INSTITUTIONAL ISSUES IN THE DELIVERY OF WATER AND SANITATION SERVICES

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Contents

Summary

The development of sustainable water services requires institutional structures and policies which are fit for purpose. Experience has shown that the traditional municipal model, although successful in establishing water services for all, has failed to invest in the maintenance of systems. Water charges have been too low to provide for the level of cost recovery necessary to develop and maintain infrastructures. The result has been a backlog of investment almost everywhere and a deteriorating service with water rationing through intermittent supplies in developing countries. These failures have

resulted in the need for separation of operational management from local government policy functions, most commonly through the formation of publicly owned water companies. Increasingly, regulation is seen as a function which should be independent from government so that decisions on investment, charging and enforcement of standards necessary to implement government policies can be taken objectively, without political interference.

The necessary changes require the removal of general subsidies and an increase in charges. Contrary to general belief, it is the rich who benefit from general subsidies with the poor often not receiving a piped supply and paying very much more to water vendors. The poor benefit from an increase in charges to allow investment in the infrastructure with subsidies targeted at system extensions and payment of access charges for the poor. Public consultation is essential so that consumers understand the reasons for the changes and can make a contribution to policy thinking. There are good examples of public participation in the establishment and management of community systems.
One major challenge is the refurbishment of old infrastructures, coupled with ongoing urbanization with the expansion of cities. These demands are compounded by climate change and the need for an integrated approach to water and wastewater management with consideration of wastewater re-use. A growing consideration is the increasing use of energy in the provision of water services. These factors require governments to integrate policy making on water and wastewater.

1. Introduction

Institutional issues have been studied far less than water science and technology, but without effective policies governance and regulatory systems, scientific understanding and improved technologies cannot be applied successfully. Effective governance requires attention to be given to all the key elements for effective, efficient and sustainable water services.

The use of the term regulator is relatively new in water services, but the regulatory functions have always existed, although until recently they did not have any independent focus. Privatization in England in Wales in 1989, with the need for greater objectivity and transparency, was accompanied by the formation of formal independent regulatory bodies. Since that time, failures by local authorities to regulate effectively have established the value of formal regulation in public sector operations. There is a requirement for economic, drinking water quality and environmental regulation.

2. Key Elements for Sustainable Water Services

2.1. Governance Structures

Historically, water services have been provided as part of local government. This had the apparent advantage of elected local politicians being responsible for services and being accountable to the citizens. In practice, although successful in developed countries in extending services to all people, it has not produced sustainable systems. There are considered to be two main reasons for this. The first reason is that local

government functions include both policy determination and operational management which require different motivations and skills. Generally, individuals who are good at policy development are not good operational managers, and vice versa. There is also a tendency for local politicians to use water utilities to meet other objectives such as reducing unemployment, or to generate cash to subsidize other local authority functions such as transport. Although laudable objectives, they result in inefficiencies and in operational management being unable to focus on what should be their main tasks of providing consumers with a good and reliable service.

The second reason for failures of the municipal model has been the unwillingness of politicians, especially around election times, to sanction the tariff increases necessary for sustainable cost recovery. The impact of this is not noticeable for many years, but eventually the lack of money for investment in maintenance and refurbishment of the infrastructure results in a downward decline in service and in sustainability. The time lag, between inadequate investment and a deteriorating service, is one reason why governments have not had to face up to the need for water service reform until now. In many cities, systems are in poor condition, needing substantial amounts of money to fund the backlog of investment; at the same time there is a need to extend the infrastructure as cities grow and a need to fund environmental improvements. The impact on water charges is in many cases politically unpalatable locally, resulting in attempts to obtain central government funding. Those cities in the developed world which are facing up to the requirement see the need to increase water charges by 10% per year in real terms for 10 or more years, resulting in tariffs up by 2.5 times at the end of the period.

This realization has stimulated reform of utilities to improve efficiency and alleviate the price impact. The basic requirement should be to separate policy and operational functions, with experienced operational management allowed to function without political interference. This separation can be achieved in a number of ways. It is possible to achieve separation within a local authority structure by introducing internal contracts. One part of a city operation determines policies, but contracts operations to another separate department. For this to be successful, as in Seattle in the United States and in Brisbane in Australia, there is a need for the internal contract conditions and achieved performance figures to be available to the public.

More commonly, cities are forming publicly owned water companies and requiring them to operate under private sector conditions, including producing private sector type accounts and paying dividends. This is particularly effective when the company boards include independent directors without allegiance to local authorities as in the Netherlands. In that country Local Authorities have become the shareholders and approve tariffs.

