

PN-ABR-593

ISBN 88209



WATER AND SANITATION  
FOR HEALTH PROJECT

Operated by  
CDM and Associates

Sponsored by the U.S. Agency  
for International Development

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## SUSTAINABILITY OF URBAN WATER SUPPLY AND SANITATION INSTITUTIONS

Prepared for the Office of Housing and Urban Programs  
U.S. Agency for International Development  
under WASH Task No. 034

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April 1989

The WASH Project is managed  
by Camp Dresser & McKee  
International Inc. Principal  
cooperating institutions and  
subcontractors are: Associates  
in Rural Development, Inc.;  
International Science and  
Technology Institute, Inc.;  
Research Triangle Institute;  
Training Resources Group;  
University of North Carolina  
At Chapel Hill.

# SUSTAINABILITY OF URBAN WATER SUPPLY AND SANITATION INSTITUTIONS

## 1.0 INTRODUCTION

### Focus of the Paper

This paper has been prepared in response to the theme of the Twelfth Session of the United Nations HABITAT Commission which is focused on maintenance of buildings and infrastructure<sup>1</sup>. While the U.S. Agency for International Development considers maintenance an important, and long neglected, subject in its own right, we feel that the issue is best approached through a broader focus on sustainability of infrastructure institutions which places maintenance in a proper development context.

This paper addresses some of the key policy issues with regard to long term sustainability of urban water supply and sanitation (WSS) services in developing countries. Improving WSS services is an important target of A.I.D. activities as it serves two key objectives of the Agency: (1) improving the health and well being of urban and peri-urban populations and (2) supporting economic growth.

The focus of this paper is on sustainability of urban WSS institutions. The Agency is concerned not just with the longevity of physical facilities but with the viability of the entire WSS service system. In this paper we are concentrating on a subset of institutional issues that are critical to sustained performance of the sector. These issues include:

- \* Institutional structure - at national and community levels
- \* Human resources
- \* Financial resources and management
- \* Relation between institution and service users
- \* National policies which affect institutional performance

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<sup>1</sup>. This paper has been prepared by the Water and Sanitation for Health (WASH) Project of the A.I.D. Office of Health with support and collaboration from the A.I.D. Office of Housing and Urban Programs.

## Perspectives on the Sector

Addressing sustainability requires a different point of view from that normally used in approaching the WSS sector, which has typically focused on physical systems first. However, since physical facilities are only one component of the WSS service system, we need a broader framework. That broader framework should start with a focus on the actual flow of services received by WSS consumers.

Concentrating on the flow of services received provides several advantages. First, it forces consideration of the "demand side" of the WSS service sector. Second, it forces consideration of the informal as well as formal WSS service delivery systems. Third, it focuses attention on ancillary services such as hygiene education which improves the effectiveness of the service and the benefits derived. Fourth, it removes the somewhat artificial distinction between capital facilities and operations/maintenance (O&M) since both are viewed equally as production factors in the flow of services.

In examining the flow of services, the key questions are, who benefits from the services and how? It is particularly useful to distinguish between private and public benefits. Private benefits are those enjoyed by single individuals or households and are not shared by the public at large. Public benefits are those enjoyed by the community at large and from which individuals cannot be excluded. For example, piped water supply to a person's home provides a private benefit to that person since it cannot be shared by others outside the home. On the other hand, provision of a sanitary sewer system, by reducing the spread of disease generally, provides a public benefit to the community at large.

National governments have long recognized, at least implicitly, this split between public and private benefits of WSS services by providing partial subsidies and mandating partial cost recovery from beneficiaries. Consumers recognize this as well in their willingness to pay for WSS services. Generally, water supply provides a more direct private benefit and consumers are often willing to pay a substantial amount for water service. On the other hand, sanitation is often viewed as a more public benefit with corresponding less willingness to pay for the service by individual households.

The distinction between public and private benefits is crucial to understanding the public sector's role in regulating and supporting the WSS sector. In general, the government has a compelling interest in seeing that public benefits are safeguarded and less of an interest in guaranteeing private benefits. This issue of critical importance in the WSS sector where governments may over regulate and unnecessarily subsidize private benefits while ignoring truly public benefits.

