Pakistan
Private Sector Participation
in Urban Environmental Services
Water and Wastewater Services and Solid Waste Management:
A Sector Study

June 26, 1997

Infrastructure Division
Energy and Project Finance Division
Country Department I
South Asia Region
CURRENCY UNITS
(February 1996)

Currency Unit = Pakistan Rupee (Rs)
US$1 = Rs 33

ABBREVIATIONS

BOT - build, operate and transfer
CDA - Capital Development Authority
BOO - build, own, operate
BOT - build, operate, transfer
ECA - export credit agency
FDA - Faisalabad Development Authority
GDP - gross domestic product
GOP - Government of Pakistan
IFC - International Finance Corporation
KMC - Karachi Metropolitan Corporation
KWSB - Karachi Water and Sewerage Board
LDA - Lahore Development Authority
MD - managing director
USAID - United States Agency for International Development
PSP - private sector participation
WASA - Water and Sanitation Agency
PAKISTAN

PRIVATE SECTOR PARTICIPATION
IN URBAN ENVIRONMENTAL SERVICES:
Water and Wastewater Services and Solid Waste Management
A Sector Study

Table of Contents

EXECUTIVE SUMMARY

PART ONE: WATER AND WASTEWATER SERVICES

1. INTRODUCTION .................................................................................................................. 1
   A. Country Context ........................................................................................................ 1
   B. Subsector Context ..................................................................................................... 3

2. WATER AND WASTEWATER SERVICES IN FOUR PAKISTANI CITIES ......................... 6
   A. Current Legal Framework Arrangements ................................................................. 6
   B. Organizational Structure and Autonomy ................................................................. 7
   C. Labor Issues ............................................................................................................. 9
   D. Regulatory Practices ............................................................................................... 10
   E. Performance of Water and Wastewater Services .................................................. 10
   F. Resource Requirements .......................................................................................... 12

3. PRIVATE SECTOR PARTICIPATION IN URBAN WATER AND WASTEWATER SERVICES: INTERNATIONAL EXPERIENCE ........................................................................ 14
   A. Private Sector Participation Options ...................................................................... 14
   B. Impacts of Private Sector Participation on Service Charge and Quality ............... 14
   C. Tariffs and Efficiency Improvements ..................................................................... 16
   D. Regulatory Implications of Public vs. Private Service Provision ......................... 17
   E. Labor Implications .................................................................................................. 18
   F. Investment Finance .................................................................................................. 22

4. STRATEGY FOR INTRODUCING PRIVATE SECTOR PARTICIPATION .......................... 27
   A. Proposed Strategy ..................................................................................................... 27
   B. Proposed Institutional Reforms: Separation of Policymaking, Regulation, Corporate Governance and Service Management ......................................................... 30
   C. Enhanced Role of Consumers ................................................................................. 32
   D. Required Changes in Existing Laws ...................................................................... 32

The report draws on the main sector mission to Pakistan undertaken in January 1996 and a follow-up workshop in Pakistan to discuss the draft of this report in July 1996. Jane Walker (SA1EF) was Task Manager; Thelma Triche (consultant) and Sandra Cointreau-Levine (consultant) provided the main contributions to the text. Additional contributions were provided by Sunita Kikeri (PSD); Ashoka Mody (CAPPF); John Sachs (SA1EF); Eric Haythorne (LEGPS); and Zaffar P. Sabri, Khalid Rashid and Brian Ellis (Consultants). The report was edited by Ellen Clore-Patron, and Betty White assisted in its production. The peer reviewers for the study were Michel Kerf (PSD), Khalid Siraj (FSD), and Walter Stottman (EMTIE). The study was sponsored jointly by South Asia 1, Infrastructure Division and Energy and Project Finance Division.
# PART TWO: SOLID WASTE MANAGEMENT

## 7. INTRODUCTION

## 8. SUBSECTOR CONTEXT

<table>
<thead>
<tr>
<th>A. Collection Services</th>
<th>42</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Disposal Services</td>
<td>42</td>
</tr>
<tr>
<td>C. Legal Context</td>
<td>44</td>
</tr>
<tr>
<td>D. Institutional Context</td>
<td>45</td>
</tr>
<tr>
<td>E. Financial/Budgetary Issues</td>
<td>45</td>
</tr>
<tr>
<td>F. Technical Issues</td>
<td>48</td>
</tr>
</tbody>
</table>

## 9. PRIVATE SECTOR PARTICIPATION IN THE PROVISION OF SOLID WASTE SERVICES IN PAKISTAN

## 10. PRIVATIZATION ACTIVITIES AND ISSUES COMMON TO SOLID WASTE MANAGEMENT: INTERNATIONAL EXPERIENCE

| A. Maintaining Private Sector and Government Balance | 53 |
| B. Appropriate Duration of Agreements               | 55 |
| C. Flow Control                                     | 56 |
| D. Performance Measures                             | 56 |
| E. License Control over Private Subscription        | 56 |
| F. Performance Monitoring                           | 57 |
| G. Capacity Building                                | 58 |
| H. Financing                                        | 58 |
| I. Cost Recovery                                    | 59 |
| J. National Policy Support                          | 59 |
| K. Labor Redundancy                                 | 60 |

## 11. PRELIMINARY RECOMMENDATIONS

| A. Enabling Environment                             | 61 |
| B. Privatization Conditions for General Municipal Solid Waste | 63 |
| C. Privatization Conditions for Special Wastes     | 66 |

## ANNEXES

| Annex A: Detailed Legislative Synopsis            | 67 |
| Annex B: Pakistan: Labor Issues in the Privatization of Public Services | 71 |
| Annex C: Justification and Objectives of Regulation | 76 |
| Annex D: Structure of Proposed Provincial Regulatory Commission | 78 |
| Annex E: Telecommunications Sector Regulations in Pakistan | 81 |
| Annex F: Power Sector Regulation in Pakistan      | 82 |
| Annex G: Sector Study Workshop                    | 83 |
| Annex H: Sanitary Landfill Design and Siting Criteria | 94 |
| Annex I: Strategy Matrix                          | 95 |
TABLES
Table 1.1: Infrastructure: How Does Pakistan Compare? ............................................................ 3
Table 1.2: Water Supply and Sewerage Coverage ................................................................. 4
Table 2.1: Comparative Statistics for Water Services - Four Cities in Pakistan 1995-96 .. 11
Table 2.2: Future Investments and Cost Recovery ................................................................. 13
Table 3.1: Options for Private Sector Participation in Urban Water and Sewerage Services .... 15
Table 3.2: Tariff Level and Changes with PSP ....................................................................... 16
Table 3.3: Changes Before and After Introduction of PSP .................................................... 17
Table 3.4: Comparative Analysis of the Privatization Process of Four Public Services in Pakistan ......................................................................................................................... 22
Table 3.5: Commercial Water and Wastewater Projects - Project Costs and Financing Structure .................................................................................................................. 24
Table 4.1: Policy Role of the Federal and Provincial Governments ........................................ 30
Table 4.2: Responsibilities of Proposed Provincial Water Services Regulatory Commissioners ...................................................................................................................... 31
Table 4.3: Roles of Corporate Governing Bodies and Management ........................................ 31
Table 8.1: Global Perspective on Refuse Quantities ............................................................... 41
Table 8.2: Global Perspective on Refuse Characteristics ....................................................... 41
Table 8.3: Disposal Costs by Alternative Technologies ........................................................ 43
Table 10.1: Who is Doing What In Privatization? ................................................................. 54
Table 11.1: Global Perspective on Solid Waste Management Cost Versus Income ............ 65

BOXES
Box 3.1: Constructive Approaches to Staff Reductions in the Context of PSP in Water Supply ...................................................................................................................... 19
Box 3.2: The Evolution of Private Financing: A Three-Step Process ................................. 26
Box 4.1: Vallejo Wastewater Treatment Project ................................................................. 28
Box 4.2: Mexico City: Lessons of a Phased Approach to PSP .......................................... 29

CHARTS
Chart 8.1: Cost/Tonne of Solid Waste .................................................................................. 47

BIBLIOGRAPHY .................................................................................................................. 101
Executive Summary

Introduction and Purpose

1. The purpose of this study is to propose options for promoting private sector participation in urban environmental services—water and wastewater services and solid waste management—based upon its observed potential in Pakistan. The study reviews the existing structure, performance, regulation and current activity in the sector in four cities to map the groundwork that has already been laid and from which private sector participation may grow. It also draws upon international experience to establish best practices for promoting greater private sector involvement in urban environmental services in the country.

2. The Government of Pakistan has recognized that the public sector alone cannot satisfy the massive investments in infrastructure and human capital that are necessary to improve urban environmental services. Given that aspects of private sector participation have been successfully addressed in the power, telecommunications and transport sectors in Pakistan and international experience provides models of “best practice” to reform urban environmental services, private sector partners may well contribute to the resolution of several problems in the sector. While in-depth analysis of inefficiencies has been reported elsewhere, the study proposes reforms to address some of the inefficiencies that pervade the subsector. Increasing involvement by the private sector, for example, may serve to help redress the demands on existing systems and degradation of the environment, improve and increase coverage of services and provide the resources that the Government of Pakistan is challenged to provide in the face of increasing demand and a deteriorating macroeconomic situation.

3. The study is organized in two parts by subsector: (1) water and wastewater services and (2) solid waste management. Services in both subsectors have been reviewed in four cities—Karachi, Lahore, Faisalabad and Islamabad—to serve as the country context for the study. For water and wastewater services, international experience has been drawn upon to define: (1) private sector participation options; (2) impacts of private sector participation in service charge and quality; (3) tariffs and efficiency improvements; (4) regulatory implications of public verses private service provision; (5) labor implications; and (6) investment finance options. Privatization activities and best practices from international experience have been analyzed to provide the basis for the practices recommended to increase private sector participation in solid waste management. The study proposes reforms that address (1) the enabling environment and (2) desired conditions for improving solid waste management of general municipal wastes and special wastes, e.g. hazardous industrial and medical wastes.

4. The reforms that are suggested reflect the differing stages of development of each subsector. While the public sector is responsible for the majority of solid waste management in the cities studied, formal private sector activities are not uncommon. Experimentation with private sector participation in solid waste is taking place with various degrees of success. In the water and wastewater services subsector, however, even the concept of private sector participation is itself an innovation, though in
Karachi and Lahore, the idea is becoming more accepted. Discussion about the potential for private sector participation is still in the early stages.

Water and Wastewater Services

5. Water is a basic necessity and clean water is required to prevent the spread of disease. The supply of clean water is necessarily a high priority. Subsidies and inefficient service delivery systems have limited the expansion of supply without providing benefits to the poor—most have limited access to piped water systems and usually buy from private vendors at high prices. The sewerage systems are almost non-existent with the result that poor sanitation is of growing concern.

6. **Complementary Conditions.** Uneconomic pricing of water services represented by the mismatch between current tariffs levels and the full cost of production are apparent in a number of water supply systems and are not acceptable to private sector investors. The undeniably large investments required in the sector—to meet demand and environmental standards—will lead to an increase in tariffs in the majority of cases. The willingness to treat water as an economic good must be accepted by policymakers, whether the private sector is involved or not.

7. Private sector involvement in water and wastewater services has yet to be tested in Pakistan but opportunities for private sector investment do exist. Hesitation in endorsing private sector participation may be rooted in part in the Government’s unease at awarding monopoly rights in such a sensitive sector without full confidence in the private sector’s ability to deliver services. A significant cause for this concern is found in the newness of the concept of regulation as a tool to assure the performance of the private sector and in the lack of understanding of the full role and responsibility of the regulator to assure full service delivery.

8. **Suggested Reforms:** The promotion of private sector participation in the provision of water and wastewater services requires the enactment of legislation (1) expressly permitting private sector participation in core services and (2) establishing the jurisdiction for a regulator, independent of vested interest groups, for the subsector at the provincial level. The establishment of provincial “framework” law providing the basis, i.e., legal underpinnings, for all forms of private sector participation would then need to be enacted.

9. Since water and wastewater services outside of Islamabad are a provincial responsibility, the provincial governments will be responsible for developing strategies for private sector participation and actually creating the required regulatory frameworks. The Sindh government has already begun to examine the possibility of a concession for water services in Karachi. Private operators have expressed an interest in such an arrangement, although the specific conditions of private investment remain to be determined. Interest, therefore, by government officials at the provincial level and by the private sector does exist. The federal government has already demonstrated policy reform for private sector participation in other infrastructure sectors, e.g., power, telecommunications and transportation, and has a key role to play in promoting private sector participation in urban water services.

10. If structured carefully with political and legislative commitment, private sector participation could help the Government of Pakistan and the provincial governments to meet two major challenges that water and wastewater services in Pakistani cities face: (1) the need to improve the performance of services based on existing assets and (2) the need to mobilize substantial investment resources to expand networks and to create wastewater treatment and disposal facilities. Meeting the first challenge is a prerequisite to meeting the second: without improvements in the quality of services, consumers will resist tariff increases; without increases in tariffs, it will not be feasible to mobilize investment resources.
11. Given the need for large investments in water and wastewater services and the generally poor performance of existing services, the concession model--combining both water supply and sewerage--is recommended for Lahore, Faisalabad and Karachi. Evidence from international examples shows that a carefully prepared concession, accompanied by the reform of the policy and regulatory framework, could result in significant improvements in service quality and technical efficiency, and improve prospects for mobilizing funds for investment through self-finance and from private sources.

12. Generally, build-operate-transfer/build-own-operate (BOT/BOO) type mechanisms are attractive to policymakers and service managers because they enable the mobilization of private investment finance for new components and can add increased capacity to a system. Financially, these types of schemes can be isolated from existing operations. However, these types of schemes do not address the institutional and financial weaknesses that are prevalent in the operation of the total water distribution and sewerage systems. For this reason, BOTs are most suitable for situations where existing operations are already efficient and financially viable; none of these conditions is present in Pakistan at the current time.