A third option for separation is to contract operations to the private sector as is common in France. Experience elsewhere has been mixed with failures arising from poorly constructed contracts. There is a tendency for the city and the contractor not to want to publish contract details with a resulting lack of essential transparency leading to loss of public confidence. The requirements for successful use of the private sector are discussed later under ‘the Futile Public-Private Argument’.

2.2. Key Policy Issues

2.2.1. Separation of Functions

The need for separation of responsibility for water service delivery from policy development has been discussed above but there is another key separation policy issue, that of regulation. Regulation is the process of interpreting and implementing laws, policies and regulations, to achieve what was intended in their formation. Most commonly, governments who have formulated policies and regulations also have the role of implementation. However, just as governments are poor operators they find it difficult to implement and enforce 'laws' in an objective way, especially when the results may be politically unpopular such as in the setting of higher water charges for service sustainability. So the separation of policy and operations is insufficient; there is also the need for independent regulatory bodies. Governments find this requirement a very difficult one, as in politicians' eyes, it involves relinquishing power. Yet, an independent regulatory body, trusted by the public, actually enhances governments' reputations through transparency and objectivity which result in greater public confidence. Independence of regulatory bodies is achieved through powers of access to information, reporting without approval of government and through free access to the media.

There can be independent environmental regulation through the formation of Environment Agencies, as in much of Europe and North America, but often the function is embedded in the Ministry responsible for environmental regulation with varying degrees of independence. Drinking water quality regulation is often part of the environmental regulation function, but can be connected with the Health Ministry as in Sweden, or the responsibility of the economic regulator as in Portugal, Egypt and Malaysia. In the UK drinking water quality regulation is handled by dedicated inspectorates. Whatever the structure, it is important that there is independence for monitoring and enforcement of standards, and independent reporting of results.

Independent economic regulation has tended only to be established with large-scale privatization as in England and Wales and in Chile, although the State of Victoria in Australia now has independent regulation of tariffs and economic performance through a regulator covering all service utilities. Economic regulators exist elsewhere, for example in Portugal, Egypt and Ghana, but they do not have tariff setting powers, which have remained with government. So although there are benefits in having professionally competent regulatory bodies, much of the benefit is lost through political interference in tariff setting.

2.2.2. Viable Utility Size and Centralization versus Decentralization Issues

There is the important question of viable utility size; smaller utilities (those serving less than a population of 100,000 people) are unable to attract good quality management and are unlikely to be able to afford the increasingly necessary scientific support services. On the other hand there are many small communities who would prefer to have their own water service, and integration of operations with neighbors is seen as loss of control and autonomy. This reluctance is a barrier to progress in the many small

communities of the United States and Canada. Some governments have introduced integration of utilities against the will of some local authorities. This happened in England and Wales in 1974 with the integration of 1600 water and wastewater operations through the formulation of 10 Regional Water Authorities based on river basins. This had the advantage of integrated river basin management but there was the loss in some cases of local civic pride which had created successful operations. The Netherlands achieved integration of water supply utilities through legislation but retained local authority involvement as shareholders of the enlarged companies. The public service reform program in Australia, in which there were financial incentives for achieving improved performance, resulted in States taking the decision to create larger viable utilities through amalgamation of small operations. All these cases have resulted in greatly enhanced management capability and in the necessary investment for sustainability.

The centralization/decentralization question might appear to be related to utility size but there are other issues. The main question is whether responsibility for water services should rest with central governments or whether decision making should be delegated to a more local level. This has arisen because even in countries where there are very small utilities, as in Canada, there is a high degree of centralized decision making. Following the Walkerton drinking water contamination incident in which half of the community became sick and 7 people died, the Province of Ontario decided that provincial government should monitor local utilities carefully and if necessary take over operational control. This decision appears to have resulted in significant improvements in quality of operations, but an alternative approach would have been to have fewer larger viable utilities with provincial government limiting its role to policy and setting standards. Other countries, such as Tanzania, recognizing that central control of rural water services was not working, have adopted a policy of devolving responsibility to local communities. This goes back to the original premise that in those communities without adequate water services, greater progress is likely to be made through a bottom-up approach, as happened in Europe and North America in the 19th century. Harnessing local community energy will be essential in meeting the demanding Millennium Development Goal of halving the 1.2 billion people without an accessible safe water supply by 2015, and even more so in meeting the equivalent goal on basic sanitation.

The argument against decentralization is that it is sub-optimal and does not allow for effective integrated water resource management. The solution is for central responsibility to retain overall water resource planning, particularly as it relates to river basin management, but to devolve operations to local decision making but with utilities of a viable size. Viable size with community control can be achieved through a number of local authorities establishing a cooperative. One good example of this is in north eastern Brazil in which 48 communities formed a regional water supply utility called Sisterna Integrado de Saneamento Rural (SISAR). SISAR is a not-for-profit company overseen by an Administrative Council elected by the General Assembly of the 48 communities. So the policy challenge for governments is how to establish sound policies and at the same time provide stimulation at a more local level to develop viable sustainable water service operations. It is not a question of centralization or decentralization but both, with national policies and management of river basins and local water service operations.