## 2.0 OBSTACLES TO INSTITUTIONAL SUSTAINABILITY

There are many obstacles to long term sustainability of WSS institutions, ranging from poor engineering design to inadequate cost recovery. Furthermore, these problems are almost always interconnected -- poor project planning and management can lead to financial problems, which lead to a poorly-paid unmotivated staff performing inadequate O&M, leading to an erratic supply of poor quality water, which in turn promotes consumer unwillingness to pay and a further inability to provide services. In this analysis we are focusing on a subset of five issues which are most critical to institutional performance and long term sustainability:

- \* Institutional structures
- \* Human resources
- \* Financial resources and management
- \* Relations between WSS institutions and service users
- \* National policies

The following discusses each of these five topics in order.

### 2.1 INSTITUTIONAL STRUCTURES - AT NATIONAL AND COMMUNITY LEVELS

#### WSS Institutions are Overly Centralized

The institutional models for WSS organizations in developing countries vary considerably, although most are based on models from western countries. In most developing countries the sector is run by highly centralized public sector agencies. In some cases water supply and sanitation responsibilities are divided; in others they are combined. In most cases rural and urban projects are institutionally separated. Some countries may have regional or even municipal level offices. In other locations municipal water departments run their own systems. Despite this apparent diversity, most frameworks involve highly centralized control of the formal WSS sector.

Under a centralized system, local or regional offices are limited by centrally mandated engineering standards, tariff structures and personnel policies. Decision making power is reserved for the central authority. Such centralization imposes a high overhead cost on the entire WSS system, causing difficulty in communication and cash flow. As a result, local WSS agencies become highly dependent on financial support, technical expertise, and decision making approvals from the central office. In fact,

local agencies come to view the central authority as the real client, not the local service consumers.

#### Centralized WSS Systems do not Make Effective Use of Local Resources

Centralized WSS institutions usually do not appreciate and utilize local resources, such as the local private sector, and "grass-roots" community organizations. These resources vary considerably from locality to locality and their utilization cannot be standardized. The role of the informal sector is almost never accommodated in the formal WSS service delivery system, although it may be the only mechanism by which WSS services are delivered to many people especially the urban poor. Beyond serving as alternative means of service delivery, community organizations can serve as information channels to the WSS agency and be used to aid service consumers in using the WSS facilities and services properly.

#### WSS Institutional Models are Designed to Fit Capital Intensive WSS Service Delivery Systems

WSS organizational structures, based on developed country institutions (often pushed by donors), are designed to manage service systems that are capital intensive, minimize labor and utilize advanced technology. These systems have been shaped in large part by economic factors that favor capital over labor intensity. These institutional designs do not typically incorporate elements of the existing indigenous service delivery system (such as water vendors) in the new WSS service delivery system.

The importation of capital intensive solutions to WSS problems carries with it the high chance of failure. In Dar Es Salaam a major conventional sewer project called for connection charges of \$1000 and monthly rates of \$3. At these rates, residents refused to connect to the system, causing complete project failure.

Such organizational models present two major problems when transferred to developing countries. First, they are not well adapted to cultural patterns of doing business, interpersonal relations or transactions between people and bureaucracies. In short, these models are imposed from outside the culture rather than growing from indigenous entities. Second, they force continued reliance on outside expertise and management systems. As systems run by "experts", they also foster management styles which inhibit information flow upward through the chain of command.

## 2.2 HUMAN RESOURCES

### Poor Incentive Structure make it Hard to Retain Good Staff

Many of the problems of WS&S institutions are caused by poorly qualified and under trained staff. In many cases WS&S agencies may have sufficient numbers of staff or even too many employees. However, critical shortages frequently occur at the upper and mid-level managerial positions. WS&S agencies, which are usually in the public sector, have comparatively low salaries, and poor benefit packages. The more competent engineers and (especially) managers can earn far more in the private sector.

WSS staff supervision can be erratic, often not based on job performance. WSS staff rarely receive extra compensation for good work, resulting in poor attitudes and low motivation. High staff turnover in key positions is common, partly due to remuneration problems, and partly due to staff change-over prompted by political change. Such organizations are not sustainable since they lose "institutional memory" and waste time, effort and financial resources, re-learning old lessons.