13. Since many policy, institutional, and legal changes will be required to make a concession arrangement viable, it is desirable to proceed in a carefully structured way particularly for the initial PSP arrangements. Entry conditions required by the private sector vary. It is likely however that raising tariffs, reducing staff, and agreeing on “up front” autonomous decision making on operational decisions will be the minimum required to attract serious international private sector sponsors. In a concession, the private sector will seek to mitigate its risks by identifying the least cost investments that will maximize the productivity of existing infrastructure in the initial years. The decision on phasing of investments will be managed by the concessionaire once in place. Investments will be linked to the performance based outcomes common in concession contracts, such as increases in coverage and increases in level and quality of services. Step-by-step approaches, for example, starting with management contracts that are intended to be followed by more comprehensive private sector participation, such as a concession, are only recommended when immediate capital investment is not required. Phased approaches to PSP which do not address difficult institutional and policy reforms early on in the process are not likely to succeed.

Solid Waste Management

14. Conditions. Solid waste collection by government owned and operated services in Pakistan's cities currently averages only 50 percent of waste quantities generated; however, for cities to be relatively clean, at least 75 percent of these quantities should be collected. To achieve this level, a large capital investment is required (up to Rs 4.5 billion). Demand for services will grow as urban populations grow and as per capita waste generation rates grow; the latter is projected at one to three percent per year. The increased quantity of waste will also place greater demands on disposal services, thereby exacerbating an already poor situation since present disposal methods for solid waste are totally inadequate. Disposal is by open dumping, primarily on flood plains and into ponds, causing significant environmental damage.

15. Unlike for water and wastewater services, major cities in Pakistan are already experimenting with private sector participation in solid waste management. For example, private haulers provide waste collection services on a private subscription basis with various private enclaves, such as cantonments, industrial estates, airports, ports and commercial establishments. Also, construction/demolition debris is transported through private subscription. Some individual households and neighborhood organizations subscribe for pre-collection service provided by private entrepreneurs with hand carts or donkeys on an
informal basis.

16. Limited evidence from Pakistan indicates that the private sector is more productive than the public sector in providing solid waste services. Workers tend to be younger and more efficient and the 'down' time of their vehicles is much less. Overall, the private sector collects more waste per truck and per person during a work shift than government service providers. The private sector, however, has significant "unproductive" costs that increase the cost of doing business. Creating a transparent, competitive and accountable procurement process and ensuring that the private sector works without political interference would enable private sector efficiencies to be more fully captured by users.

17. The analysis of the current private sector operations in solid waste management in Pakistan revealed a number of problems that have frustrated entrepreneurial activity. The solid waste sector lends itself to private sector activity due to its ease of entry and scope for considerable competition, lack of significant start-up costs and the need for relatively low skill levels. Problems identified in the Pakistani context include: (1) environmental regulatory requirements and enforcement mechanisms are undefined; (2) costs of obtaining contracts and collecting contract payments, customs and taxes are not transparent; (3) market demand for service and related revenue potential is not well developed; (4) senior public management personnel change frequently; and (5) the public sector has a history of arbitrary contract termination and payment default.

18. Suggested Reforms. Given this analysis, the environment that would need to be created to promote private sector participation in solid waste management must address several issues. First, for the private sector to operate efficiently and profitably, a clear and secure regulatory framework and enabling environment must be established. The government must also define output requirements from private sector service that are equitable and measurable. Furthermore, access to a reliable revenue base must be increased to cover the private sector's needs to meet its cash flow obligations for debt service, capital replacement, operation, maintenance and repairs.

19. The structuring and phasing of privatization arrangements for solid waste management activities should be developed in order to optimize competition, accountability and transparency, as well as to avoid labor dislocation that may lead to social problems. Reform efforts for the subsector should focus on:

- establishing appropriate municipal bylaws and sanctions to be applied;
- massing (1) sanitary inspectors, (2) special magistrates that require compliance, and (3) public cooperation with and participation in the solid waste collection and disposal systems, including cost recovery;
- instituting central and provincial government environmental regulations that specify safe disposal practices for general municipal wastes and that require special handling and disposal for hazardous wastes;
- formalizing procurement procedures for multi-year agreements that are competitive and transparent, complete with timely and adequate technical, economic and environmental reviews;
- shifting municipal solid waste budget allocations from capital development into recurrent expenditures to cover contracting-out costs; and
- acquiring cash flow financing from municipal government's solid waste services and contract payments from sustainable and reliable sources through a combination of general revenues, user charges, license fees, sanctions and tipping (dumping) fees.

The solid waste department needs become more efficient or be privatized.
Next Steps:

20. The sector study workshop that was held in July 1996 to review, discuss and finalize a draft of this document moved current thinking within the government forward on several fronts. A second workshop was held in May 1997 to discuss the completed study. First, the workshops served to educate the participants about (1) issues involved in private sector participation at various levels of government (i.e., federal, provincial and municipal) and (2) experience in private sector participation in urban environmental services internationally and in other sectors in Pakistan. Secondly, the workshops served to generate ideas about moving private sector participation forward in Pakistan, particularly on aspects of regulation and consumer projection. However, motivating greater interest in private sector participation in urban environmental issues requires a continuing dialogue. The following are other recommended initial steps for each subsector.

21. Water and Wastewater Services. Progress toward substantial private sector participation in water and wastewater services in Pakistan can move forward on two fronts: at the federal and provincial levels. If following the successful models of the power and telecom sectors, Pakistan would require a central authority at the federal level to act as a strong sponsor and advocate, coordinate efforts and deal with national issues, such as international investors. Future efforts could first focus on the creation of a small, specialized cell at the federal level that would promote private sector participation in the provision of water-related services nationwide. In parallel, private sector participation can be promoted at the provincial level initially on a project-by-project basis whereby regulation would be based on specific transactions, such as the possible concession arrangement for water services in Karachi and Lahore. For both options, the most immediate requirement is the clarification of the legal basis that will permit the provision of “core” water and wastewater services by the private sector.

22. Solid Waste Management. Collection provides the greatest opportunity for private sector participation. Given the ease of entrance and exit to the subsector and the growth in private sector participation in solid waste management in the major cities studies, private sector participation will continue to grow as demand for solid waste services overwhelms the public sector’s ability to supply them. The practical recommendations in the study are sufficient to facilitate and promote best practice in the sector and should provide significant efficiencies and cost effective services for collection. A number of these recommendations can be implemented by the municipalities themselves with existing resources and with limited technical assistance that is currently available from several donors, including IDA.
PART ONE: WATER AND WASTEWATER SERVICES

1. INTRODUCTION

1.1 Increasing the quality and quantity of infrastructure services can deliver major benefits in economic growth, poverty alleviation and environmental sustainability. The adequacy of infrastructure helps determine one country's success and another's failure in diversifying production, expanding trade, coping with population growth, reducing poverty or improving environmental conditions. Although the overall magnitude of water-related infrastructure needs to be increased in Pakistan, at the same time, it is essential that existing assets are utilized more efficiently since the costs of inefficiencies in the existing system in terms of forgone economic growth and lost opportunities for poverty reduction and environmental improvement are high and unacceptable.

1.2 This study presents an overview of the existing structure, performance and regulation of water and wastewater services in four Pakistani cities and recommends strategies to be adopted by the federal and provincial governments to promote the introduction of private sector participation (PSP). The implementation of these strategies will ensure that PSP results in substantial benefits for consumers and promotes Pakistan's broader economic development. In addition to identifying the forms of PSP that are most appropriate and likely to meet Pakistan's needs in the near future, the report delineates the practical steps needed to be taken to attract private operators and investors, and the process of preparing for, selecting and regulating private operators. The study does not aim to analyze inefficiencies in depth or to justify the need for PSP; rather, it is premised on the notion that inefficiencies exist and that PSP is an appropriate path to follow in the water and wastewater services subsector.

A. Country Context

1.3 Overview. Pakistan is a country with a rich and diverse cultural heritage, abundant natural and human resources and an important geopolitical position. Pakistan has experienced internal political instability and costly regional conflicts but has still achieved substantial economic growth over the last half century. Growth of the gross national product, for example, has averaged about 2.5 percent per year and the percent of total population below the poverty line has declined from 46 percent in the mid-1980's to 34 percent in the early 1990's. Nevertheless, Pakistan remains a low income country with a per capita gross domestic product (GDP) of US$430. Recent trends also show a decline in the annual average economic growth from 6.5 percent in 1978-88 to 5.5 percent in 1988-91 and 5 percent more recently.

1.4 Pakistan's policymakers are well aware of the complex issues confronting the country and have made serious efforts to deal with a number of them. The country has embarked on a comprehensive economic reform program that emphasizes sound fiscal and monetary polices to maintain a stable macroeconomic environment. Particularly in infrastructure, it is well recognized that shortages have constrained production. Initiatives are being made, however, to remedy this situation. For example,


2 A number of key macroeconomics issues and constraints are discussed in the Eighth five-year Plan (1993 -98).
Pakistan’s energy investment policy framework, which was announced in March 1994, is attracting substantial foreign investment in the power sector. The Government of Pakistan (GOP) has also adopted a private sector policy for oil and gas exploration and investments in pipelines, storage facilities and new refineries, as well as policies on transmission and hydroelectricity. In a similar development, the Government recently announced an open access policy for rail freight, including oil and containerized cargo.

1.5 Several cross-cutting issues affect the majority of public sector institutions; resource constraints and governance are two such issues that are particularly important to the introduction of private sector participation in environmental services.

1.6 **Resource Constraints.** The relatively high returns on investment that are needed to attract foreign capital in developing countries are fundamentally supported by the stronger economic growth prospects of these countries. Pakistan’s success in attracting foreign capital will ultimately depend on its own policies. The longer-term outlook for both foreign direct investment and foreign portfolio investment flows into Pakistan could be favorable provided that federal, provincial and municipal governments take steps to continue structural reforms, improve governance, enforce policies and regulations more consistently, improve basic infrastructure and the quality of the work force, remove barriers to private sector development and stimulate the economy.

1.7 Two of the reasons that private sector resources, both financial and managerial, are sought is that public institutions in Pakistan have experienced a sustained erosion in their effectiveness and their current management capacities are limited. Fiscal management is difficult due the narrow tax base in Pakistan. High debt repayments and defense outlays have constrained management’s flexibility to commit to other expenditures. Large budget deficiencies result. Given that environmental services are provincial and municipal responsibilities, revenue sharing between these two levels and the federal government is important. Revenues collected at the provincial level account for less than six percent of the total revenues. The provincial governments, therefore, depend heavily on the federal government. In contrast, fiscal transfers from the federal or provincial government to the local governments are very limited.

1.8 **Governance Issues.** The performance of the public sector governance regime is critical to any fundamental change in the operation of public institutions and the introduction of private sector management and ownership. The discretion of civil servants, for example, over commercial decisions has declined dramatically. But much more remains to be done to give everyone the same opportunities, increase transparency, further reduce the scope for corruption and politicization of public sector decision making, and strengthen judicial and other institutions. It appears that Pakistan’s federal and provincial governments’ planning and policy formulation, implementation and monitoring processes have not adequately adjusted to the new economic forces within and outside Pakistan. A more open market economy needs government intervention and control in a more limited but more detailed and targeted way. Though changes are needed, progress will not always be easy since it will challenge the vested interests of organizations and individuals who stand to lose much from additional reform.

1.9 Governance problems have always been inherent in developing economies as structures change and new norms are accepted. In Pakistan these problems are perceived as particularly acute. The informal parallel economy (20 to 30 percent of GDP), which is largely driven by illegal activities such as smuggling, has grown rapidly. Also, public resources have been illegitimately diverted in the form of defaults on bank loans, unpaid utility bills and public sector dues, and rampant tax evasion. At the core of the reform effort is the need to strengthen the legal and judicial system as a basis for the timely
resolution of civil (and criminal) disputes. Presently, all kinds of commercial transactions suffer because the judicial system does not provide timely recourse; for successful private sector transactions, a remedy to this deficiency is critical. More generally, there has been an increasing breakdown in law and order. A credible rule of law needs to be established as the foundation of civil society and commerce in Pakistan.

1.10 Overall insufficient investment and inefficient operations and maintenance in the face of population and per capita income growth and structural change in Pakistan’s economy have generated large unmet demands for power, telecommunications, transport and water services. A recent survey, for example, found that infrastructure shortages are one of the most serious obstacles to the operation and growth of commerce, placing Pakistan in the lowest rank. Table 1.1 below provides a comparative analysis of Pakistan’s infrastructure vis-à-vis that of five other developing countries in Asia.

Table 1.1
Infrastructure: How Does Pakistan Compare?

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Pakistan</th>
<th>Sri Lanka</th>
<th>India</th>
<th>Philippines</th>
<th>Thailand</th>
<th>Malaysia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households with Electricity (%)</td>
<td>31</td>
<td>33</td>
<td>54</td>
<td>46</td>
<td>43</td>
<td>64</td>
</tr>
<tr>
<td>System Losses (% of output)</td>
<td>24</td>
<td>18</td>
<td>19</td>
<td>19</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>Population with Access to Safe Drinking Water (%)</td>
<td>55</td>
<td>60</td>
<td>73</td>
<td>81</td>
<td>77</td>
<td>78</td>
</tr>
<tr>
<td>Telephone Density (Lines/1000 persons)</td>
<td>16</td>
<td>12</td>
<td>8</td>
<td>10</td>
<td>31</td>
<td>111</td>
</tr>
<tr>
<td>Paved Road Density (Km/million persons)</td>
<td>229</td>
<td>536</td>
<td>893</td>
<td>242</td>
<td>513</td>
<td>na</td>
</tr>
<tr>
<td>Paved Roads in Good Condition (%)</td>
<td>18</td>
<td>10</td>
<td>20</td>
<td>31</td>
<td>50</td>
<td>na</td>
</tr>
</tbody>
</table>


B. Subsector Context

1.11 Introduction. Water is a crucial resource in Pakistan—for health, agriculture and life itself. For all uses, it is precariously underpriced, leading to waste and misuse. On average, water charges in the agricultural sector cover only about half of associated operations and maintenance. For capital and replacement costs, the situation is even worse. World averages indicate that these costs are 10 to 16 times existing charges; Pakistan’s situation is similar. For municipal water services, a recent study for Karachi indicated that actual expenditures on operations and maintenance were only 50 percent of what was budgeted. This is typical for the majority of municipal water supply systems in Pakistan with the exception of Lahore, where delivery efficiency is extremely low because operations and maintenance expenditures have been below required levels and deferred maintenance has led to significant deterioration of the system. Furthermore, because tariffs do not cover the actual price of service, underpricing leads to wastage. Financing for investment under such a regime is almost impossible.

