extent this concept is correct in that if a person wishes to collect untreated water they can often do so at no cost, apart from their time and potentially their health. However, water supply treated so as to represent no health risk, is not a free service and the cost of water supply largely reflects the 'added value' cost of treatment and delivery.

It is essential for long-term sustainability of the sector that costs are recovered by some mechanism, whether through application of full cost-based charges to consumers or by Government support to the sector. Where cost recovery and sector funding has been ignored, the effect has been a deterioration of infrastructure which eventually leads to the breakdown of systems, absence of an adequate water supply and an increased public health risk. It is also important to recognise that costs for treatment and disposal of return flows of wastewater must also be recovered for the sector to be sustainable.

It is essential that the profile of the need to pay for water supplies amongst consumers is maintained at a high level. Unless consumers are convinced of the need to pay for services, cost-recovery will remain problematic and the long-term sustainability of the drinking water provision will be compromised. However, this also means that service quality needs to be sufficiently good to encourage payment and that water suppliers are seen to be responsive to the demands of consumers.

## ***Consequences of poor cost-recovery***

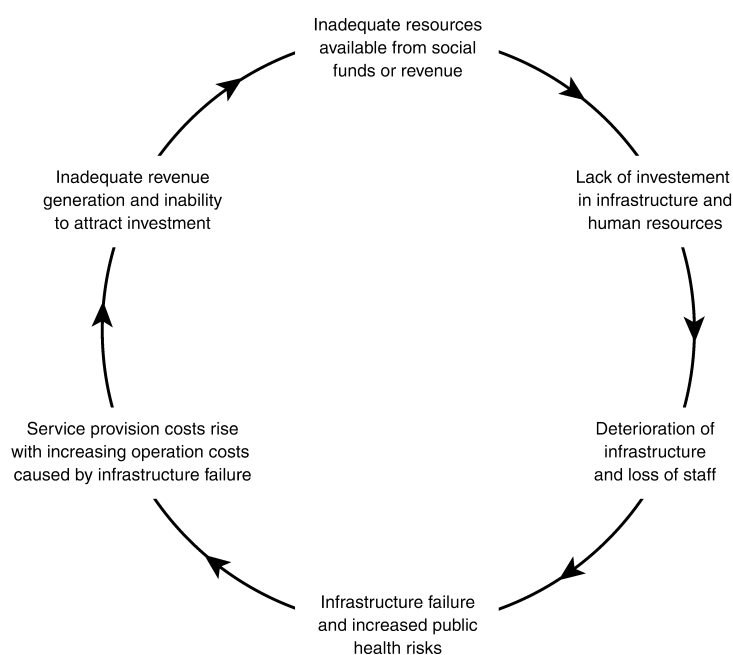
In many countries, the issues of cost-recovery and sector sustainability were ignored for a long period. As a result, tariffs set were unrealistic and frequently there was insufficient Government subsidy to make up the shortfall in the costs of the service provided. In consequence, the infrastructure has deteriorated and service quality has declined. This process is outlined in figure 1 below.

Inadequate cost-recovery, will result in an inability to operate and maintain existing supplies properly with consequent increased of leakage, water supply interruption and likely deterioration in both the quality and quantity of the water supplied. This will lead to increased public health risks, a likely increase in morbidity and mortality rates and an increased burden on the health care system.

Inadequate cost-recovery will also result in an inability to extend water supplies to unserved areas, thus continuing a cycle of inequitable access to water supplies. This not only fails to satisfy the basic human right of all peoples to have access to an adequate water supply (UN, 1977), but will continue to place a continued extra burden on the health care system. It is vital that sufficient resources are raised from existing water supplies not just to ensure their continued functioning, but also to extend services to the urban and rural populations who lack access to an adequate water supply.

A good example of this is the water supply in Lusaka, Zambia, where a prolonged lack of investment has led to an almost complete breakdown of existing services and an inability to extend services to serve new settlements within the urban conurbation. As a result, only in the region of 30 per cent of the population are connected to a water supply, although the figure for coverage with an adequate, continuous water supply is far lower.