The over-centralization in WSS institutions also discourages leadership development within the ranks. WASH studies of institutional performance in the sector have found that lack of autonomy in WSS institutions restricts the growth of leadership which is a key factor in the performance of the institution.

### WSS Staff Training is Inadequate

Few staff members have specific training in the jobs they perform in WSS agencies. The formal education system is not well matched to the needs of WSS agencies. Training they do receive is usually too theoretical, or oriented toward other tasks. Much of the available training is overseas, and oriented towards problems encountered and equipment used in those places. Few WSS agencies have the financial resources or knowledge to establish an internal training program aimed at job related skills.

Staff selection, and subsequent training, if any, tends to emphasize technical engineering issues over management concerns. Donor support in the past has tended to make this problem worse by over emphasizing the "hardware" aspects of WSS systems in allocating resources for training and technical assistance. Much of the technical assistance needs of donor project has been poorly specified in initial project design and left to host countries to fund from project loan proceeds. Since many recipient countries are not willing to spend loan funds on this type of technical assistance and training, this aspect of the institution building is often neglected.

## 2.3 FINANCE AND MANAGEMENT SYSTEMS

### WSS Institutions have Unstable Sources of Capital Financing

WS&S agencies usually obtain capital investment funds from loans from bilateral donors or development banks, national government budgets, or in rare cases local capital markets. Most is in the form of loans, at attractive rates, rather than grant funding. Given the fiscal problems of many central governments, grant funds are becoming increasingly scarce.

The bulk of current WS&S financing is from the international agencies as LDC government budgets are tight, and local capital markets are quite weak. Such international borrowing consumes precious foreign exchange earnings. Unfortunately, continued dependence on donor financing further retards development of local financial intermediaries and domestic capital markets which are needed to mobilize domestic savings.

Donor and international bank funds are limited and unstable. Their availability depends on national economic conditions, historical repayment of other loans, performance on previous projects, and political conditions within the donor agencies. Such funds are also insufficient to meet the large needs in the developing world. The World Bank has recently estimated that no more than 5% of capital investment requirements for urban infrastructure in developing countries can be met by external financing sources. The gap will only widen as urban populations continue to grow.

### Performance in Meeting Recurrent Costs is Poor

While different countries have different policies on how recurrent and capital costs should be recovered, most WSS programs assume that recurrent (operations and maintenance) costs will be covered by user charges. System planners must estimate the cost of projects (capital, O&M and rehabilitation) as well as the expected revenue (based on a predesigned tariff and expected consumer base). However real capital and (especially) O&M costs are often different from preliminary estimates. There are often revenue shortfalls which result from over optimistic forecasts of the customer base and delays in system connections. For example, a 1985 survey of major towns and cities in India showed that only 6 out of 12 were covering even the basic operating costs of their water services.

In addition to poor revenue and costs forecasting, there is a major problem with WSS tariff systems. Governments generally want to keep tariffs low for both equity and political reasons. Even if the tariff structure is adequate, billing and collection systems are often weak and poorly managed. Coverage by billing systems is often poor and is compounded by low collection efficiency.

Unfortunately, as finances get more and more difficult, O&M performance, and the quality of service gets poorer, leading to customer dissatisfaction, and refusal to pay tariffs. The situation often deteriorates to the point where central governments are forced to provide "bail-out" subsidies to keep these institutions in operation.

### Government Subsidy Practices Undermine Financial Sustainability

Central government subsidy schemes for WSS services are often poorly designed to reach the target beneficiaries and can be fiscally counterproductive in the long run. First, given the current fiscal crises of many central government, the level of current subsidization simply cannot be maintained. Second, subsidies tend to undermine fiscal discipline of WSS agencies as they provide little incentive for agencies to control costs, raise revenues and improve financial performance. Such direct subsidies keep the price of water artificially low and often benefit the wealthiest consumers.

Since most government subsidy is focused on capital construction, it cannot be readily targeted to low income or high risk groups. In addition, efforts to keep the charges for WSS services low in order to benefit a subset of service users (the poor) in fact, helps all consumers more or less in proportion to the amount they consume.