1.12 Access to piped water and sanitation is the weakest part of Pakistan’s infrastructure. Although the water and sewerage systems have started to expand somewhat faster since the mid 1970s, the pace is still quite slow (see Table 1.2). Forty percent of the population does not have access to piped water and
60 percent of those with access share a single water tap with a large number of other users. Moreover, the supply of water to those who have access remains quite unreliable. In the city of Karachi, 60 percent of households have water connections, but receive water only five hours a day. Smaller cities are far less developed in terms of water and wastewater services. Wastewater services, including collection, treatment and disposal, are particularly lacking in Pakistan.

<table>
<thead>
<tr>
<th>Table 1.2: Water Supply and Sewerage Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Years</strong></td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>1972</td>
</tr>
<tr>
<td>1975</td>
</tr>
<tr>
<td>1980</td>
</tr>
<tr>
<td>1990</td>
</tr>
<tr>
<td>1991</td>
</tr>
<tr>
<td>1994</td>
</tr>
</tbody>
</table>

Source: Institutions, Private Sector Participation and Infrastructure Development in Pakistan; Background paper for Pakistan 2010 Report, July 1995 (unpublished)

1.13 Only 80 percent of the urban population and 45 percent of the rural population is estimated to have access to clean water in Pakistan. Furthermore, migration to the cities is putting pressure on inadequate urban water and sanitation facilities. Pollution has led to the spread of water-related infections: more than 40 percent of the hospital beds in Pakistan are occupied by patients with water-related diseases, such as cholera, typhoid, hepatitis, diarrhea, dysentery, yellow fever and malaria. About 60 percent of infant mortality is associated with water-related infectious and parasitic diseases.

1.14 It is estimated that providing improved water and sanitation services to all segments of the population now underserved would reduce the incidence of water-related diseases by 47 to 71 percent, and yield an economic value of $461 to $1,252 million per year, depending on the assumed value of life-years lost to premature death and sickness. A recent World Health Organization study found that improved water supply and sanitation produced a median reduction in illness and a median reduction in death of 65 percent. Because high income groups are more likely to have access to clean water supplies or to be able to purify their water or to purchase bottled water, the incidence of water-related illness falls with increased income.

1.15 The reasons for inefficiencies in infrastructure investment and performance can be traced back to weak incentives in public organizations in charge of these services, massive price distortions and insufficient budgetary allocations. All urban services, including water and wastewater, have been dominated by public enterprise or bureaucratic departments with employee compensation and promotion rules unrelated to performance. In some cases, these services are provided as a function of bureaucratic departments without control over their revenues and that depend on the annual budgetary allocations for all their finances. Water and wastewater services throughout Pakistan are operated by public operators riddled with operational and cost inefficiencies.

1.16 Cost recovery from users of infrastructure services has been quite low. Karachi’s water supplier, for example, has not reached operational cost recovery despite raising prices for the majority of domestic
consumers by over 200 percent and tripling the cost for bulk industrial consumers and domestic consumers in the highest billing category (over 5000 square feet) during the 1986-1995 period. Indeed, no infrastructure sector except telecommunications fully recovers its costs. The government has not provided sufficient funds to the operators to finance the necessary operations and maintenance costs. There is also considerable cross-subsidization of services within the water and wastewater services sector with costly distortions in user incentives. Furthermore, some federal agencies and public companies currently purchase their water supply at a heavily discounted rate, e.g., Pakistan Steel Mills. The cost for this federal agency's discounted rate alone amounts to 200 million rupees per year given their use of 20 mgd. The entire KWSB system, however, is supported by government funds, indicating that no one is paying enough.

1.17 Removing Pakistan's infrastructure bottlenecks and keeping up with demand growth requires strong maintenance and operation incentives and large amounts of capital. For the water and wastewater subsector, investment requirements are in the order of US$4 billion over the next 15 years if the economy grows at about five percent per year. Though estimates are not available for expected financing for the water and wastewater services by the private sector, for infrastructure as a whole in Pakistan, it is expected that nearly 75 percent of these investments (say up to US$50 billion) will have to be financed by the private sector by 2010. The GOP's current reform policy focuses on achieving increased private sector participation in a range of infrastructure sectors—most notably telecommunications and power. The GOP also recognizes that the public sector alone cannot provide the investment needed to substantially improve water-related services.

1.18 Water Resources Management and the Environment. Coherent and comprehensive water resources management policies and an appropriate institutional framework for managing water resources are lacking. There is ample evidence that Pakistan's valuable water resources are not being used efficiently. Although three of the four cities studied face water shortages, water losses in urban services are high, and wastewater reuse is non-existent. Agricultural productivity has fallen as a result of water erosion, water logging and salinity.\(^3\) These problems can be traced in large part to the lack of adequate water pricing policies. Improved water resources management was identified as a priority area for further cost-benefit analysis in the Pakistan 2010 report. A recent World Bank report for the agricultural sector recommends immediate increases in irrigation charges and longer-term institutional reforms to improve the efficiency of irrigation services.\(^4\) The proposals presented in this report recommended improving cost recovery and overall efficiency of urban water supply services and involving the private sector in that effort of which are consistent with proposals for the irrigation sector. If adopted, these proposals would constitute an essential and complementary component of comprehensive water resources management. Moreover, an adequate framework for defining and protecting water rights is a precondition of PSP, because private operators need to know that the water rights on which their operations depend are secure.

---


2. WATER AND WASTEWATER SERVICES IN FOUR PAKISTANI CITIES

2.1 The current environment for water and wastewater services nationwide is not conducive to efficient operations nor for private sector participation in service provision. Under the current legal framework, water and wastewater services may only be provided by public authorities. Existing institutional arrangements for these services are not conducive to efficient, financially viable investments and operations. Decisionmaking is bureaucratic. Tariffs are set with regard to political rather than commercial and economic criteria. Furthermore, managers have little control over the key factors of production and cannot be held accountable for results.

A. Current Legal Framework Arrangements

2.2 Overview. Nowhere yet in Pakistan is there any significant private sector participation in the delivery of core water supply and sewerage services. In accordance with the Constitution of Pakistan, it is the provincial governments that have exclusive jurisdiction with respect to water supply, drainage and sanitation, although certain federal regulations do have an important potential impact on the conduct of these activities. The only exception to this general rule concerns the National Capital Territory of Islamabad for which the federal government has the authority to legislate in respect to these services.

2.3 Thus, with this exception, in order to assess what legislation presents obstacles to private sector participation in the provision of these services in the four major urban areas under review, an analysis of relevant provincial and subsidiary municipal legislation is required. With certain minor exceptions,
authority in respect of water supply and sewerage services rests, by statute (law or more typically ordinance), with the following:

(a) Karachi: the Karachi Water and Sewerage Board (KWSB); 
(b) Lahore: the Lahore Development Authority (LDA) and the LDA’s Water and Sanitation Agency (WASA) to which LDA has delegated all relevant powers; 
(c) Faisalabad: the Faisalabad Development Authority (FDA) and its Water and Sanitation Agency (WASA); and 
(d) Islamabad: the Capital Development Authority (CDA).

2.4 In each instance, the relevant board, development authority and municipal corporation is expressly constituted as a body corporate with the power to acquire and dispose of real and personal property, to contract and to sue and be sued. The power of the KWSB to contract with the private sector is not made explicit although it may, with the approval of the Sindh provincial government, “make regulations providing for the grant of licenses.” Nothing further, however, is stated in the KWSB legislation on the matter of licenses; therefore, whether in time licenses can be provided by KWSB to private entities on this basis, and what the coverage of such licenses might be, remains unclear. In the cases of Lahore, Faisalabad and Islamabad, the power of the corporation or authority to contract with the private sector is restricted to those subject matters that are not expressly required to be carried out by some department or other agency of local government.

B. Organizational Structure and Autonomy

2.5 Subject to what is stated above regarding KWSB, to date, the powers and obligations of the board and of the various authorities and municipalities analyzed cannot be delegated to third parties. Thus, no private sector participation in the delivery of core services is legally permissible. The operative words here are “core services,” however, since contracting out to the private sector could well be envisaged in each instance under the existing legislative framework for what might be termed “peripheral services,” such as meter reading, user fee collection services, pipe laying, trench digging and tube-well installation.

2.6 Overview. Organizational and institutional arrangements for water and wastewater services vary among the four cities studied. In Islamabad, water and wastewater services are developed and operated by several departments of the CDA. Outside of Islamabad, responsibility for development of water and wastewater services rests, constitutionally, with the provincial governments. In the case of the larger cities, the provincial governments have generally created semi-autonomous agencies or boards to provide services, although arrangements vary somewhat from one province to another.

---

10 The president of Pakistan is entitled to promulgate so-called “Ordinances” for a period of four months when the National Assembly is, for any reason, not in session. Indeed, in recent years, it has generally become the practice of successive Governments to resort to legislation by Ordinance. The federally appointed governor of each province may also issue legislative Ordinances for a period of three months when the Provincial Assembly is, for any reason, not in session. And, frequently, in recent years, provincial legislation has consisted of such Ordinances.

11 In April 1996, the Sindh Provincial Assembly adopted a bill that separated the KWSB from the Karachi Metropolitan Corporation. The KWSB is now under the direct control of the Government of Sindh.
2.7 KWSB is a semi-autonomous agency recently placed under the direct control of the provincial government of Sindh, while the WASAs in Lahore and Faisalabad are agencies of the respective development authorities in those cities, under the control of the Punjab provincial government. Managerial autonomy is constrained for all the services, but as autonomous agencies, KWSB and the WASAs have more integrated management than the services provided by CDA.

2.8 Islamabad. Management of water and wastewater services is severely fragmented among the departments of Finance, Administration, Engineering and Services. Maintenance and operations are the responsibility of the directors of the Water Supply and Sewerage Directorates, who report to the director general of the Services Department. Meter reading and billing, procurement, budgeting and investment finance are carried out by a number of directorates that deal with all CDA services under the Member Finance. Personnel is handled by yet another directorate which reports to the Member Administration. Finally, planning and execution of investments are carried out by the directors of Water Supply Development and Sewerage Development, who report to the Member Engineering. Revenues collected for water and wastewater services in Islamabad are deposited into the general account of the CDA. The budgetary allocations of the various operating departments are determined by the Finance Department and are not linked to the revenues generated by the services.

2.9 As divisions of a public authority, the Water Supply and Sewerage Directorates of CDA have little autonomy. All operational expenditures and procurement decisions, other than for minor supplies, must be approved by the Member Finance, even if they fall within the Water Supply or Sewerage Directorates' budgets. The chairman of CDA reports through the Cabinet to the prime minister, who must approve all major policy decisions, including tariff increases. The current chairman has proposed to improve CDA’s management and increase its autonomy by creating a link between revenues and expenditures for the various services. This would provide a firmer basis for justifying increases in tariffs, thereby securing financial autonomy and the ability to act more independently.

2.10 Karachi. The original KWSB was created in 1983 and granted responsibility for water and wastewater services from the Karachi Metropolitan Corporation (KMC). Pursuant to Sindh provincial legislation, it was reconstituted in April 1996 with the size of the board expanded initially from six to a minimum of seventeen individuals. These include: the chairman and vice chairman appointed by the provincial government; the additional chief secretary (Development); the secretaries of the provincial departments of local government, Industries, Finance, and Housing Town Planning; the mayors of KMC and the District Municipal Corporations; the chairmen of the District Council of Karachi, the Karachi Port Trust, the Karachi Electric Supply Corporation and the Karachi Defense Housing Authority; the president of the Karachi Chamber of Commerce and Industries, the managing director of KWSB; the deputy director of the Karachi Military Lands and Cantonment; and the Karachi divisional superintendent of Pakistan Railways. Power is given to the Government to name any other person to the board and, by simple notification, to change the constitution of the board.

2.11 All property and contractual and other rights and obligations of the pre-existing board have been vested in the new board. KWSB still lacks full financial autonomy since its annual operating budget must be sanctioned by the Sindh provincial government as was the case with the “old” KWSB.

2.12 Lahore and Faisalabad. The Lahore and Faisalabad WASAs are autonomous bodies under the immediate administrative control of the Lahore Development Authority (LDA) and the Faisalabad Development Authority (FDA), which were created in 1975 and 1976 respectively as agents of the Punjab provincial government under its Department of Housing, Physical and Environmental Planning. They are charged with the preparation, implementation and enforcement of improvements in Lahore and

-8-
Faisalabad. The LDA and FDA are distinct from the Lahore and Faisalabad Metropolitan Corporations, local government authorities that in normal times are headed by elected mayors. Their organizational structures each include three deputy managing directors (MD) (for Engineering and Development; Finance, Administration and Revenue; and Operations and Maintenance) and a director for Planning and Evaluation who reports directly to the MD. The WASAs are governed by the provincial governments through the development authorities. They collect revenues from two sources: tariffs they collect from consumers and a 42.5 percent share of the property taxes collected by the provincial government in the jurisdictions that they serve.

2.13 Although they are designated autonomous bodies, in reality, the WASAs have only limited control over their resources. The annual budgets of the WASAs must be submitted through the director general of the development authorities for approval by the Punjab provincial department of Finance. The deputy managing directors of the Finance and Revenue Departments, approve operational expenditures and sign contracts for operational activities within the approved budget, subject to governmental procurement guidelines. As in the case of KWSB in Sindh, tariff increases and adjustments to reflect inflation must be approved by the chief minister of the Punjab provincial government; proposals are frequently reduced or delayed for political reasons.