The protection of the water resource base is a key factor in water supply and where revenue generated has been insufficient to cover the costs of treatment of wastewater, water resources are likely to become at risk from pollution. If poorly or untreated wastes are discharged into streams or excessive leakage of waste to groundwater is allowed, then this will lead to a deterioration in natural water quality. This has two principal effects: firstly it increases the treatment requirements for the production of drinking water and therefore increases the cost of water supply; secondly, if pollution is allowed to continue and where certain pollutants (such as aromatic hydrocarbons) are present there can be a long-term loss of resources resulting in the need to develop new, possibly less accessible, water resources.



**Figure 1: Consequences of poor cost-recovery**

### ***Recovering costs***

Costs are usually recovered, at least in part, through the levying of a charge on consumers by the supply agency. A certain proportion of the costs may be recovered directly from Government. However, increasingly the sector is expected to be self-financing with limited support and water suppliers are expected to raise funds for on-going costs and to raise sufficient funds for major rehabilitation and extension works.

In many countries there is now a political decision that the subsidisation of social services will no longer be carried out and the water supply sector is expected to become self-sustaining in a very short period of time. This may have grave consequences for public health as water suppliers increase tariffs in order to recover costs and new policies, such as disconnection, are enacted. In these conditions, plans for extending water supplies to unserved areas are often shelved and low-income areas risk to disconnection for non-payment of bills.

An important factor in cost-recovery is the setting of adequate standards of service. It has been shown that consumers are willing to pay for good quality services and are prepared to pay increased costs for improved services in terms of water quality and supply continuity. However, where water supply services are poor, the collection of revenue is difficult and costs are rarely recovered. In some situations, consumers may be willing to be disconnected from a water supply whose service quality is poor and whose costs are high. This leads to a fundamental question of water supply improvement: does service quality improvement or cost-recovery improvement take priority and therefore should tariffs be raised in order to improve service quality or should service quality be improved to allow increased revenue to be collected?

Many water suppliers argue that in order for them to raise the capital required to improve service quality, tariffs which reflect the cost of doing this need to be charged immediately. Once sufficient revenue is collected then service improvements can be implemented. However, from a public health point of view, it is vital that service quality improvement in areas where this is poor, should be implemented immediately. There is a significant risk that users will be willing to disconnect themselves from an expensive but poor quality service rather than pay what they see as unrealistic prices. This will inevitably lead to greater health risks as unprotected water sources are used for water supplies.

Another significant risk arises from the shift towards user-only funding of the water supply sector is that it will continue to marginalise the poor in unserved areas. These users will continue to rely on poor quality water supplies unless some form of subsidy is made available to support the provision of services to them. Furthermore, these sections of the population are also frequently forced to pay higher unit costs for drinking water from vendors where no connection to some form of centralised water supply is made available.

Where Government subsidises the supply of water to poorer sections of the community, it is important that some element of household payment, however nominal, is retained to encourage responsible use of water supplies and infrastructure. It is also important that all users of the water supply pay for the services that they receive. In many countries, the worse defaulters on payment of water bills are Government Institutions, the military and the wealthier sections of society. In many countries, low-income groups actually subsidise the high-income groups.

The need to pay for drinking water supplies should remain a high profile issue nationally. Promotional campaigns on payment and the implications for service quality in the event of non-payment and clearly described and the link between payment of fees and improving water supplies should be clearly shown. In some cases, water suppliers provide annual statements of water supply quality and expenditure. These allow consumers to be able look at how their money has been spent and what improvements that has led to. Water suppliers and surveillance bodies should be proactive in their efforts to raise the profile of the need to raise revenue and the responsibility of all consumers to pay bills.

### ***Charging policies***

Charging policies can be established in a number of ways. The key principle of charging policies however, should be to ensure that water supply remains accessible for all consumers whilst still recovering overall costs of the water supply. Charging policies should be established which are fair and equitable, provide incentives to conserve water and are simple and comprehensible to consumers.