### Little Attention is Given to Internal Management Practices

In most WSS institutions, internal management procedures are poorly developed. With a predominant focus on building physical systems, long run management systems and personnel practices tend to be neglected. This neglect is manifest in the general absence of teamwork and adequate supervision, lack of career opportunities and poor information flow within the organizations.

There is a general lack of accountability which pervades many WSS institutions. Few WSS agencies measure the quality and quantity of the services delivered nor have means to measure the efficiency of their operations. Many do not even have basic cost data to know much is being spent on different functions such as O&M. There is also a lack of comparative information across agencies so WSS managers do not know what "normal" costs and ratios should be.

A recent survey conducted by the Research Triangle Institute under the WASH program found that few water supply agencies could provide up-to-date information on routine O&M costs. There is almost no comparative data maintained on staffing ratios, O&M unit costs for different types and sizes of systems, user fees, fee collection efficiencies and total unit costs of water supply. The

data that were collected in the RTI survey showed enormous variation across water supply agencies on some of these measures.

## **2.4 RELATIONS BETWEEN INSTITUTIONS AND SERVICE USERS**

### Uniform Standards do not allow Consumer Choice

In many localities, WSS projects are designed to uniform engineering standards, or central government norms of level of service. However, numerous studies have shown that there is great variability in demand for different levels of WSS services even within the same community. For example, in communities in northeast Thailand, it was found that local residents were willing to pay a substantial amount for piped water systems with house connections but were not willing to pay a much smaller amount for shared standpipes which were viewed as scant improvement over traditional wells.

As urban populations grow, the level of demand tends to rise and becomes increasingly differentiated. At the same time, alternative supplies of WSS services become available through other (often informal) means. If local WSS agencies cannot respond to this broadening of demand, they will lose their customer bases.

In many cases, national level policy, donor policies, or political pressures dictate a high level of service for all consumers, reflecting a desire to improve health and living conditions. In many cases, WSS agencies cannot afford to provide adequate area coverage at these standards, nor can users afford to pay for much of the actual costs. Designers usually fail to consider a phased approach to level of service which begins with a low level at first and can be upgraded later as demand changes. Too often an "all-or-nothing" approach to WSS design is used.

The problem of a mismatch between engineering solutions and consumer desires appears particularly critical with urban sewerage. While progress has been made with handpumps and improved latrines for rural water supply and sanitation and the use of water supply standposts in peri-urban areas, "intermediate" technologies for (peri-)urban sewerage have been slow in developing. Alternatives to conventional water borne sewerage and activated sludge treatment, such as latrines and aquaprivies (in less dense areas), or small bore or shallow sewers (in more dense areas) have not been given sufficient attention and trial.

### Lack of User Involvement Raises Total Costs and Reduces Net Benefits

Urban WSS agencies typically make little provision for involvement of user groups. However, the manner in which the

consumers of WSS services actually use the services and facilities affects both the costs of the WSS agency and the net benefits to the consumer. Consumer "misuse" of WSS facilities raises the costs of O&M and often requires early rehabilitation. This greatly increases the total "life cycle costs" of WSS facilities and services.

In a housing project built with A.I.D. support on the urban fringe of Monrovia, Liberia, community latrines were built to provide public toilets, water taps, showers and laundry facilities. The local water and sewer authority could not afford to maintain the facilities as water use and operating costs were excessive. The residents' cooperative took over the facilities, imposed user fees and contracted with private operators to manage each facility. The systems have been running now for six years successfully under community management.

The benefits of WSS services can be increased by user involvement. Many urban residents, particularly recent migrants and slum dwellers (especially children), simply do not know how to use WSS facilities. In addition, many are lacking hygiene knowledge so the benefits of clean water and proper sanitation facilities are negated through unsanitary behavior. Without an understanding of these behavioral and knowledge deficits of the users, WSS agencies cannot provide effective service, no matter how good the facilities.

## 2.4 NATIONAL POLICY ISSUES

### There is a Lack of Clear National Policies

In many countries, there is a absence of policy guidance on many key issues in the WS&S sector. Some examples of these deficiencies include:

- \* Many countries have weak sector plans that fail to adequately address long term sector development and institution building needs. National governments, politicians, and donors alike often think only in shorter project cycles, and not longer term program approaches.
- \* Few nations have clear and useful policies and guidance on the appropriate roles of national, regional and local governments, the private sector and community organizations.
- \* Few governments establish clear investment plans which help agencies know the level timing and nature of funding in the "pipeline". Five year plans may be written but they are rarely Followed. Many governments tend to disburse grants on an adhoc basis, creating confusion and poor

implementation. Poorly designed "bail-out" subsidies are often used to cover up the inability of governments and donors to develop and carry out viable investment plans.