C. Labor Issues

2.14 The managers and professional staff of the services are highly competent. Most have excellent insights about what needs to be done to improve services; however, they are frustrated by an institutional setting that limits their ability to act. The political strength of labor unions and the restrictive personnel practices of the public sector are particularly counterproductive. Hiring and firing is closely controlled and management is sometimes unable to enforce normal performance standards and rules. All the water services are over-staffed. The ratio of staff per 1000 water supply connections is 11.3 in Karachi, 7.5 in Lahore, 9.5 in Faisalabad and 45 in Islamabad. By comparison, efficient water companies in Latin America employ about three staff per 1000 connections.

2.15 In accordance with an action plan agreed with the World Bank, KWSB is in the process of reducing its total staff by 6,500,13 of which 4200 employees related to water supply services will be retrenched. If successful, this would result in a ratio of 2 per 1000 water supply connections; however, a court-imposed requirement that the reductions be applied proportionately to all grade levels could undermine the beneficial impacts, since most of the excess staff are in the lowest grades. Lahore's WASA has imposed a hiring freeze, also required under loan covenants, in spite of continuing political pressure to hire more staff. The MD of Faisalabad's WASA has spent a large portion of his time in the recent past trying to overcome these barriers through legal action. He has successfully fought union interference in hiring decisions and had the water and sewerage services in Faisalabad declared "essential services"—a designation which protects them from work disruptions. In spite of excess staffing at the lowest levels, there may be a lack of specialists at the deputy director level in some areas. This designation has had little effect on the situation in Karachi where services of KWSB have been declared "essential" for many years.

---

12 Under the current government, municipal elections have been suspended; an administration has been appointed with power similar to that of the mayor.

13 65 percent water and 35 percent wastewater.
D. Regulatory Practices

2.16 The purpose of regulation of public services is to ensure widespread access to good quality service and to promote financial viability and economic efficiency. Current regulatory practices are not achieving any of these objectives reliably.

2.17 Tariff Regulation. Requests for tariff increases and adjustments to reflect inflation are submitted on an ad hoc basis and are initiated by the service providers. After review by their supervisory authorities, requests must undergo the provincial department review process. In the case of Islamabad, requests must be reviewed by the Cabinet. Approvals, which must come from the highest political levels, are unpredictable and subject to delays for political reasons. A number of substantial increases have been implemented recently, particularly to meet the conditions of the World Bank and other external lenders, but a sustainable and predictable regulatory regime is lacking. Tariff increases are not conditioned on achieving monitorable service quality objectives.

2.18 Tariffs are largely flat rates, set on the basis of annual rental value, ferrule size or plot size and are very low (see para. 2.23). Recent increases have helped, but further increases are needed to provide for adequate preventive maintenance and finance needed investments. These will be difficult to justify without greater attention to consumer concerns and substantial improvements in service quality and efficiency.

2.19 Investment Planning and Controls. In all four cities, investments, which generally are not self-financed, are subject to a time-consuming approval process. The greater the expenditure, the higher in the hierarchy it must be approved. Investment expenditures over Rs 1 million (US$30,000) must be approved at the local, provincial and federal levels. This means that replacing ordinary pieces of operating equipment, such as vehicles, may be subject to delays of several months. Any project costing more than Rs 100 million (US$3 million) and all which require external financing must be approved by the federal government through a process known as PC1 (Planning Commission 1 Procedures). Completing this process can take up to two years. To some extent it is inevitable that the commitment of scarce public resources and external financing is subject to close scrutiny and bureaucratic delays. Greater ability to self-finance and attract private sources of financing would give the services more flexibility and autonomy.

E. Performance of Water and Wastewater Services

2.20 Commercial Performance. Water and wastewater authorities in the four cities studied suffer from poor commercial performance due in part to inaccurate and incomplete records, pricing which does not allow for full cost recovery, illegal connections, lack of adequate control over collection staff and the dissatisfaction of consumers. Table 2.1 below provides some comparative statistics in terms of quantities produced, connections, labor levels, expenses and revenues.
Table 2.1:  
Comparative Statistics for Water Services  
Four Cities in Pakistan 1995-96

<table>
<thead>
<tr>
<th></th>
<th>Lahore</th>
<th>Faisalabad</th>
<th>Islamabad</th>
<th>Karachi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Production (MGD)</td>
<td>250</td>
<td>35</td>
<td>67</td>
<td>365</td>
</tr>
<tr>
<td>Gallons/per capita/day (including losses)</td>
<td>50</td>
<td>19</td>
<td>nd</td>
<td>36</td>
</tr>
<tr>
<td>Number of Employees</td>
<td>2,810</td>
<td>810</td>
<td>1,849</td>
<td>7,25014</td>
</tr>
<tr>
<td>Water Connections</td>
<td>376,456</td>
<td>85,016</td>
<td>38,159</td>
<td>567,074</td>
</tr>
<tr>
<td>Sewer Connections</td>
<td>320,000</td>
<td>81,710</td>
<td>17,000</td>
<td>482,00015</td>
</tr>
<tr>
<td>Water Employees/1,000 Connections (water)</td>
<td>7.5</td>
<td>9.5</td>
<td>48</td>
<td>12.8</td>
</tr>
<tr>
<td>Operating Expense/Connection (w&amp;s) (Rs)</td>
<td>950</td>
<td>1,147</td>
<td>6,348</td>
<td>1,113</td>
</tr>
<tr>
<td>Gross Revenue/Connection (w&amp;s) (Rs)</td>
<td>1,138</td>
<td>638</td>
<td>1,324</td>
<td>834</td>
</tr>
<tr>
<td>Operating Expense/1,000 Gal Water (Rs)</td>
<td>7.3</td>
<td>15.0</td>
<td>9.9</td>
<td>8.8</td>
</tr>
<tr>
<td>Gross Revenue/1,000 Gal Water (Rs)</td>
<td>8.7</td>
<td>8.3</td>
<td>2.1</td>
<td>6.6</td>
</tr>
</tbody>
</table>

Source: Consultants' estimates

MGD=million gallons per day; w=water; s=sewerage; nd=no data

2.21 Only WASA Lahore meters domestic consumer usage; of those meters existing for commercial/industrial consumers, between 20 to 50 percent are inoperative and/or are not read regularly. As a result of the lack of domestic meters, it is impossible for the water authorities to control illegal connections and manage demand. Thus, in most of the cities examined, water is wasted or used uneconomically for watering lawns, washing cars, etc. Even in the case of Faisalabad, where the WASA has taken steps to improve collections through implementation of computerized billing, collections are still only a modest 64 percent. In Karachi, the extremely intermittent water supply has made meters unworkable. Non-revenue water, from administrative losses and from leaking pipes, is high (possibly as high as 50 percent) but reliable data is not available.

2.22 Despite incomplete information regarding the level of receivables outstanding in each of the four water authorities studied, it appears that even if collections were at a rate of 100 percent and illegal connections were eliminated, current tariffs would be insufficient to support adequate maintenance and expansion. Compounding this problem is the fact that the authorities base their budgets on a cash basis, and do not account for depreciation expense or financial expenses. Because of this lack of attention to real costs, the authorities are not quantifying the full cost of water provision and fail to keep in mind when setting tariffs. Despite not fully accounting for costs, operating revenues of the authorities are inadequate to support even the budgeted operating expenses. When taking depreciation and financial

---

14 KWSB employees based on estimate of 50 percent of total employees (14,500) are employed in water supply related activities. It should be noted that KWSB conveys water in bulk from Kotri which is 140 km away from Karachi; this activity substantially increases KWSB's total staff relative to that of the other three cities, which do not convey water from such a considerable distance.

15 Based on assumption that sewer connections are 85 percent of water connections.
expenses into account, none of the authorities (except WASA Lahore) is able to support basic operating expenses, much less a preventative maintenance program or necessary expansion.

2.23 Pricing is also a key factor in the poor performance of the authorities. Pricing is largely on a flat rate basis, related to annual rental value of property, ferrule size or plot size. Flat rates range from about Rs 33 to Rs 145 per month for a typical household. Metered rates for industrial or commercial use range from about Rs 11 per 1,000 gallons to Rs 40 per 1,000 gallons (about US$.08 - US$.20/m³ water). Taking this into consideration, tariff levels on average for Karachi at least would need to be at least doubled\(^\text{16}\) in real terms (assuming collections are also improved) if the authorities are expected to cover basic operating costs and institute proper maintenance and expansion programs. Such real increases are necessary whether or not the goal is to attract private owners/operators. Nevertheless, increases will likely be difficult to implement, as to date the authorities have encountered difficulty in even adjusting tariffs upward to reflect inflation.

2.24 Technical Performance. In general, technical performance is poor. Sewers are heavily silted. In Lahore, several kilometers of the main sewer lines are completely blocked. The severe flooding of July 1996 in the central areas of Lahore caused considerable damage and emphasized this lack of maintenance. Low pressure and intermittent service exist to some degree in all of the cities. In Karachi, rationing of the water supply is also required occasionally. The situations of the authorities are exacerbated by the fact that the annual growth rates in the urban areas is over four percent and the fact that Faisalabad, Karachi and Islamabad area all face water resource constraints and Lahore must deal with frequent flooding.

2.25 In Karachi, the two trickling filter facilities and five aerated lagoons, can meet only 50 percent of wastewater treatment demand. These plants are poorly operated and maintained, and suffer from shortages of parts, lack of trained manpower, and the presence of industrial effluent sewer lines. Work to upgrade the plants is in progress and the use of treated sewage for irrigation of fodder crops is being tested.

2.26 In Islamabad, wastewater treatment is limited to a plant constructed in 1962 and another plant of the same capacity that awaits commissioning. Sludge bulking has often been reported at the old plant, indicating inadequate aeration. Important operational parameters, such as sludge age and return sludge values, are neither monitored regularly nor reported.

2.27 In Lahore, city sewage that had received only primary treatment was routinely pumped into the Ravi River until recently. After years of experimentation with low-cost facultative and maturation ponds, the Institute of Public Health Engineering has recommended the use of such ponds at six different locations around the city. Performance of the pilot facultative ponds was satisfactory, suggesting successful outcomes with the full-scale plant.

F. Resource Requirements

2.28 Given the level of investment and rehabilitation resources needed in Pakistan’s cities and the current low levels of tariffs, it is unrealistic to hope that productivity gains alone could provide the required resources. Substantial tariff increases are justified, however, estimates for tariff increases based on fuel cost-recovery estimates for the existing services and improved services were made for Lahore

\(^{16}\) A recent study for Karachi indicated that tariffs would have to raise from Rs 33 per month to Rs 80 per month to cover full costs.
and Faisalabad. These estimates are set out in Table 2.2 below. They indicate that Lahore currently is fairly close to full cost recovery, while Faisalabad lags far behind. Even with new investments for wastewater treatment, Lahore remains a fairly promising prospect. However efficiency improvements must be pursued as a means of mitigating the resource requirements. For example, reductions in water losses and improved demand management that could result from institutional reform and well-designed PSP arrangements would make it possible to postpone some expansions in production capacity so that scarce investment resources could be allocated to urgently needed wastewater treatment and disposal.

Table 2.2: Future Investments and Cost Recovery  
(all costs in Rs million)

<table>
<thead>
<tr>
<th></th>
<th>Lahore 1995-96</th>
<th>Faisalabad 1994-95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings</td>
<td>858</td>
<td>106</td>
</tr>
<tr>
<td>Expenditure</td>
<td>836</td>
<td>191</td>
</tr>
<tr>
<td>Debt service not shown above (estimated)</td>
<td>0</td>
<td>200</td>
</tr>
<tr>
<td>Net Surplus/(deficit)</td>
<td>22</td>
<td>-285</td>
</tr>
<tr>
<td>Tariff increase required to meet full cost recovery</td>
<td>0</td>
<td>268%</td>
</tr>
<tr>
<td>Tariff increase based on 12% annual inflation</td>
<td>12%</td>
<td>280%</td>
</tr>
<tr>
<td>Additional investments per annum for five years</td>
<td>500</td>
<td>350</td>
</tr>
<tr>
<td>Additional expenses for new investments¹</td>
<td>125</td>
<td>88</td>
</tr>
<tr>
<td>Collection efficiency</td>
<td>80%</td>
<td>60%</td>
</tr>
<tr>
<td>Additional revenue requirements based on collection efficiency</td>
<td>156</td>
<td>147</td>
</tr>
<tr>
<td>Tariff increase based on investment plan</td>
<td>30%</td>
<td>418%</td>
</tr>
</tbody>
</table>

¹ Wastewater treatment
Source: Consultants' Estimates

2.29 The level of resource requirements and the potential for productivity improvements varies among the cities studied. It was not possible to make a detailed study of each case in the context of this study, however. Based on the cost of relatively efficient water services in comparable cities in other developing countries and World Bank estimates of the financial requirements in Pakistan, it is likely that tariffs will have to increase. As a first step in reforming the sector and eventually attracting PSP, studies of the financial requirements and the potential for productivity improvements in each of the services should be undertaken. Willingness-to-pay studies have been used in other countries to determine how much consumers are already spending on water from all sources and to determine the realistic range for tariff increases in the short term.
3. PRIVATE SECTOR PARTICIPATION IN URBAN WATER AND WASTEWATER SERVICES: INTERNATIONAL EXPERIENCE

A. Private Sector Participation Options

3.1 The private sector has participated in several ways in water and wastewater services in other countries. Five of the most frequently used options are presented in Table 3.1 on the following page. Some provide limited private involvement, while others are more comprehensive in scope. They vary as to the benefits and challenges they present and as to the level of risk assumed by the private sector. Full privatization (i.e., sale of assets) of water and wastewater services is rare. Rather, public authorities typically contract with private firms to operate services, and in some cases to assume responsibility for financing, executing and operating new facilities. Newly created assets may belong to the developer during the contract period, but are usually transferred to public authorities at the termination of the contract. The return to public ownership poses some challenges, such as an increased publicly financed maintenance budget, that need to be acknowledged and dealt with from the beginning. These problems may be minimized in the concession option in which the private operator takes effective ownership and all the responsibility associated with ownership during the concession period.