The tariff set will depend on the determination of costs and the ability and willingness of consumers to pay. Consideration should be given to whether a pay-for use system is employed or a rates system used. Pay-for-use systems require household water meters to be installed to gauge individual household consumption, whereas rate systems rely on estimation of property value and the use of bulk meters to determine bulk demand. If a flat rate system is employed it is essential that consideration be given to how excessive consumption will be dealt with and whether fines for consumption of a certain level of water will be introduced.

Often a mixture of flat rate and pay-for-use systems are used to set tariffs. These systems generally employ low flat rates for a given amount of water per household and thereafter use a progressive rate for increasing water use. The advantage of this system is that it provides some security to the poor as low rates of water use are inexpensive, whilst allowing wealthier members of society use the water they require and also allows transparency of charging.

The problem with this system is the determination of the maximum allowable supply charged at a flat rate. A number of solutions have been employed. At the most basic level, an equivalent of 5 litres per capita per day can be used as the water required for consumption and this may be used as the flat rate maximum. However, in most countries where combined tariff systems are in place a flat rate is used which includes sufficient water for all basic domestic use, which will raise this figure to about 30-50 litres per capita per day.

This approach can be implemented using a *block rate* system or a *step rate* systems. The step rate system employs progressively higher charges for bands of consumption. Thus the initial band will be a volume sufficient for basic domestic needs and charged at the minimum rate. Increased consumption therefore brings a penalty of a higher unit charge, which increases in a series of steps. The principle of this method is to encourage conservation of water and to penalise those who use excess amounts. Block rates work in the reverse, with the maximum rate charged for volumes sufficient for all domestic use and thereafter low unit charges for increased consumption with minimum charges for very high consumption. This works on the principle

that although unit charges decrease, as the number of units consumed increases, sufficient revenue is generated.

### ***Keeping water charges affordable***

It is essential that water charges remain affordable for all consumers, this may be achieved through employing cross-subsidisation techniques. Cross-subsidisation allows different tariffs to be set according to the ability to pay of different groups of consumers. The principle is that richer consumers pay an increased proportion of costs in order to ensure that poorer consumers can afford their water bills. Cross-subsidisation can be an effective mechanism for ensuring that costs charged reflect ability to pay. However, it is frequently contentious, difficult to implement and requires careful and detailed planning if it is to be successful.

One way in which costs can be reduced is to encourage greater community or consumer involvement in operating and maintaining the supply. This is an approach commonly used in less developed countries. However, with sophisticated systems utilising treatment plants and an in-house level of supply, it is much more difficult to rely on community involvement to reduce costs because specialist skills and a large amount of time are required.

Careful consideration should also be given to whether domestic water bills should be the same as industrial water charges. Industry uses a great deal of high-quality water and this forms part of its raw materials. As industry uses a large amount of water and as it is essentially profit making in most circumstances, there is much to be said for subsidising domestic water tariffs through application of higher rates to industry. This is further strengthened by the fact that industry accounts for a great deal of the pollution of water resources and thus directly contributes to increased treatment costs.

Agricultural water use is generally covered by the water resource management body, although there needs to be close liaison to ensure that farming activities do not pollute water sources used for drinking water supplies and that priority for use as drinking water is always maintained.

The difference between in ability to fully recover costs in rural and urban areas must also be considered. There is greater potential for revenue collection in urban areas where there are more people living in restricted surroundings. In rural areas, the low density of population often makes full cost-recovery difficult. In these circumstances the possibility of subsidising rural water supplies by urban consumers should be considered.

One aspect of cost-recovery which is often difficult to address is the funding of surveillance activities undertaken by watchdog bodies. In most situations this activity is funded from local or national government through taxing of the population. This approach is workable as long as there is a sufficient tax base to raise revenue for all the competing demands. However, in many countries such funds are not available and water suppliers must contribute to the funding of a watchdog body.

### ***Non-payment issues***

The issue of non-payment of water charges is an issue which provokes considerable debate and great care must be taken when dealing with non-payment issues to ensure that public health is not unacceptably compromised.