- \* National policies are often vague on the allocation of responsibility to pay for WS&S services. Cost recovery procedures are often dictated on a project by project basis without consistency in the principles of charging. In other cases, the central government may dictate uniform fee structures across projects without regard to actual costs incurred. When fee setting is left to the local agency, there is often no guidance provided on how to apply complex principles of cost recovery, balancing ability to pay with the benefits received while meeting revenue needs.
- \* In many cases, central governments are unwilling to provide, or allow local agencies to offer different levels of service for consumers' choice. Inflexible national "standards" which dictate solutions across the board, may be applied uniformly.
- \* Policies promulgated by different ministries may not be coordinated. The growing recognition for water conservation in the environmental area is not translated into operational objectives of water supply agencies, although there is much that can be done in leakage controls and conservation incentives in the user fee structure.

#### Many National Fiscal Policies Undercut Sustainability

National government funding and budget policies often favor new capital investment over O&M and rehabilitation. Internal political pressures and donors programs emphasize new construction. There is little incentive for agencies to maintain existing systems in good condition. Even rehabilitation of old dilapidated systems which no longer produce at capacity are often less appealing to top decision-makers than a new project reaching an unserved area, with its political and publicity value.

These policies undermine financial sustainability as they promote extremely inefficient use of financial resources. Large capital investments in new systems are substituted for smaller investment in ongoing maintenance. Under many current policy environments, it is easier to get another loan for major system reconstruction, than to make the O&M expenditures to maintain the systems correctly.

National governments often maintain national tariff structures which keep costs to consumers low, but which do not provide adequate revenue, do not allow different pricing for different levels of service, and are difficult to modify. Governments want

to keep prices down, particularly in large urban centers, often because local cultural forces dictate that water (as a basic human need) should not be denied to anyone, and often out of fear that local populations would revolt if the price of water was raised very high.

Such tariff policies often have results which are opposite from that intended. For example, the low revenues of urban water supply agencies prevent them from extended water service to peri-urban areas, often inhabited by squatters. This forces the squatters to purchase water from private vendors, often paying as much as 10% of household income for the water. By setting prices artificially low, the national policies are severely limiting the service coverage of local WSS agencies, forcing the poor to pay more, and delaying the day when they will get improved service at a reasonable price.

#### Developing Countries are Subject to Poor Donor Coordination and Conflicting Policy Advice

Donor agencies promote coordination in theory but do a poor job in fact. Individual donors have a set of pressures to which they must respond and the benefits of coordination provide little real incentive. It is, in fact, the host country governments which are in the best position to foster coordination, but there is much to be gained in the short run by keeping donors from collaborating.

Donor agencies are taking a more aggressive stance in the policy arena in recent years, promoting more policy-linked programming. Lack of coordination among donor initiatives in this area becomes problematic since conflicting policy directions, especially in fiscal policy, can destabilize the sector.

Donors, due to the relatively short duration of their funding cycles, often do not adopt a long term approach to institution building. They opt for shorter term approaches which may yield results in their own project cycles, but do not really address the more fundamental institutional issues. Donors need to justify their projects on the basis of beneficiaries served per unit of investment, meaning that time consuming and expensive efforts on sector planning, policy development, training and institutional development are often ignored.

The problem of ineffective donor coordination has been recognized by the donor community and steps are being taken to remedy this. In the WSS sector there is considerable discussion and a growing amount of joint action, spurred in large part by the International Drinking Water Supply and Sanitation Decade proclaimed by the UN General Assembly in 1980. The Water Decade Program has mobilized a group of bilateral and multilateral donors with projects targeted on WSS services expansion and improvement.