B. Impacts of Private Sector Participation on Service Charge and Quality

3.2 A recent World Bank study examined the experiences with PSP in urban water and wastewater services in a number of developing countries. The cases that were studied include:

<table>
<thead>
<tr>
<th>City</th>
<th>Type of PSP</th>
<th>Year Initiated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buenos Aires, Argentina</td>
<td>Concession</td>
<td>1993</td>
</tr>
<tr>
<td>Cancun, Mexico</td>
<td>Concession</td>
<td>1994</td>
</tr>
<tr>
<td>Cartagena, Colombia</td>
<td>Management Contract</td>
<td>1995</td>
</tr>
<tr>
<td>Gdansk, Poland</td>
<td>Lease Contract</td>
<td>1992</td>
</tr>
<tr>
<td>Guinea</td>
<td>Lease Contract</td>
<td>1989</td>
</tr>
<tr>
<td>Santiago, Chile</td>
<td>Service Contracts</td>
<td>1979</td>
</tr>
</tbody>
</table>


3.3 The study found that PSP was associated with varying degrees of improvement in the quantity and quality of services. In some cases, improvements have been substantial while in others, only modest progress has been achieved. In most cases, the private sector was able to provide, very quickly, technical expertise that led to an initial increase in coverage, more reliable service and improvements in water quality. During the early stages of these operations, improvements were introduced primarily through relatively simple management and operating procedures and relatively small, but carefully targeted, investments. Improvements in technical performance resulted from equipment rehabilitation, inspection and mapping of distribution systems, regulation of network pressures, reduction of water loss (through leak detection, rehabilitation, etc.) and the introduction of systematic control procedures. Commercial performance was improved through new billing and collection systems, updating of cadasters, rapid incorporation of users into the commercial system, better information services and better consumer relations.
### Table 3.1:
**Options for Private Sector Participation in Urban Water and Sewerage Services**

<table>
<thead>
<tr>
<th></th>
<th>SERVICE CONTRACTS</th>
<th>MANAGEMENT CONTRACTS</th>
<th>LEASE CONTRACTS</th>
<th>CONCESSIONS</th>
<th>BOT/BOOT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scope</strong></td>
<td>Multiple contracts for a variety of support services such as meter reading, billing, etc.</td>
<td>Management of entire operation or a major component</td>
<td>Responsibility for management, operations and specific renewals</td>
<td>Responsibility for all operations and for financing and execution of specific investments</td>
<td>Investment in and operation of a specific major component, such as a treatment plant</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>1-2 years</td>
<td>2-5 years</td>
<td>10-15 years</td>
<td>25-30 years</td>
<td>Varies</td>
</tr>
<tr>
<td><strong>Level of Risk for Private Sector</strong></td>
<td>Minimal</td>
<td>Minimal/moderate</td>
<td>Moderate</td>
<td>High; many single consumers - no guarantees</td>
<td>High; usually single or few public sector purchases; often guaranteed</td>
</tr>
<tr>
<td><strong>Compensation Terms</strong></td>
<td>Unit prices</td>
<td>Fixed fee, preferably with performance incentives</td>
<td>Portion of tariff revenues</td>
<td>All or part of tariff revenues</td>
<td>Mostly fixed, part variable related to production parameters</td>
</tr>
<tr>
<td><strong>Competition</strong></td>
<td>Intense and on-going</td>
<td>One time only; contracts not usually renewed</td>
<td>Initial contract only; subsequent contracts usually negotiated</td>
<td>Initial contract only; subsequent contracts usually negotiated</td>
<td>One-time only; often negotiated without direct competition</td>
</tr>
<tr>
<td><strong>Special Features</strong></td>
<td>Useful as part of strategy for improving efficiency of public water company; Promotes local private sector development</td>
<td>Interim solution during preparation for more intense private participation</td>
<td>Improves operational and commercial efficiency; Develops local staff</td>
<td>Improves operational and commercial efficiency; Mobilizes investment finance; Develops local staff</td>
<td>Mobilizes investment finance; Develops local staff</td>
</tr>
<tr>
<td><strong>Problems and Challenges</strong></td>
<td>Requires ability to administer multiple contracts and strong enforcement of contract laws</td>
<td>Management may not have adequate control over key elements, such as budgetary resources, staff policy etc.</td>
<td>Potential conflicts between public body which is responsible for investments and the private operator</td>
<td>How to compensate investments and ensure good maintenance during last 5-10 years of contract</td>
<td>Does not necessarily improve efficiency of on-going operations; May require guarantees</td>
</tr>
</tbody>
</table>

3.4 In Buenos Aires, the population served increased and the quality and reliability of service improved substantially in less than two years. The public water company in Santiago, Chile, which contracts out about 50 percent of the value of its operations to local private firms, is probably the best-performing water utility in all of Latin America with a coverage of 100 percent for water and 97 percent for sewerage.

3.5 In Guinea, where the introduction of the lease contract was accompanied by donor-financed investments in production, initial increases in population served were substantial, along with the achievement of major gains in efficiency and the quality of service, further gains, however, have proven elusive, in spite of substantial tariff increases. With the establishment of a 30-year operation and maintenance contract with the private sector in Gdansk, Poland, drinking water quality now meets European standards and the quality and reliability of service have improved. In Cartagena, the quality of drinking water has improved through better use of chlorination, but a lack of investment funds has hampered expansion and improvements in service. Very little progress appears to have been achieved in Cancun, Mexico. Performance has been best in those cases where the regulatory or contractual framework created incentives for improvements.

C. Tariffs and Efficiency Improvements

3.6 Tariff and efficiency issues are at the heart of the debate on the restructuring of water services and PSP. In many cases of sector reform and PSP, tariffs have increased substantially, either because they had not been high enough to cover the reasonable cost of providing service prior to sector reform and PSP or because the institutional changes were accompanied by a substantial increase in investments. However, it would be incorrect to attribute the increases to PSP per se. In most cases, the tariff increases would have been necessary whether the private sector had been involved or not. In Chile, the increases occurred even though the large majority of services remained public. In Buenos Aires, where a concession is in place, tariffs have decreased. Table 3.2 shows the tariff levels and percentage increase or decrease that followed sector reform and the introduction of PSP in selected countries:

<table>
<thead>
<tr>
<th>Locality</th>
<th>Tariff Change since PSP</th>
<th>Time Period</th>
<th>Current Tariff US$/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buenos Aires</td>
<td>17% lower</td>
<td>over 2 years</td>
<td>.33</td>
</tr>
<tr>
<td>Provinces (Argentina)</td>
<td>100% higher</td>
<td>over 1 year</td>
<td>na</td>
</tr>
<tr>
<td>Guinea</td>
<td>270% higher</td>
<td>over 6 years</td>
<td>.90</td>
</tr>
<tr>
<td>UK (England and Wales)</td>
<td>20% to 120% higher</td>
<td>over 10 years</td>
<td>.38 (water)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.49 (sewage)</td>
</tr>
</tbody>
</table>

Source: Various.

3.7 If PSP is carefully structured and appropriate incentives for efficiency are provided, efficiency gains can help to mitigate tariff increases. The case of Buenos Aires demonstrates that when an inefficient public utility has charged tariffs that are high enough to cover the cost of operating, PSP can lead to significant cost reductions, which can be used to reduce tariffs, increase the capital development program and improve maintenance. Prior to the Buenos Aires concession, the tariff averaged US$ .40 per cubic meter. Two years into the concession contract, water supply and wastewater services rates are 17 percent lower (in real terms) even though investments in system expansion and wastewater treatment are being partially self-financed.

-16-
3.8 The case of Santiago, Chile, is also worth examining. Tariffs have increased in real terms since the government adopted a full-cost recovery policy in 1979. At the same time, the Santiago water company began to contract out all support services. The cost savings achieved through contracting out is substantial. Essentially, tariffs would be higher in the absence of the support service contracts.

3.9 In evaluating tariff increases (whether accompanied by PSP or not), the relevant questions to ask are: (1) Were the increases justified by improvements in service and increased investments? (2) Are the level and cost of service consistent with consumers' willingness to pay? and (3) Have adequate measures been taken to improve productive efficiency? The recent World Bank study of PSP found that, as with service improvements, productivity improvements have not been consistently achieved in all cases of PSP. Table 3.3 presents selected productivity indicators before and after PSP.

### Table 3.3: Changes Before and After Introduction of PSP

<table>
<thead>
<tr>
<th>Location</th>
<th>Unacc-for-Water Before</th>
<th>Collection Rate Before</th>
<th>Empl/1000 con. Before</th>
<th>Working Ratio Before</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buenos Aires</td>
<td>na</td>
<td>80%</td>
<td>6.4</td>
<td>1.05</td>
</tr>
<tr>
<td></td>
<td>na</td>
<td>96%</td>
<td>3.3</td>
<td>0.65</td>
</tr>
<tr>
<td>Cancun</td>
<td>51%</td>
<td>85%</td>
<td>13</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>51%</td>
<td>88%</td>
<td>11</td>
<td>0.5</td>
</tr>
<tr>
<td>Catagena</td>
<td>52%</td>
<td>50%</td>
<td>14</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>50%</td>
<td>82%</td>
<td>5</td>
<td>0.9</td>
</tr>
<tr>
<td>Gdansk</td>
<td>na</td>
<td>80%</td>
<td>10</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>20%</td>
<td>88%</td>
<td>8</td>
<td>0.7</td>
</tr>
<tr>
<td>Santiago</td>
<td>28%</td>
<td>90%</td>
<td>2.1</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>22%</td>
<td>94%</td>
<td>1.9</td>
<td>0.4</td>
</tr>
<tr>
<td>Corrientes</td>
<td>28%</td>
<td>90%</td>
<td>2.1</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>22%</td>
<td>75%</td>
<td>1.9</td>
<td>0.4</td>
</tr>
</tbody>
</table>


3.10 The differences among the cases seem to be due more to the quality of the regulatory framework and incentives perceived by the operators than to the type of PSP. Large productivity gains have been achieved in a short time in Buenos Aires where a well-conceived regulatory framework was put in place and an adequately staffed and funded regulatory authority was established to monitor compliance with and enforce the detailed provisions of the concession contract. In Chile, gradual improvements in productivity have been sustained since the government (1) adopted a full-cost recovery policy in the late 1970s and (2) in 1989, created an independent regulatory authority charged with setting targets for improved efficiency of services and keeping tariffs down while promoting financial viability. Where the contracts do not provide incentives to improve efficiency and where regulatory authority is not well designed, the results have been less than anticipated.

### D. Regulatory Implications of Public vs. Private Service Provision

3.11 As previously discussed, it has been shown that in the absence of an adequate regulatory framework, PSP does not necessarily lead to efficiency improvements. Furthermore, the need for

17 It should be clearly stated that in most developing countries, the poor pay very high prices and sometimes extremely large fractions of their income, to obtain water from the informal sector. Concerns about lack of willingness to pay are therefore often misplaced. For the poor, a policy which would promote investment and expand coverage—even if it means that operators are to be allowed to make sufficient profits—are much more beneficial that policies aimed at subsidizing water prices, as such policies typically end up benefiting the relatively well off (who have connections) and hamper system development.
regulation applies to both public and private service providers. While the interests of a public provider differ from those of a private operator, they do not necessarily coincide with the interests of consumers or promote the overall regulatory objective of efficiency any more than those of private operators. In either case, a utility regulator is needed to protect the interests of consumers and to provide incentives for economic efficiency.

3.12 Experience has demonstrated that, generally private operators are not significantly more difficult to regulate than the public operators, although private operation of water services poses regulatory challenges that may be somewhat different from those posed by public operation. In Chile, where both public and private companies are regulated, the most important challenge posed by the private operators has been their reluctance to report cost information which they consider proprietary. The problems are most pronounced in cases where private operators had been operating prior to the creation of a regulatory framework. Such problems may be avoided by establishing the regulatory framework concurrently with development of a strategy for private sector participation and by using market-like incentives to promote efficiency rather than cost-based regulatory approaches that require extensive monitoring of costs. For example, the simple publication of basic performance information has been enough in some cases to prompt different operators to become more efficient. The publication of such data is widely perceived as the most powerful tool of OFWAT, the United Kingdom water regulator.

3.13 On the other hand, private operation in some cases has promoted good regulation. Governments tend to take regulation more seriously and are more likely to establish an effective regulatory authority when the private sector is involved or is expected to become involved in the near future. This has been the case in Argentina and Peru. In addition, the clearer distinction between a private operator and the regulator helps to eliminate political interference in day-to-day operation of services.

3.14 Mixed enterprises are often created in the belief that they combine the benefits of both public and private operation. In fact they may create a conflict of interest for the government if the same level of government is the partner in the enterprise and is also responsible for oversight and regulation; conflicts also may arise if the regulatory authority is not entirely independent. Experience in a number of countries indicates that regulation tends to be lax when the government is both regulator and regulated party. This may be less likely if the public partner in a mixed enterprise represents a different level of government than the regulator, for example if a municipality is part owner of a utility while regulation is the responsibility of the provincial government, and if the two levels of government are politically independent of each other (i.e., elected separately).

E. Labor Implications

3.15 Gaining the support of labor is essential for the success of efforts to arrange PSP, particularly when services are severely over-staffed, as they are in the four cities examined. Experience in other sectors in Pakistan, as elsewhere, shows that when a clear labor strategy is developed at the start of the process and labor is involved early in the process, the results are more likely to be positive. In contrast, in several cases, where labor issues were not dealt with early in the process, privatization was delayed or blocked, or privatized companies were forced to retain excessive staff. The objectives of a labor strategy should be to:

(a) reduce uncertainties for investors and employees alike;
(b) obtain labor support for privatization;
(c) ensure that the restructured service organizations will not be saddled with excess or unproductive staff; and
(d) minimize the negative social consequences arising from layoffs.