Many water suppliers insist that policies of disconnection in cases where there is continued non-payment of bills are essential if revenue collection and hence cost-recovery is to be maintained. However, it should be stressed that there is no evidence of significantly increased levels of non-payment of bills where there is no threat of disconnection. It should also be stressed that disconnection from a public water supply represents a significant health risk to the whole community and not just the disconnected household. Significant increases in disease are noted in areas where disconnections have taken place.

In many areas where disconnection is heavily promoted, water supplies have been privatised. In these circumstances, disconnection may be more related to profits of the company rather than inability to recover costs. There are real dangers in disconnecting users from water supplies and it is not method that can be recommended because of the public health risk.

Where household resource are limited and non-payment becomes problematic, other solutions should be identified. These may include a minimum amount of water provided effectively free of charge, employing large scale subsidisation from wealthier domestic users and industry or installing flow limiters on households with a history of persistent non-payment.

### ***Conclusion***

Cost-recovery is vital if water supplies are to be sustainable and if they are to meet future demands. It is important that the revenue raised covers operation and maintenance costs and generates capital for extension and rehabilitation of water supplies.

Some element of subsidy is often required, whether from Government social funds or through the application of differential tariffs for low and high income residential areas and differential tariffs for domestic and industrial water users.

Disconnection policies represent a significant health risk which is likely to affect the wider community and not just those disconnected. Disconnection of households from piped water supplies for non-payment of bills can never be justified from a public health standpoint and such policies should not be enacted.

**References**

OFWAT (1993) *Annual Report 1992*. HMSO. London.

Robens International Centre for Public and Environmental Health, *Water and Health*, Paper Presented at the Institution of Civil Engineers-Royal Institute of British Architects Meeting Who is Making Britain Sick?, 1996.

U.N. (1977), *World Water Conference, Mar del Plata, Argentina*,

WHO (1990), *Handbook of Financial Principles and Methods*, World Health Organization Working Group on Cost- Recovery. WHO/CWS/90.10.

# Cost Recovery

## Presentation Plan

Section	Key points	OHP
<b>Introduction</b>	<ul style="list-style-type: none"> <li>• production and provision of clean water has both capital and ongoing costs, it is not free</li> <li>• poor cost recovery leads to inability of the water sector to meet the demands placed upon it</li> <li>• cost-recovery is often contentious, but is essential</li> <li>• costs may be recovered from Government, from consumers or through a mixture of both</li> <li>• where water charges are levied, quality of service must be good and reflect charges made</li> </ul>	<b>1, 2</b>
<b>Consequences of poor cost-recovery</b>	<ul style="list-style-type: none"> <li>• cost-recovery has been ignored by some countries and so tariffs were too low and government subsidy insufficient to make up shortfall</li> <li>• in consequence, infrastructure has deteriorated and service declined</li> <li>• inadequate cost-recovery results in an inability to operate and maintain supplies properly and will lead to increased leakage, interruptions and deterioration in quality &amp; quantity</li> <li>• inadequate costs-recovery also prevents extension of services to unserved areas</li> <li>• poor cost-recovery may also lead to loss of water resources through pollution from inadequately treated wastewater</li> </ul>	<b>3, 4</b>
<b>Recovering costs</b>	<ul style="list-style-type: none"> <li>• costs recovered usually at least in part through levying of charge on consumers</li> <li>• increasingly government support is being withdrawn from the sector which is expected to become self-financing</li> <li>• this may lead to reduction in programmes to extend coverage and disconnection for non-payment, both of which cause public health risks</li> <li>• it is essential that service provided is adequate to ensure costs may be recovered</li> <li>• this raises difficult questions such as whether service improvement or increased charges come first</li> <li>• arguments exist for both approaches, although it is clear that poor service will significantly limit cost recovery</li> <li>• community management can help reduce costs and assists in extending coverage</li> </ul>	<b>5, 6</b>