2.2.3. Standards, Monitoring and Enforcement

It is appropriate to establish drinking water quality standards at national level, as it would be discriminatory to have different standards at local levels. That does not mean that actual quality will be the same as there may be varying timetables to achieve compliance. Generally, the same principle of national commonality applies to setting environmental standards, although in large countries with regions having very different climatic conditions some variation may be appropriate. Common environmental standards can be seen as one part of achieving a 'level playing field' for trade as in Europe with the European Union setting mandatory minimum environmental requirements. Other standards of service, such as, for example, minimum water pressure at the point of supply and response times to consumer complaints, can be set at the individual supplier level. However in a monopoly situation, consumers do not have a choice and there is a case for establishing minimum national standards as in England and Wales with the Guaranteed Standards Scheme.

Drinking water quality standards should be based on the WHO (the World Health Organization) Guidelines, as WHO brings together the best knowledge and experience in the world to develop and maintain up-to-date guidelines. Some countries or regions such as the United States of America and the European Union, although taking note of WHO Guidelines, do develop their own 'standards'. The WHO Guidelines are what they are called; they are guidelines and not standards, and within the guidelines there are choices to be made. Governments need to base standards on the Guidelines but to recognize that it will take time and investment to achieve them. There is therefore a requirement to consider interim standards. It is better to have interim standards which with effort can be achieved in a defined timetable than to have only 'final' standards with no prospect of achievement in the foreseeable future. The latter can lead to disillusionment amongst the staff involved whereas interim standards do allow the setting of priorities for investment. Interim standards should cover those parameters, particularly microbiological standards, but also some specific chemical standards, where there is an immediate threat to health. In particular, it is important that minimum standards provide for the removal or inactivation of waterborne pathogens. This requires disinfection and it is important, as advised by WHO, that governments do not compromise the safety of drinking water over concerns about disinfectant byproducts. The risks to health associated with such byproducts are very small compared with the known impact of pathogens. WHO estimates that every year there are 4 million deaths from waterborne diarrheal disease. The current WHO Guidelines give emphasis to the management of risk through the development of drinking water safety plans and this has become a major consideration for government policy.

The policy aspects are encased in the Bonn Charter, (so-named because it was developed at workshops held in Bonn, Germany), which provide a set of high level principles to meet the goal of 'Good safe drinking water that has the trust of consumers'. The document has been designed for policy makers with a view to the principles being adopted by governments to give a sound policy foundation. The Charter stresses the importance of an integrated approach covering catchment to tap with the need for clarity of roles and responsibilities and the need to share knowledge.

The Bonn Charter and the WHO Guidelines are companion documents and should be considered together. Both advocate the development of drinking water safety plans (referred to as water safety plans by WHO) as the means of applying an integrated risk management approach. Essentially, it involves teams of people, made up from organizations responsible for the water supply chain from catchment to tap, identifying the risks to the safety of drinking water safety and putting in place critical controls to counter those risks. The WHO Guidelines include guidance on preparing such water safety plans.

Establishing sound policies and standards is important but there is little point in having standards unless there is monitoring for compliance and there is some means of enforcement. There should be enforcement agencies with powers to check compliance with drinking water quality standards and other standards, and powers to take enforcement action. This refers back to the need for independent regulators discussed in Section 2.2.1. The enforcement process should be integrated into planning as discussed in Section 2.4 below.