3.16 A number of mechanisms have been used to achieve these objectives. Some of these are detailed in Box 3.1 below which describes the approach to labor adopted in several recent PSP cases.

Box 3.1
Constructive Approaches to Staff Reductions in the Context of PSP in Water Supply

In Buenos Aires, Argentina, where a concession for water and wastewater services was awarded in 1993, labor representatives were informed about the government's plans for PSP from the very beginning. Although they opposed the plans initially, labor leaders eventually supported it and took advantage of the opportunity to negotiate favorable terms for all staff—those who retired as a result of the concession as well as those who stayed. A total of 3,600 employees, almost 50 percent of the staff, transferred to the private water company or retired voluntarily following the award of the concession contract. About 1,600 employees accepted an early retirement program offered by the government and another 2,000 accepted a similar plan offered by the concessionaire. The value of the severance package averaged about $20,000 per employee. Working conditions improved considerably for those who remained. Wages increased by an average of 40 percent. In addition, under the provisions of its contract, the private operator reserved 10 percent of shares for purchase by employees. Finally, an ambitious training program and stricter enforcement of safety procedures have significantly improved working conditions and prospects for advancement of employees.

In Gdansk, Poland, staff of the water services have been encouraged to leave the company and form small private enterprises that provide services to the water company and other clients. In 1992, a 30-year lease contract was signed between the city of Gdansk and SNG, a mixed company which is owned by the city of Gdansk (49 percent) and the French company, SAUR (51 percent). After taking over responsibility for water services, SNG developed a gradual and comprehensive program to encourage staff to retire voluntarily and enable them to create small enterprises. The company provided training for more than 1,500 participants in 70 different topics for this purpose during the period 1993-95. As a result of this successful strategy, Gdansk is one of the few Polish cities where the number of staff employed in water services has been reduced.

3.17 International experience (from countries such as Argentina, Chile and Mexico) shows that the labor adjustment process can be smoother than expected if effectively designed and implemented. A key lesson learned is the need for open and early dialogue and consultation with labor at the beginning of the PSP process to minimize labor opposition and avoid visible disputes that are not only costly in terms of time and political capital, but that also potentially deter investor interest. In the case of the Argentina Buenos Aires water concession, for example, labor unions were actively involved throughout the process. In the initial stages, this involved arrangements to explain to labor the rationale for reform, the costs and benefits of reform, and the costs of continued inaction for the enterprise and the community as a whole. It also involved an institutionalized role for unions through representation on the committee that was established to oversee the reform process.

3.18 A second element in a positive stance toward labor involvement in PSP is the provision of incentive schemes for employees to build labor support. These schemes have mainly included the reservation of shares (10 to 20 percent) for employees, often at preferential prices and with special financing arrangements. In Chile, for example, workers in all privatizations were offered five to ten percent of the company's shares at a discounted price. To pay for the shares, workers were allowed to borrow up to 50 percent of their severance pay, with the company promising to repurchase the shares at retirement at a value at least equal to the foregone severance payments. Workers have often gained through cashing in their shares on the secondary market as the value of the shares increased due to the investment and management changes being implemented by the private investor. The companies also
Water and Wastewater Services

gained as such schemes served to improve productivity and labor relations at the enterprise level.

3.19 Another frequently used incentive is the employment guarantee, where as part of the terms and conditions of sale the government required new owners to guarantee existing levels of employment for a specified time period. The advantage of such guarantees is that they postpone employment reduction, but in a number of cases enforcement problems have occurred. Moreover, use of such guarantees in sectors where overstaffing is especially severe can complicate the negotiations process and delay transactions. More importantly, it restricts the ability of the new investor to restructure and achieve the underlying objective of increased efficiency.

3.20 To minimize unemployment, many governments have developed the contracting out approach as an incentive mechanism, where employees are encouraged and helped to set up cooperatives and subcontract with the company for activities previously carried out by the enterprise. This approach has been successfully used in many sectors, including water. In Guinea, for example, the privatized water management company (SEEG) helped the 250 or so laid-off workers establish water cooperatives to provide services such as new connections, maintenance of canals and landscaping. The company provided training and logistical assistance, as well as initial working capital. As of August 1995, about 20 small enterprises had been formed—all of which subcontract with SEEG.

3.21 While determining desirable staffing levels, governments have imposed a ban on fresh recruitment. If some redundancy is necessary, then the principles for retrenchment should be established and legal advice should be made available to those persons affected; otherwise ‘echoes’ would continue to be heard. In addition, practical timeframes should be established for separation. Time should be invested in the planning of this work prior to consultation and agreement with the unions. The financial implications should be worked out including the identification of sources of finance to execute the plan.

3.22 Third, to minimize the political and social costs of retrenchment, governments have provided generous severance pay (over and above legally mandated requirements) to induce early retirement and voluntary departures and to cushion the social impact where forced layoffs are involved. Generous severance packages reduce excess labor in a politically acceptable manner, secure worker support, and mitigate the social costs of transition. There are two commonly associated problems with overly generous payments. The first problem is that since severance pay has to be high enough to induce workers to leave voluntarily, it can involve large up-front costs and financing problems, particularly where there are a large number of redundancies and where wages and benefits are high. Cost and financing problems can be overcome by: (1) improving the design of the severance package by linking it more carefully to workers’ characteristics; (2) offering a menu of options, including non-cash elements; and (3) cost-sharing with the private sector. The second problem of adverse selection (where the most productive workers are the first to leave) can negatively affect the performance of the firm. Establishing strict criteria for early retirement and “ring-fencing” of critical staff can help minimize this problem.

3.23 Finally, redeployment and retraining support can be provided to improve skills and to assist laid-off workers in reintegrating into the labor market. Many developed countries have used training and literacy programs and relocation assistance to increase labor mobility. But these programs are costly and involve a number of implementation difficulties, particularly in developing countries where most of the training is only available by state-run agencies that lack resources and market orientation. To overcome these problems, some countries have reached arrangements with private employers to give “on-the-job” training for employees retrenched as a result of PSP. These have been more effective, particularly when used on a pilot and targeted basis.

3.24 For Pakistan, there are several examples of labor activities as they relate to private sector participation in public service enterprises. Annex B sets out a brief review of four studies; the salient features are set out in Table 3.5 below. The major and most well documented case of the Kot Addu
Water and Wastewater Services

A power plant sets out lessons that should not be repeated: (1) labor was informed late in the process, (2) government didn’t obtain the confidence of the workers, (3) too much was given away since there was no retrenchment and all workers received an increase in salary, (4) the private sector was held “hostage” to the demands of labor, and (5) the private sector paid the full amount of labor costs mainly because it was a small cost relative to the total deal. The guiding principles that are included in the package of benefits for workers in state enterprises being privatized was reached in 1992 with the All Pakistan Enterprises Workers Action Committee (APSEWAC). The Privatization Commission, set up in January 1991, is the GOP agency most involved in the recent privatization initiative for the power and telecommunications sectors. Through the Privatization Commission, the Government can support 50 percent of compensation for employees. The Privatization Commission has not yet been involved in PSP initiatives in the urban environmental services sectors.
Table 3.4: Comparative Analysis of the Privatization Process of Four Public Services in Pakistan

<table>
<thead>
<tr>
<th>Privatized Entity</th>
<th>Kot Addu Power Plant</th>
<th>United Bank Ltd.</th>
<th>Northern Gas Pipelines</th>
<th>Southern Gas Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision to Privatize</td>
<td>n.a.</td>
<td>7/95</td>
<td>2/94</td>
<td>9/94</td>
</tr>
<tr>
<td>Status of negotiations with labor</td>
<td>completed</td>
<td>completed</td>
<td>stalled</td>
<td>not yet begun</td>
</tr>
<tr>
<td>Stage of negotiations during which labor becomes involved</td>
<td>advanced</td>
<td>early</td>
<td>early</td>
<td>TBD</td>
</tr>
<tr>
<td>Labor’s initial attitude toward privatization</td>
<td>negative</td>
<td>negative</td>
<td>negative</td>
<td>negative</td>
</tr>
<tr>
<td>Nature of protests/issues against privatization</td>
<td>ideological, anti-constitutional, nationalist, anticipated negative affect on prices, labor-related</td>
<td>fear of retrenchment/lower salaries, options for employees to purchase enterprise shares, regularization of temporary/casual employees</td>
<td>ideological, why sell to foreigners and not workers, financial, fear of retrenchment, process “bulldozed”</td>
<td>TBD</td>
</tr>
<tr>
<td>Privatization Commission activities with labor</td>
<td>address to plant workers, exchanges of correspondence, meetings with labor union</td>
<td>meetings with labor unions, letters</td>
<td>meetings with union, provision of labor agreements</td>
<td>TBD</td>
</tr>
<tr>
<td>Interruption in privatization process due to labor issues</td>
<td>yes, significant</td>
<td>no</td>
<td>yes</td>
<td>TBD</td>
</tr>
<tr>
<td>Mode of Labor Protests</td>
<td>written, demonstrations, physical danger to expatriates sensed, threat of hunger strike,</td>
<td>written, verbal by collective bargaining agent</td>
<td>written by Charter, verbal by collective bargaining agent</td>
<td>TBD</td>
</tr>
<tr>
<td>Labor demands considered as basis of negotiations</td>
<td>yes</td>
<td>yes</td>
<td>yes, completely rejected</td>
<td>TBD</td>
</tr>
<tr>
<td>Results of Negotiations: Increase in Pay</td>
<td>yes</td>
<td>not guaranteed</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Results of Negotiations: Non-Wage Benefits protected</td>
<td>no</td>
<td>n.a</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Results of Negotiations: Security of Service for regular employees</td>
<td>yes; no retrenchment to be allowed</td>
<td>yes; no retrenchment for one year following transfer of management to strategic investor</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Result of Negotiations: employees allowed to bid on enterprise shares</td>
<td>yes; 10% of private entities’ shares</td>
<td>yes, up to 20% of total existing paid-up capital</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Results of Negotiations: Security of Service for temporary/casual employees</td>
<td>no</td>
<td>yes, regularization of top 1,500</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Compensation for Employees</td>
<td>100% Buyer</td>
<td>50% Buyer / 50% Privatization Commission (?)</td>
<td>50% Buyer / 50% Privatization Commission (?)</td>
<td>TBD</td>
</tr>
</tbody>
</table>

Source: Consultant’s study on labor issues, Hagler Bailly, February 1996.

F. Investment Finance

3.25 Tapping substantial new sources of finance is—along with increasing operational efficiency—a prime motivation for attracting private sector participation. The success of this goal depends largely on the basic pricing and regulatory framework as discussed previously, which determines the future flow of
earnings and their stability. Governments would ideally like to eliminate their financial support to private projects; however, incomplete reforms, continued subsidies to consumers and the risks associated with the transition from public to private management require direct, targeted subsidies and indirect governmental financial assistance (i.e., performance guarantees for public agencies).

3.26 The reasons for seeking new sources of financing are evident. In the past, investments in water have been financed largely out of government budgets, supported in part by official lending from multilateral and bilateral agencies. The limits of governmental financing arise from the basic structural flaws in the traditional governmental mode of delivery. Tariffs have been low; financial and physical losses have been high, limiting operating profits and hence the ability to internally finance investment. The large, pent-up investment needs are the basis for the urgency in seeking substantial, additional financing from private sources. It is important, moreover, to note that the objectives of additional financing from non-traditional sources and greater operating efficiency are closely related. Government owned and operated water enterprises, especially if they are not financially and institutionally autonomous from central and local governments, are exposed to political interference and thus often face a multitude of objectives that conflict with operating on a sound financial basis. Private financing is also expected to bring the necessary financial discipline through prudential norms set by bankers or capital markets.

3.27 The majority of large, privately financed water and sanitation projects, like other privately financed infrastructure facilities including power plants, toll roads, ports, and airports, are structured around the cash-generating ability of the facilities. Concession agreements, that are common in the water industry, have the advantage of taking over the existing cash flow of an operating utility. To support new investments, however, the model has been the limited-recourse form of financing. Equity has been provided by major water services operators, mainly French and British privatized utilities. A key element of this financing is the provision of long-term debt. The high capital intensity of water projects and consumers' sensitivity to tariff increases indicate that the financing challenge for the water subsector is access long-term financing at reasonable rates. Long-term financing must be found to match the long-term payback period associated with the large investments required to rehabilitate and expand existing assets and construct new facilities. Additionally, for new investments such as BOT type projects, the long gestation period from financing for initial construction to operation and stable revenue generation may represent two or three years without debt repayment.

3.28 Key to financing limited-recourse projects is the acceptable sharing of risks among various parties. The central security behind investment financing is the concession agreement or ‘pay and take’ contract. In addition to critically scrutinizing these contractual arrangements, lenders and investors must pay careful attention to the quality of the regulatory and legal institutions that will be involved in ensuring that the obligations of all parties, as specified in the contractual documents, are met. Sovereign government guarantees which overlay or reinforce public contractual obligations, are typically provided; it is partly in this sense that the projects are said to be “limited-recourse” rather than “non-recourse.” Recourse to the government arises when the project’s failure to meet its financial obligations occurs on account of, for instance, the government changing the basic rules under which the project was constituted or inconvertibility of the local currency.

3.29 Because of the perceived risks in water and wastewater projects, thus far the sources of lending have been limited. Very few water projects have been considered “bankable” even in countries that are at investment grade or above. Foreign credit sources have been central to the financing of these projects despite major civil works and significant domestic sourcing of materials. The International Finance

---

18 A number of smaller facilities, mainly wastewater treatment plants have been financed on the balance sheet of the parent companies.
Water and Wastewater Services

Corporation (IFC) has been the major lender for Aguas Argentinas, a private sector company responsible for water supply and wastewater services in the capital area and 14 municipalities of Greater Buenos Aires. Somewhat surprisingly, the export credit agencies (ECAs) have also been prominent, as in the Izmit project in Turkey. The expectation had been that ECAs would be less prominent in water and sanitation projects than in power projects because of the limited foreign content of the investment in water and sanitation. However, the Izmit example shows that ECA funding may be sought even for construction financing. Local bank financing has occurred in Argentina for Aguas Argentinas, in Thailand, and especially in Malaysia, where pension funds have also been active.