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Section	Key points	OHP
<b>Recovering costs</b>  <i>continued</i>	<ul style="list-style-type: none"> <li>● defaulters who can pay bills (e.g. government departments etc.) must be made to pay / the poor should not subsidise the rich</li> <li>● the need to pay should be promoted and the consumers made aware of the consequences of non-payment on service quality</li> </ul>	
<b>Charging policies</b>	<ul style="list-style-type: none"> <li>● these can be established in a number of ways</li> <li>● key principle should be to ensure that water remains accessible and affordable to entire population</li> <li>● charging should be fair and equitable and encourage conservation of water</li> <li>● rates or pay-per-use systems may be employed</li> <li>● pay-for-use systems require the installation of water meters</li> <li>● rates system usually work on property values as a mechanism of determining ability to pay</li> <li>● can use systems which employ elements of both approaches with minimum amount supplied at a flat rate and extra consumption charged per use</li> <li>● this protects poor whilst encouraging water conservation</li> <li>● problem is setting minimum to be supplied, although this should reflect health requirements</li> <li>● rate systems may use block rates or step rates</li> <li>● step rates employ increasing rates for increasing consumption and therefore promote conservation of water</li> <li>● block rates use decreasing rates for increasing consumption which penalises low-volume users</li> </ul>	<b>7, 8, 9</b>
<b>Keeping charges affordable</b>	<ul style="list-style-type: none"> <li>● costs must kept affordable for all consumers in order to protect public health</li> <li>● cross-subsidisation may be used</li> <li>● community operation and management will also reduce costs</li> <li>● industrial use of water can also be used to subsidise domestic use of water through use of differential tariffs</li> <li>● urban areas may subsidise rural areas as revenue generation easier in urban areas with larger, more concentrated populations</li> <li>● cost-recovery should also help to fund surveillance activities</li> </ul>	<b>10</b>

Section	Key points	OHP
<b>Non-payment issues</b>	<ul style="list-style-type: none"> <li>• water suppliers may request on a policy of disconnection for non-payment as a means to ensure costs are recovered</li> <li>• however, there is no evidence of increased non-payment where disconnection is illegal and may reflect a desire for profit rather than cost recovery</li> <li>• disconnection causes serious public health risks and can never be recommended</li> <li>• for persistent non-payment, other options may include flow limitors</li> <li>• keeping costs affordable will reduce non-payment as an issue</li> </ul>	
<b>Conclusions</b>	<ul style="list-style-type: none"> <li>• costs-recovery by some means is essential for sustainable water supply</li> <li>• government subsidy or application of differential tariffs may be employed to keep costs affordable</li> <li>• disconnection policies should not be implemented because of the public health risk</li> </ul>	

# The Cost of Using Water (UK Example)

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Flushing toilet	1p
Shower	3.5p
Dishwasher	5.5p
Bath	8p
Washing Machine	11p
Hose pipe (1 hour's use)	54p

(Assuming average cost of water, including disposal, of 0.1 pence per litre and typical consumption figures)



# Investment Requirements

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- Investment required in water supply and sanitation in lower income countries is approximately \$50 billion per year.

Actual spending is \$10 billion per year.

(Christmas and LeRoy, 1990)