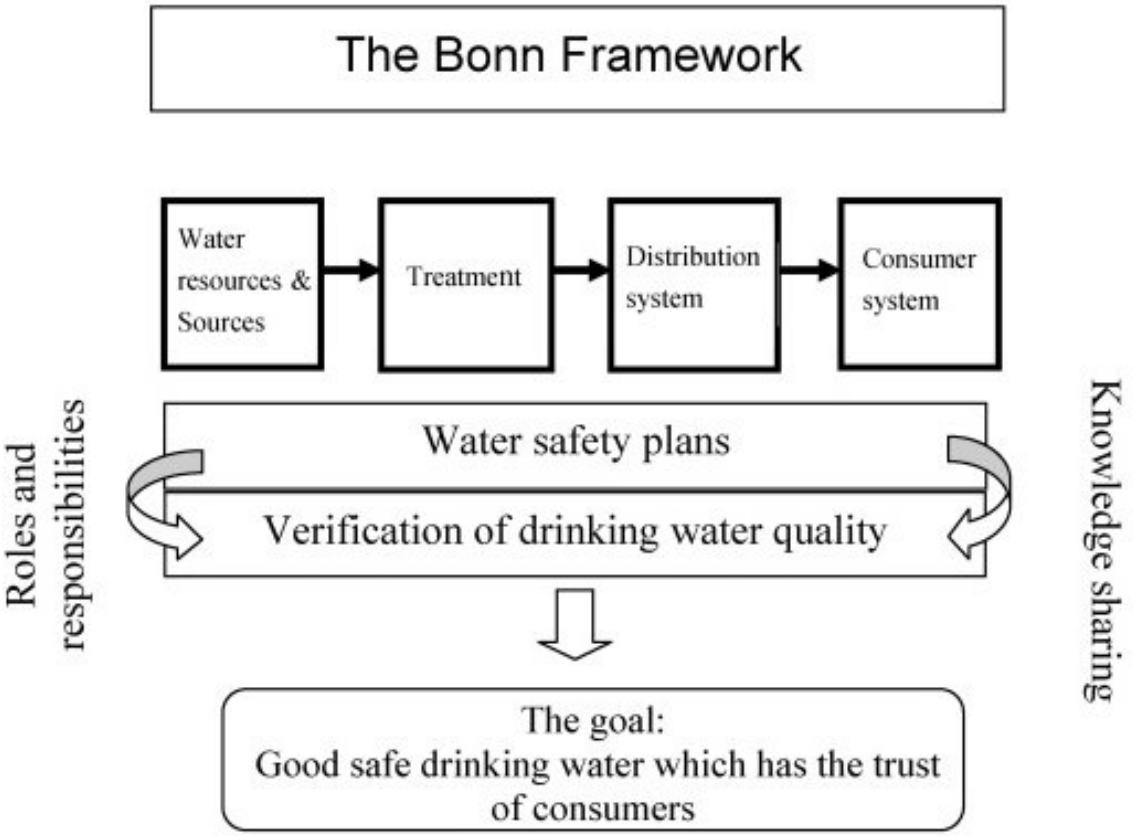

Figure 1. Bonn Charter Framework

2.2.4. Investment and Cost Recovery

As mentioned in Section 2.1, municipalities around the world have failed generally to invest in the maintenance and refurbishment of water services infrastructures. This has risen largely from water charges set at a level insufficient to provide income for

maintaining serviceability. The International Water Association (IWA) definition of sustainable cost recovery is 'that costs are recovered so that a water services undertaking (ie a water utility) can achieve and maintain a specified standard of service, both for the present and future generations'. IWA gives the costs to be recovered as including:

- The internal operating costs of extracting, treating and distributing the water, as well as those of the collection, conveyance, treatment and disposal of wastewater. These costs include administrative overheads.
- The cost of capital for new infrastructure. An important consideration is the time period over which a capital investment is depreciated
- The cost of maintaining and refurbishing existing assets. For both 2 and 3, an accounting system is needed that makes the required financial provision.

Governments should ensure that all these items are covered effectively in setting charges. However, start-up costs for new infrastructure can impose an unacceptable burden on consumers, and there is a need to mitigate this through providing utilities with grants or long-term low-interest loans. The Government of Malaysia is establishing an organization, essentially a national bank, to provide such loans so that the initial infrastructure costs are spread over a long period of time and can be recovered through charges. However, charges need to be set to make sufficient allowance for the depreciation of those assets and their eventual replacement or refurbishment. Investment decisions should be taken in an integrated way through a periodic planning process which considers all requirements at the same time in the context of charges for cost recovery. Economic planning processes are discussed in Section 2.4 under Economic Regulation Planning.

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Biographical Sketch

Michael Rouse offers expert independent advice on water industry matters. He has extensive knowledge and experience of water governance and regulation, including all aspects of audit and enforcement, and the governance issues related to both public sector management and privatization. Michael is experienced in working with Ministers, senior government officials, and water and sewerage utility managers, both in the UK and around the world. He has wide knowledge of water technical and operational matters, based on his applied research and development background. He was Managing Director of the Water Research Centre in the UK and Head of the Drinking Water Inspectorate in London.

He has a good understanding of international water matters and is a Past President of the International Water Association, currently chairing the Association's Group on Institutional Governance and Regulation. In recent years he has worked on policy, governance and regulation matters in China, Singapore, Malaysia, Egypt, Ghana, Australia and Hungary.

He is a Distinguished Research Associate at the University of Oxford and manages the Institutional Governance and Regulation module of the University's MSc Course on Water Science, Policy and Management. He is a Visiting Professor at Tsinghua University, Beijing, and a Visiting Professor at the Shanghai Academy of Social Science. His book on Institutional Governance and Regulation of Water Services was published in 2007.