### 3.0 APPROACHES TO ENHANCE SUSTAINABILITY OF WSS INSTITUTIONS

#### 3.1 A NEW PERSPECTIVE ON THE SECTOR

Enhancing the sustainability of WSS institutions requires first an appropriate perspective on the sector. The more traditional view of WSS as "hardware" rather than as a service system has tended to focus attention on technological aspects of the physical facilities while ignoring the larger issue of how well WSS institutions actually deliver services. To correct this bias requires viewing WSS services from the perspective of the service consumer with a corresponding focus on the services and benefits actually received.

There are two key aspects of this perspective. First, it requires attention to the actual performance (service output) of WSS institutions. Second, it requires a means to characterize the benefits received by WSS service consumers.

#### Measuring WSS Service Performance

WSS institutions are not in the business of building infrastructure, they are in the business of delivering water supply and sanitation services. All of the activity and expenditure by a WSS agency is meaningless if poor service is the result. There are two key aspects of WSS agency performance which require attention:

- \* the quality and amount of the services delivered (including such attributes as coverage and effectiveness); and
- \* the efficiency with which the services are produced and delivered.

The focus on performance is critical to establishing accountability within WSS institutions which, in turn, provides the foundation for improved management practices across the board. Without this orientation, the poor management practices which plague WSS institutions will be hard to rectify.

#### Characterizing WSS Benefits

Water supply and sanitation services provide different mixes of public and private benefits. While water supply has some elements of public health (and hence provides a public benefit), it also provides private benefits to the water supply users which are not shared. Sanitation systems likewise have some private benefits but are generally found to have a large degree of public

benefits. It is not surprising that where a service conveys private benefits, there are likely to be both a high willingness to pay for the service and also private providers of the service. This is the case for water supply and also for other "public" services such as education and medical treatment.

Where there is little perceived private benefit such as for sanitation services, there is much less willingness to pay and few, if any, private suppliers of the service. In this case, it is generally left to the government to either provide the service itself or to force households to purchase the service through government regulation.

The discussion of private vs. public benefits is crucial to understanding the appropriate roles of the government in the sector as it provides the basis for deciding:

- \* who should pay for what types of services;
- \* who should deliver which services; and
- \* how government policies affect the demand and supply of WSS services.

Of growing concern is the problem of urban environmental degradation where conventional approaches to safeguarding the public interest are clearly inadequate. These approaches must deal with both rights of public and private interests as well as practical mechanisms for altering behavior, allocating costs and raising substantial funds for cleanup and future treatment.

### 3.2 PROMOTING SUSTAINABILITY

A sustainable WSS institution has the following characteristics:

- \* It continues to provide a service that is in demand.
- \* It has stable financing, able to cover both new capital investment for expansion and rehabilitation as well as routine O&M costs.
- \* It is increasingly efficient in converting resources into service output.
- \* It is adaptable to changes in demand and resource availability.

A.I.D., through its WASH Project field studies, has identified some of the key factors which promote sustainability in WSS

institutions. As evident from the presentation of obstacles to sustainability in Section 2, there are many targets for improvement. Here we are focussing a select few which impact most directly on institutional sustainability. We have distilled the findings into four "precepts" which underpin our approach. The Precepts are cross cutting in that each has ramifications at the three levels of national policy, institutional structure and management practices.

#### **PRECEPT NO. 1: INCREASE RELIANCE ON MARKET FORCES**

Sustainable institutions are those that use and leverage market forces, not try to repel them. Key aspects of this precept are that:

- (a) WSS services must match the demand of the service consumer.
- (b) WSS institutions must use delivery mechanisms (including the private sector) which are most efficient and cost effective.
- (c) WSS capital investment funding must rely increasingly on domestic sources of financing and reflect market rates of interest.

WSS services must offer a range of choices to consumers and be adaptable to changes in demand. Various studies of the demand for water supply and willingness to pay show dramatic variation in what people want and will pay for. Those preferences change over time and can be greatly influenced by changes in income and public education. WSS institutions need the flexibility to respond to changing demand and the ability to meet different levels of demand. This means that WSS institutions require the autonomy to determine which service levels should be offered and how costs may be recovered.

Flexibility in cost recovery is important since different communities possess different types of resources and different ways of mobilizing them. For example, in Nepal different municipal governments raise matching funds for drainage construction through very different mechanisms: one city used a monthly flat fee per household; another imposes a frontage assessment on each property owner based on a sliding scale of ability to pay; a third town uses a neighborhood canvass to collect the required amount.