# Consequence of Poor Cost-Recovery

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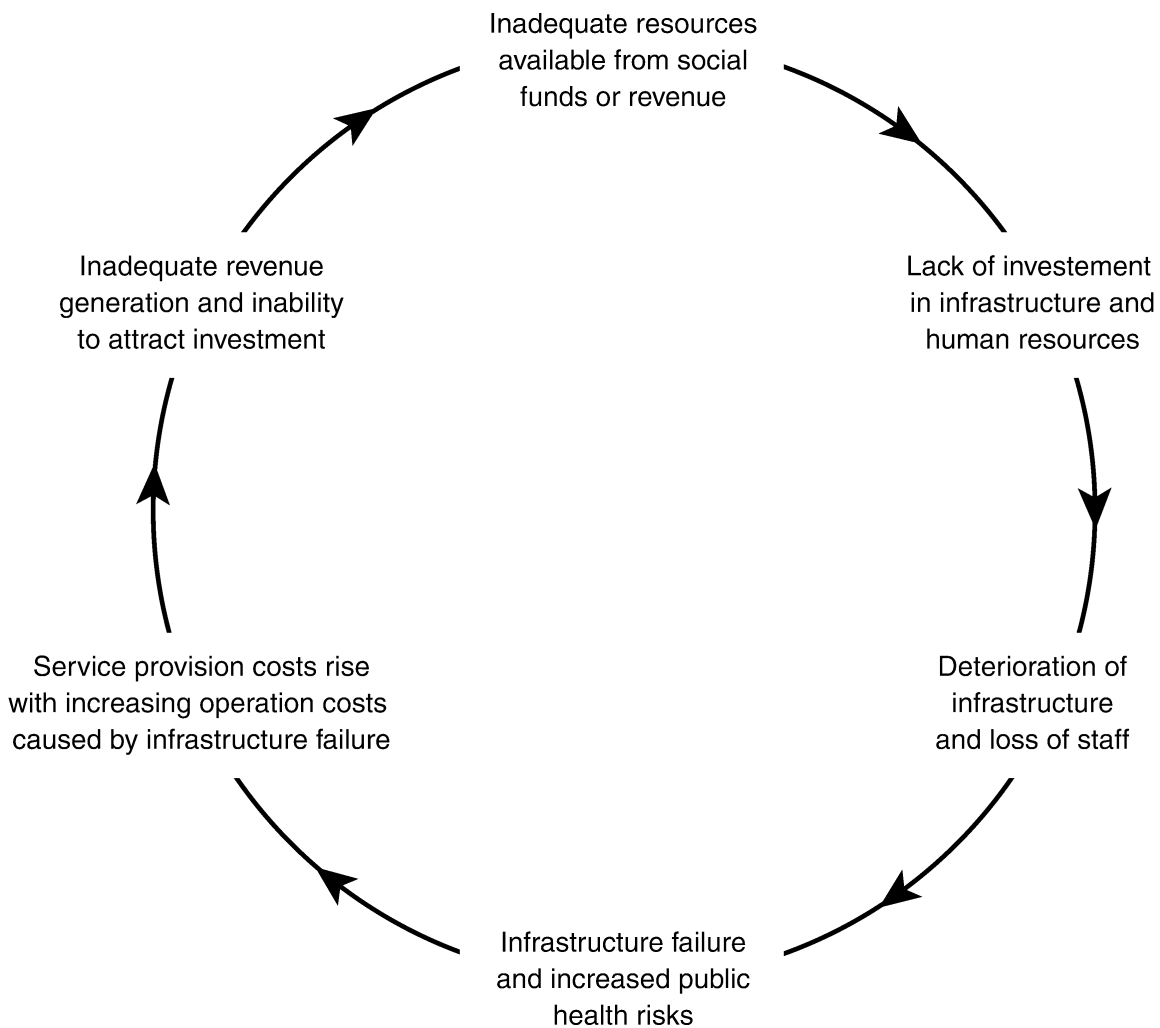
- Inadequate cost-recovery will mean that water supply provision is not sustainable and will eventually lead to deterioration in infrastructure and human resources.



# Water Supply Service Deterioration Caused by Poor Cost-recovery and Cost Covering

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# Recovering Costs - Priorities

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- Improved service quality or improved cost recovery?

Therefore:

- » Does increased revenue fund service quality improvements?

*or*

- » Do service quality improvements lead to increased revenue generation?



## Sale price of water

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World Bank (1990) reported that the average effective sale price of water is only about one-third of the marginal cost of production.



# Charging Policies

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## **Should aim to achieve:**

- fairness and equity
- sensible incentives
- simplicity and comprehensibility



# Keeping Water Charges Affordable

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- Rich subsidise poor
- Community-based approaches
- Industry subsidises domestic
- Urban areas subsidise rural
- How is surveillance funded? Water levy or other tax?



# Nonpayment and Disconnection

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- There is no evidence that disconnection policies have any impact on reducing non-payment of bills
- Disconnection from a public water supply represents a serious public health risk
- Disconnection can **never** be justified on health grounds



# Keeping charges affordable

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- To protect public health costs must be affordable for all consumers
- Cross-subsidation may be used
- Cost reduction may be achieved by community management and operation
- Industrial tariffs may subsidise domestic use
- Urban areas may subsidise rural ones