<table>
<thead>
<tr>
<th>Project</th>
<th>Total Cost US $</th>
<th>Debt - Equity</th>
<th>Sponsor's Equity</th>
<th>Domestic Equity (% total equity)</th>
<th>Debt Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina: Buenos Aires</td>
<td>4 billion</td>
<td>62-38</td>
<td>85</td>
<td>47.4</td>
<td>IFC, Inter-American Development Bank, commercial loan</td>
</tr>
<tr>
<td>Australia: Prospect</td>
<td>133 million</td>
<td>80-20</td>
<td>20</td>
<td>-</td>
<td>Commercial loans</td>
</tr>
<tr>
<td>Malaysia: Indah</td>
<td>2.4 billion</td>
<td>33-67</td>
<td>100</td>
<td>75</td>
<td>Semi-public (public bank); syndicate of local commercial bank loans</td>
</tr>
<tr>
<td>Mexico: Puerto Vallarta</td>
<td>38 million</td>
<td>76-24</td>
<td>46</td>
<td>54</td>
<td>IFC, export credits, commercial loan</td>
</tr>
<tr>
<td>Turkey: Izmit</td>
<td>700 million</td>
<td>85-15</td>
<td>51</td>
<td>75</td>
<td>Export Credit, OECF (Japan)-soft loan, commercial loan</td>
</tr>
</tbody>
</table>

Source: Consultants' Estimates.

A recent study looked at key barriers to private sector investment in East Asia across a range of countries and a range of sectors, including the water and wastewater sector. The water sector was ranked as the sector with the highest perceived barriers to PSP by international investors for the four countries studied (China, Philippines, Thailand and Vietnam). The lack of buyer creditworthiness is seen as a major barrier in the water sector, because a number of models of PSP provide or sell services to government-owned utilities that are not financially strong. An unclear decision-making process that resulted in delays for private sector investment was cited as a major disincentive in the water sector. This barrier has its roots in the newness in the water sector of PSP initiatives vis-à-vis power and transport. Given investment experience in power and transport, the water sector remains fairly untried. Akin to this, another barrier perceived by private sector investors is the complete public sector dominance of the water subsector and the uncertainty surrounding regulatory issues involving the introduction of PSP.

The company has blocks of shares that are held by several international water companies, Lyonnaise des Eaux has been 'named' the operator.

Regulatory uncertainty and the absence of a comprehensive policy framework slow down progress towards full private sector investment participation. This was a lesson learned by Pakistan in the power sector. Once the Private Power Policy was announced in March 1994, a stream of solid international and local investors submitted a number of proposals for increased generation capacity. Private sector investors are also widening their investment opportunities into power distribution and transmission as a result of the wide, sweeping reforms.

3.31 In countries like Pakistan with underdeveloped capital markets, low coverage levels, high population growth, increasing expansion demand and weak institutions, private sector investors and operators do face high risk. For the water sector these factors are somewhat exacerbated by the slow build-up of revenue and the requirement that financing terms are typically long. PSP options that reduce this risk are sought. One model that reduces the private sector’s investment risk as much as possible is to use the cash generation capacity from the existing company. However, even in a well operated utility of a typical developing country, these resources usually cover operation and maintenance costs, and part of the capital expenditures; they cannot cover all investment needs for expansion of the water system and for wastewater treatment.

3.32 Under this scenario, even when the private sector achieves efficiency gains, it is important to accept in Pakistan that the public sector will likely maintain a financing role for years to come until local capital markets become more mature. The formidable task is to get the balance right between public and private financing. The private sector can reduce, not eliminate, the need for government financing and its obligation to develop financial mechanisms, strengthen capital markets and provide guarantees and subsidies when it is necessary. For example, the Izmit water project in Turkey is being financed in such a way that the ultimate credit will carry the indirect guarantee of the Turkish government. Though the municipality of Izmit signed the agreements with the private sector sponsor and is obliged to pay for water, provide subordinated loans in case of cash flow deficiencies and take over the foreign equity in a worst case scenario, all of the municipality’s obligations are backed by the government of Turkey at the federal level.

3.33 In summary, Pakistan private sector investment strategy for the water sector is at a low point for both country risk—Pakistan is below investment grade at B+—and the sector itself has considerable financing challenges. In the transition of water and wastewater financing from public to private sources, the initial step is the most crucial; the credibility of that shift through appropriate policy and regulatory measures, supported by an appropriate risk-sharing mechanism among the different parties, is the foundation from which more ambitious efforts grow. (See Box 3.2).
Box 3.2
The Evolution of Private Financing:
A Three-Step Process

The evolution of private financing typically follows a three-step process. The first step is limited-recourse financing, where the financing burden is borne partly by the government and partly by project sponsors but also to a significant degree by commercial borrowing secured by the cash flows and assets of the project—which may be either a discrete BOT or a concession for a distribution system.

The second step is taken when a stable set of rate-paying customers is established and some confidence established in the regulatory system. Then, once the basis for a sustainable water utility is created, substantial investments through retained earnings.

Though capital market instruments can in principle be used in the early stages, a more prominent role for the capital market, especially bond financing, is likely to develop as the track record of stable revenue sources become evident. Where private ownership of assets exists, equity markets can play an important role in disciplining management of water utilities. Governments can support the development of capital markets; examples include varying forms of credit enhancement.
4. STRATEGY FOR INTRODUCING PRIVATE SECTOR PARTICIPATION

A. Proposed Strategy

4.1 If structured carefully, PSP could help the federal and the provincial governments of Pakistan to meet two major challenges that water and wastewater services in Pakistani cities face: the need to improve the performance of services, based on existing assets, and the need to mobilize substantial investment resources for expansions in networks and the creation of wastewater treatment and disposal facilities. Meeting the first challenge is a prerequisite for meeting the second: without improvements in the quality of service, consumers will resist increased tariffs; and without increases in tariffs, it will not be feasible to mobilize investment resources.

4.2 Given the need for large investments in water and wastewater services and the generally poor performance of existing services, the concession model, combining both water and wastewater services, is recommended for Lahore, Faisalabad and Karachi. The evidence cited in Chapter 3 showed that a carefully prepared concession, accompanied by the reform of the policy and regulatory framework, could result in short-term improvements in service quality and technical efficiency, and improve prospects for mobilizing funds for investment through self-finance and private sources.

4.3 BOTs might seem attractive to policymakers and service managers because they make it possible to mobilize private investment finance for new components that can be isolated from existing operations. But unless the serious institutional and financial weaknesses in the operation of water distribution and sewerage systems are resolved, the impact of most BOT-type investments are limited to increasing capacity. Box 4.1 presents the key features of a BOT for wastewater treatment in Vallejo, Mexico, which provides treated wastewater to industrial users who pay the full cost of the service.

4.4 One of the WASAs expressed an interest in arranging a concession for sewerage only. This could be a viable option, only if it were accompanied by regulatory reform and the restructuring of the WASA so that it would function more independently and be held accountable for improving performance of the water supply services. Sewerage charges would have to be increased to cover the full cost of service, and the private operator would probably want to collect charges directly from consumers. In practice, this could prove to be complicated; and, there does not appear to be any justification for separating sewerage from water supply given the interdependence of the two.
Faced with rising water prices and potential water shortages in 1989, a group of companies in the Vallejo area of Mexico City, the largest industrial area in Mexico, sought an alternative to municipal water supplies. About the same time, the Mexican government decided to involve the private sector in water supply and wastewater treatment. As a result, 26 Vallejo companies organized a new, for-profit company, Aguas Industriales de Vallejo (AIV), to rehabilitate and operate an old municipal wastewater treatment plant. The number of operating personnel declined from 26 under public management to 17 under the private sector arrangement. Each shareholder company contributed equity based on its water usage (approximately $8,000 equivalent for each liter/second of water required) for renovation and plant operation totaling about $900,000 equivalent. No debt has been incurred, and shareholders expect to recover their initial investment in less than three years.

The Departamento del Distrito Federal (DDF) built the distribution network—at a cost of about $1.2 million equivalent—to link participating companies to the plant. DDF is responsible for maintaining the network. AIV operates the plant under a 10-year, renewable concession from the DDF. Under the concession agreement, AIV provides treated water to shareholder companies at a price equivalent to 75 percent of the price charged by the government. As the government’s price increases, AIV’s price rises automatically to maintain this relationship. In November 1991 the government charged 2,900 pesos/m³ (about $0.95), and AIV users paid 2,174 pesos/m³ (about $0.71), including pumping costs.

Many of the companies involved in the Vallejo project use the water for cooling or processing, and the government uses it for irrigation and to wash government vehicles at a central facility. The plant provides secondary-level treatment mostly for residential wastewater, which is sufficient for industrial purposes. Users receive treated water under a “take or pay” agreement. Companies are billed monthly and have eight days in which to pay. To date, there have been no problems with collections, and cash flow has been positive. AIV currently has a waiting list of companies wanting to join the project. The plant is scheduled to be doubled and additional companies will be permitted to join the venture. However, new equity shares will cost twice that the original shareholders paid. AIV has also been requested by the government to replicate the project at two more municipal wastewater treatment plants.

Source: International Finance Corporation, 1992
Box 4.2

Mexico City: Lessons of a Phased Approach to PSP

Recent experience in Mexico City with a phased approach to PSP demonstrates that unless phased arrangements are accompanied by changes in the policy and regulatory framework, progress in unlikely to be achieved.

The decision to invite the private sector to participate in the Federal District of Mexico City’s water supply services in 1993 was motivated by the need to reduce physical leakage and to improve cost recovery. The arrangements were structured in three phases, during which the private companies—one in each of four zones—were expected to gradually assume more responsibility. During the first two phases, the contractors were to be compensated on a fee-for-service basis. They would begin to assume commercial risk (by retaining a portion of tariff revenues collected from consumers as their only compensation) only in the third phase. The Federal District retained responsibility for production and the contractors assumed responsibility for distribution operations.

During Phase I, the contractors were to map the distribution system, determine its condition, measure the quantity of unaccounted for water, identify repairs required to prevent water losses, identify illegal connections, and install meters for all users. It was expected that Phase I would last about 3 years. In Phase II, the contractors were to develop and implement a billing and collection system. Phase II was also to be a trial period to gauge the response of users to metering and rigorous billing and collection. To protect the contractors, investments in the first two phases were underwritten by the Mexican public works bank, which opened a line of credit to the city that it could use to pay the contractors, in the event of liquidity problems. In Phase III, the contractors were to purchase bulk water from the city and take on full responsibility for distribution and commercial activities, including maintenance and rehabilitation of the distribution network. It was envisioned that compensation would be linked to tariff collections. Ultimately, however, the Mexican law on water services would have to be amended to make it possible for private providers to take a commercial position. The decision to go forward with Phase III would depend on consumer acceptance of higher tariffs and the stricter billing and collection procedures to be introduced in Phase II.

Progress with these arrangements fell short of expectations for a number of reasons. Nothing was done to revise the institutional and regulatory framework to encourage efficiency and allow the services to become autonomous and financially viable. Resources remained severely constrained and the meters that the contractors were supposed to install were not procured in adequate numbers. Even where meters were installed, billing was still based on a flat rate rather than on volume. Thus, the contracts resulted in only marginal improvements and after three years it was not possible to progress to Phase II as originally hoped.

4.6 The GOP has already demonstrated its interest in PSP in other sectors—such as in power, telecommunications, ports and railways—and has a key role to play in promoting PSP in urban water services. Since water and wastewater services outside of Islamabad are a provincial responsibility, the provincial governments will be responsible for developing strategies for PSP and creating the required regulatory frameworks. The Sindh Government has already begun to examine the possibility of a concession for water services in Karachi. Private operators have expressed an interest in such an arrangement, though the specific conditions of private investment remain to be determined. The Government of Punjab has also expressed interest in PSP for Lahore WASA. The key issues are likely to be tariff levels and labor redundancies. These need to be addressed as part of a comprehensive effort to reform the regulatory arrangements. Proposals for regulatory reform in Pakistan are outlined in the following sections. While these reforms are essential for PSP, most are desirable whether PSP is introduced immediately or not.
B. Proposed Institutional Reforms: Separation of Policymaking, Regulation, Corporate Governance and Service Management

4.7 In Pakistan, there is a notable lack of clarity in the delineation of policy-making, regulatory, corporate governance and managerial roles. Separation and distinction among these roles is a prerequisite for improving the efficiency of services. Services are not likely to become financially viable and efficient unless managers are faced with incentives to improve services and have adequate autonomy in day-to-day management decisions to pursue improvements. In this regard, the governing boards of water services should not be a back door for political interference. Finally, regulation needs to be fair, transparent and stable so that service providers know what their rights and obligations are and are held accountable in a consistent and fair manner. This requires that the regulator be independent from political interference linked to short-term political considerations or special interests. Tables 4.1, 4.2 and 4.3 suggest an allocation of roles among the various actors aimed at achieving the following objectives:

(a) clarification of the policy role of the federal and provincial governments
(b) creation of independent technical water supply and sewerage services regulatory authorities
(c) increase in managerial autonomy and financial viability of water supply and sewerage service providers
(d) clear delineation of the roles of corporate governing bodies vis-à-vis management.