One of the most effective ways to make services responsive to consumer demand is to make the service financially dependent on user charges. Since consumers will not pay for poor services poorly delivered, this should create the incentive for responsive WSS services. There are, however, limitations to the effectiveness of

this policy since some institutions which are mandated to rely on user charges are often successful in obtaining either "bail outs" or hidden subsidies from the central government. In addition, services for which there is little willingness to pay are not candidates for direct user charges unless there is sufficient regulatory power to force payment.

WSS institutions must be able to use alternative delivery mechanisms (including the private sector) which offer comparative advantages in terms of efficiency and effectiveness. Sanitation services are increasingly operated on a contract basis by private operators covering both household refuse and human waste disposal. There is a growing body of experience with private contracting for both individual parts of the delivery system (e.g., vehicle maintenance) or for the entire service delivery system. Increasingly decisions on whether to use such contract services rely on cost efficiency comparisons: who can provide the same quality of service for the lowest cost?

The third area where market forces must be better harnessed is in the financing of WSS capital costs. Currently, much of WSS capital financing comes from central government transfers or donor funds which are typically offered below domestic market rates and are often either partially or fully subsidized. Since the supply of donor capital is limited and cannot meet but a fraction of the total urban infrastructure investment needs in developing countries, the long run source of sustainable capital investment must come from domestic savings which is mobilized through local financial intermediaries. This is discussed more fully below under Precept No. 3.

**PRECEPT NO.2: PROMOTE DECENTRALIZATION OF WSS SERVICE DELIVERY RESPONSIBILITY TO LOWER LEVELS OF GOVERNMENT AND THE PRIVATE SECTOR**

Decentralization of responsibility for WSS services means more than merely shifting the locus of control within government ministries or establishing branch offices outside the capital. It means placing responsibility at the most appropriate level whether in the public or private sectors.

Decentralization also means making WSS agencies more responsive to service consumers since decentralized agencies are closer to the service users. It is important that decentralization include both financial authority as well as service delivery responsibility. Often, responsibility for WSS service can be transferred without a concomitant transfer of authority to mobilize resources. Such false attempts at decentralization are designed to fail.

Decentralization programs in Cote d'Ivoire and Zaire have led to increased operational efficiency. SODECI the private water utility in Cote d'Ivoire, has recently conducted a full decentralization program giving major operational power to regional offices. REGIDESO in Zaire has recently given regional directors the ability to run their own staffing, resulting in reduction of excessive and unnecessary staff.

One aspect of true decentralization is that it permits the use of local organizations, the formal private sector and the informal sector to deliver WSS services. As noted in the discussion of WSS institutional models, little effort has been made to develop urban WSS service systems that incorporate truly indigenous models of service provision. To do so would require an approach to institution building that is radically different from that in general use today. This type of an institutional approach has been used more extensively in rural WSS programs than in urban ones. Also, there has been a greater degree of experimentation with indigenous service delivery models in other sectors, notably rural primary health care and rural development (e.g., social forestry).

The role of the private sector takes on new prominence in decentralized WSS service systems. The potential role of the private sector is quite broad, ranging from limited contracting for specialized services to full privatization. As noted above, privatization is more applicable for services that provide private benefits and for which there is high willingness to pay. To make use of the private sector effectively requires cost recovery structures that suit private initiative. For example, in the Cote d'Ivoire where water supply is provided by the private utility, SODECI, the tariff structure allows SODECI to retain a fee based on water delivered (ie metered at connections) not water produced. Wasted water is lost profit. So it is both the autonomy and private profit motive as well as the national policy framework within which SODECI operates.

In addition, where there is not large private demand, the government can stimulate demand through regulation. Such a course is being examined now with respect to human waste disposal in Bangkok where the government sees a need to provide collection and treatment of household waste but has neither the resources or capacity to provide the service. One option being considered in Bangkok is to create a "market" for private waste treatment by taxing non-treatment.

Decentralization among all public service sectors is a growing trend in developing countries. As it proceeds in the WSS sector, it will cause re-examination and re-definition of the roles of the government (at all levels) in the sector. The role of the central government will likely shift from that of service provider to the role of (a) financial intermediary, (b) supplier of technical assistance and training to local agencies, and (c) regulator of the

sector. The role of regulation will also likely change from that of a very broad responsibility (which includes mandating service levels and fixing prices) to a more focused responsibility which includes guaranteeing public health standards and environmental quality, assisting disadvantaged groups and insuring the financial stability of the sector.

### **PRECEPT NO. 3: SECURE THE FINANCIAL VIABILITY OF THE SECTOR**

The first order of need is to increase access to financial resources both for capital investment and for recurrent costs. Access to capital investment funds means stimulating the growth of domestic savings which can be channeled into WSS investments. Given the growth of urban populations, the limited resources of donors and international banks, and the competition for public resources in developing countries, future WSS capital investment will be increasingly debt financed, relying more and more on local capital.

Governments can stimulate the development of financial intermediaries through tax and fiscal policy as well as through providing the institutional infrastructure and supporting regulation. Given the relative inexperience of most WSS agencies in managing debt and a general absence of financial intermediaries for infrastructure financing, there will need to be a period of institutional development in order to put a viable financing structure in place. Host countries and donors can draw on the experience of housing finance institutions and the more limited experience of municipal development funds in learning how to proceed in the is area.

In addition to access to credit for capital investment, WSS agencies must improve resource mobilization for covering current operating costs and amortization of loans. Resource mobilization will be increasingly centered on user charges, both for practical and equity reasons. Much has already been written above concerning tariff systems. The main issues here are:

- (a) Tariff structures must be properly designed to generate sufficient revenue;
- (b) Tariff structures must be readily modifiable to accommodate changes in financial need;
- (c) Tariff structures cannot incorporate all social and revenue generation needs without some tradeoffs;
- (d) Tariff structures must accommodate different levels of demand and willingness to pay; and

- (e) Tariff structures are only as good as the people who administer them and the will to enforce them.

#### **PRECEPT NO. 4: FOSTER INVOLVEMENT OF SERVICE USERS**

Many of the Precepts presented above foster a user orientation in the WSS institutions, especially the factors concerning decentralization and market orientation. Beyond those considerations, WSS agencies must recognize that consumer involvement is critical to improving institutional performance through:

- \* reducing costs of operations and maintenance;
- \* increasing the effectiveness of the services and the value of the benefits received ;
- \* selecting appropriate levels of service and delivery mechanisms; and
- \* fostering cost recovery.

An example of the importance of community participation is shown by the low-cost sanitation program of the Orangi Pilot Project (OPP) of Karachi, Pakistan. Orangi is typical of urban slums - 43000 housing units on 1800 hectares of flat coastal land, with over 3000 small lanes throughout the zone. Residents receive water through standposts, and before the project, disposed of waste with bucket latrines, soak pits, or in a few rare cases individual sewer lines. These solutions were either expensive or unsatisfactory from a drainage and health point of view. Conventional sewerage would have greatly exceeded the ability to pay of the residents.

The first step taken in the project was to develop "grass-roots" lane organizations - bringing together residents with a common interest. Elected lane managers then took on the role of calling meetings, organizing residents, collecting funds, soliciting technical support from the OPP staff, and supervising work of local artisans. OPP supervised the work of the lane managers but never handled their cash or finances. The technical approach was modified over time -- from open drains to septic tanks and buried piping. OPP helped initiate a master plan to link the drains. Since 1980, over 1200 lanes have built drains and 60 secondary drains added. The cost has been about Rs.1000 (\$65) per household, about 25% of the cost of the conventional sewerage alternative.

### 3.3 CONCLUSION

The experience of the urban water supply and sanitation sector is central to the issues that must be dealt with in approaching the problem of maintenance of buildings and infrastructure in the developing world. The frame of reference must extend beyond the physical facilities and short term interventions to focus on the sustainability of institutions which produce and deliver these services. Developing nation and donor governments alike are already recognizing the trends which will shape how governments will deal with these problems: trends of limited government resources, movement toward decentralization of service provision, increasing reliance on market forces and tapping the potential of the private and informal sectors. While these trends are already underway, much can be done to see that they are effectively and equitably managed.