Table 4.1:
Policy Role of the Federal and Provincial Governments

<table>
<thead>
<tr>
<th>Policy role:</th>
<th>Level of Government:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of eligibility criteria for investments to be financed by, or guaranteed by, central government, or from any external lenders</td>
<td>Federal</td>
</tr>
<tr>
<td>Establishment of policies and strategies to achieve better water resources management and environmental standards</td>
<td>Provincial</td>
</tr>
<tr>
<td>Establishment of broad objectives and guiding principles for sector development, for example: * principles of financial viability and economic efficiency * policy that services be broadly accessible to consumers and appropriate to their ability and willingness to pay * use of market mechanisms and competition to the extent feasible, to promote efficiency.</td>
<td>Provincial</td>
</tr>
<tr>
<td>Decisions regarding the creation of a regulatory body and the restructuring and/or decentralization of service provision</td>
<td>Provincial</td>
</tr>
<tr>
<td>Subsidy policy (objectives, eligibility criteria, source of funding) for private and public consumers</td>
<td>Provincial</td>
</tr>
<tr>
<td>Appointment of head of regulatory authority, subject to established criteria for technical competence, length of term, etc.</td>
<td>Provincial</td>
</tr>
<tr>
<td>Creation of autonomous water and sewerage companies (except where service is municipal responsibility)</td>
<td>Provincial</td>
</tr>
</tbody>
</table>
**Table 4.2:**

**Responsibilities of Proposed Provincial Water Services Regulatory Commissioners**

- Regulate utility aspects of all water and wastewater services—public or private—serving more than 1000 households;
- Award licenses for water and wastewater services;
- Establish and enforce procedures for award of contracts for private operation and/or investment in water supply and sewerage services;
- Establish and enforce rules for service quality, client relations, and to obligate companies to provide access to, and of consumers to connect to service;
- Review and monitor execution of investment programs and financing plans with regard to economic efficiency, financial viability, service objectives, customer willingness to pay;
- Establish/approve tariffs levels in accord with pre-specified rules regarding inflation, investment costs and encouragement of efficiency;
- Review and monitor execution of investment programs and financing plans with regard to economic efficiency, financial viability, service objectives, customer willingness to pay;
- Regulate/approve tariffs levels in accord with pre-specified rules regarding inflation, investment costs and encouragement of efficiency;
- Resolve disputes between service providers and consumers, between/among service providers;
- Coordinate with and participate in formulation of other types of regulation, at both federal and provincial government levels, which directly affect water supply and wastewater services;
- Advise provincial policy makers regarding sector objectives, investment funding, subsidy policy, etc., and
- Demand and receive information, compare performances and publish data.

**Table 4.3:**

**Roles of Corporate Governing Bodies and Management**

<table>
<thead>
<tr>
<th>Corporate Governing Body (Karachi's Board, Development Authorities in Lahore and Faisalabad)</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provision of strategic policy direction</td>
<td>Management of staff (e.g., hire, fire, reward, discipline, assign, reassign, etc.), subject to laws regarding fairness, etc.</td>
</tr>
<tr>
<td>Approval of annual operating budgets submitted by management</td>
<td>Technical decisions regarding the operation and maintenance of physical resources, consistent with accepted standards of good practice</td>
</tr>
<tr>
<td>Approval of management’s proposals for investment programs and tariff changes prior to sending them to the Water Services Regulatory Authority for regulatory review and ultimate revision or approval</td>
<td>Allocation and management of financial resources within approved budgetary limits, subject to accepted standards of good financial management, transparency, etc.</td>
</tr>
<tr>
<td>Appointment of managers (and removal for failure to perform)</td>
<td>Commitment of funds and signing of contracts, subject to legal standards, etc.</td>
</tr>
<tr>
<td>Monitoring of financial and technical performance Monitoring of adherence to service, environmental and health standards (Enforcement will be carried out by the respective regulatory authorities.)</td>
<td>Preparation of annual budget for submission to board</td>
</tr>
<tr>
<td></td>
<td>Preparation of investment proposals in accord with board approved strategy</td>
</tr>
<tr>
<td></td>
<td>Preparation of proposals for changes in tariffs for submission to board</td>
</tr>
<tr>
<td></td>
<td>Regular reporting of performance indicators to board</td>
</tr>
</tbody>
</table>

---

21 The term “provincial” as used in this table (b) includes the federal government in so far as legislation relevant to Islamabad is concerned.
4.8 Annex D presents a detailed structure for independent provincial regulatory authorities for water and wastewater services. There are a number of precedents for such a commission-style, industry specific, regulatory institution in Pakistan, including the National Electric Power Regulation Authority (NEPRA) to be established under the NEPRA Ordinance (Ordinance XLIV of 1995) and the National Mass Transit Authority (NMTA) to be set up under the NMTA Ordinance (Ordinance XLIX of 1995). Annexes E and F set out examples of existing regulation and regulatory authorities in the telecommunications and power sectors for Pakistan.

C. Enhanced Role of Consumers

4.9 Consumers should play an enhanced role in the restructured sector for several reasons. First, services should become more consumer oriented—that is, aimed at satisfying the needs and desires of consumers in accordance with their willingness to pay. This is a key element in ensuring the financial and economic viability of services. Secondly, one of the regulator's objectives is to motivate consumers to use services efficiently. A key tool for achieving this goal is the tariff. Consumer education is also a powerful tool as an accompaniment to tariff policy. Good information about the cost of water services, the impact and cost of wastewater pollution, and the health benefits associated with good hygiene help consumers to make appropriate decisions about the volume of water they use and how they use it. Finally, feedback from consumers is a very cost-effective and powerful source of information for the regulator in judging the quality of service.

4.10 The service operators should be required to publish key performance indicators regularly, provide convenient consumer complaint mechanisms and consult consumers regarding major new investments through willingness-to-pay surveys and public forums. The commission should establish its own mechanisms, such as a formal consumer committee and surveys, for assessing opinion about services. In some instances, consumer education could be a joint effort of the regulatory commission and the service providers, in all cases it should be coordinated to ensure the consistency of key messages.

D. Required Changes in Existing Laws

4.11 To support the development of private sector participation in Pakistan's urban water and wastewater sector, it is recommended that attention be given to a detailed policy review leading to the drafting and enactment of legislative amendments and framework laws as outlined below.

Minimum Requirements

4.12 A number of legal reforms must be undertaken. These are desirable to improve the existing public services and are absolutely essential to introducing PSP. Without them, attempts to introduce long-term risk capital into urban centers stand a high chance of failure. The minimum required changes are:

(a) the enactment of requisite legislation expressly permitting private sector participation,

---

22 Some concern has been expressed with regard to the proliferation of regulatory authorities in Pakistan; the Privatization Commission (Pakistan) is considering the possibility of integrated regulatory agencies to cover a range of privatized public utilities.

23 The introduction of a framework law in each province and for Islamabad which enabled—but did not prescribe—all forms of private sector participation, including the appropriate regulatory jurisdiction, would clearly hasten and strengthen the process.
Water and Wastewater Services

(b) the establishment of unambiguous jurisdiction by a single institution within each province and in Islamabad over the regulation of water and wastewater services within each province and Islamabad;

(c) the establishment of that regulator independent of the operational and financial functions of concessionaires, of day-to-day government influence and of other vested interest groups; and

(d) the establishment of a single set of procedures and principles for adjudicating appeals.

Most Effective Option: A Provincial “Framework” Law

4.13 As outlined above, for each province and Islamabad, a framework law should establish an independently-constituted Water Services Regulatory Commission responsible for the regulation of all major providers of water and wastewater services within the relevant territorial jurisdiction. The introduction of a framework law for the water sector represents the most comprehensive and effective option. It would require the greatest degree of political and legislative commitment in each province and federally.

4.14 The framework law would provide the basis for all forms of private sector participation in the water and wastewater subsector. It would provide the legal underpinnings for the Water Services Regulatory Commission, from which detailed regulatory arrangements, such as price control mechanisms and disclosure regimes, could then be developed. This law would constitute a comprehensive provincial legislation which would establish the appropriate provincial regulatory framework governing the delivery of water and wastewater services generally within the province or, at the very least, for the major cities within the province.

4.15 Such a law could achieve simultaneously a number of prerequisites to the successful introduction of private capital, e.g., the establishment of an independent commission to regulate long-term concession contracts and the clarification of appropriate appeal procedures and principles. It would also underline each provincial government’s commitment to private sector participation in water-related services, which itself would reduce the regulatory and political risks perceived by prospective investors.

4.16 The law should specify the following basic provisions as regards the proposed commission:

(a) jurisdiction over all private water supply licenses over a certain size threshold, including the monitoring, enforcement and contract amendment of long-term concessions;

(b) the commissioners to have no other vested interest in the water and wastewater subsector;

(c) the commissioners to be appointed for staggered, fixed terms of about five years;

(d) institutional objectives or duties that ensure that water-related service providers can finance their functions, and that consumer interests are protected;

24 Independence of the regulator could be reinforced by permitting the contracting out of some regulatory functions to independent outside experts.

25 A related matter pertains to the lack of any legislative framework in Pakistan pertaining to requirements regarding specific long-term concession contracts and BOO/BOT schemes. Following the setting of appropriate policies, provincial legislation in this respect would undoubtedly be of assistance as well.

-33-
Water and Wastewater Services

(e) funding through a levy on the revenues of those operators falling under its jurisdiction;

and

(f) major decisions of the commission to be appealable to the appropriate court or an independent arbitration panel.

5. STRATEGY FOR ARRANGING TRANSACTIONS

A. Bringing the Parties to the Negotiating Table

5.1 Political Commitment. Recent experience in countries as disparate as Argentina and Senegal has demonstrated that a key factor contributing to the success of efforts to attract PSP is political commitment and leadership at the highest levels. The reform and restructuring necessary to create the conditions for PSP imply profound changes—resistance to change is strong. Vested interests can be counted on to mount powerful campaigns to prevent change. Political commitment is needed to neutralize opposition and gain the confidence of the majority of the population who stand to gain from the change. The successful arrangement of the concession for Buenos Aires, for example, was due in part to strong political commitment at the level of the president. In several other places, a great deal of resources have been wasted on preparations for PSP that stalled when political authorities failed to adopt the required policy reforms (e.g., tariff increases) or build the political coalitions needed to create a credible institutional framework and gain the support of labor unions. Since in Pakistan, water and wastewater services are the responsibility of provincial governments, a strong, collaborative relationship between the central and provincial governments may be needed to enhance the confidence of potential private partners.

5.2 Labor. In many countries, and particularly in low-income countries, the political, social and financial difficulties that have resulted in labor opposition to PSP has slowed down the process. The perception by the private sector investor that labor problems could result in delay is a significant issue. One of the major disincentives acknowledged by the private sector are high time costs in finalizing transactions. The Kot Addu Power Project is a case in point for Pakistan. On the side of the workers involved, the real consequence of labor shedding is the potential loss of benefits and privileges. A clear strategy is needed that sets out the best practice to mitigate labor concerns, if this is a consequence of the chosen PSP policy. Best practice as shown in Buenos Aires in the water supply concession indicated that early consultations with labor unions and their involvement in decisionmaking proved invaluable to the successful negotiation of the concession arrangement.

5.3 Adequate Preparation and Appropriate Targets. Among the other key factors which contribute to successful efforts to arrange PSP are the availability of reliable information on the condition of assets and market conditions and the establishment of realistic targets to be achieved during the life of the contract. While the targets should represent substantial improvements over existing service levels, they must be reasonable in light of existing conditions. The information on existing conditions should be
adequate to allow potential bidders to evaluate the cost of achieving the targets. Lack of information or unreasonable targets is likely to discourage bidders or result in excessively costly service. The engagement of reputable international consultants to assist in the preparation of background documentation and draft contracts contributes to their credibility and helps to place governments in a strong position to negotiate with private operators.26

5.4 Remuneration Potential. A final precondition for attracting the interest of the private sector is that the potential rewards of the contract be adequate to warrant the cost of bid preparation and the risks inherent in the contract itself. Tariffs should be adequate to allow for financial viability and a credible process for the adjustment of tariffs should be in place. Large tariff increases will be required in Karachi, Faisalabad and Islamabad whether PSP is introduced or not. It is strongly recommended that such tariff increases be implemented prior to the effort to arrange PSP. This will give potential bidders a strong signal that the provincial governments are committed to a reasonable tariff policy. In addition, it will make it possible for the efficiency gains of PSP to be more obvious.

5.5 A concession for a very large metropolitan area where demand is growing and willingness to pay has been demonstrated is usually very attractive, but smaller cities may also be very attractive for strategic reasons—that is, if they place the operator in a favorable position to win additional contracts in the region. An operator that already has a concession in a large metropolitan area will be interested in smaller towns in the same region, because it can take advantage of existing capacity. The advantages of allowing an established operator to expand to other cities must be balanced against the loss of contestability which may result. (See the discussion of competition below.)

B. The Selection of Operational Contractors

5.6 The way the contract is awarded has an impact on its viability. To be politically viable, the process must be perceived as transparent and fair. To be viable in the operational and financial sense, it should result in the selection of a qualified and trustworthy operator; the cost of the process should not be excessive. Recent experience provides a few lessons.

5.7 Competition vs. Direct Negotiation. A competitive bidding process provides transparency and for this reason is often favored, particularly when PSP is first introduced. It is also widely believed that competition results in the lowest price for service. This is probably true if competition is strong and there is no collusion among bidders. Competition for contracts for support services is likely to be strong because the services are fairly routine, the cost of preparing bids is low, the number of service providers is potentially large and the contracts have a short duration, so that competition is frequent. In contrast, competition for the riskier forms of PSP may be limited. The preparation of a bid for a large concession can be quite costly—US$1 million or more—so competition is not likely to be strong unless the contract is particularly desirable. Only a limited number of international water service companies qualify for these contracts or can afford the cost of the bidding process. In the case of smaller and medium-sized cities, competition is likely to be limited unless qualified local or regional companies exist. The emergence of local, private water operators should be encouraged.

5.8 Finally, operational and concession contracts are long in duration, so competition is not repeated frequently. Even if competition for an initial concession is strong, sooner or later the public authorities will have to negotiate tariff adjustments or changes in service targets and investment programs. At the

---

26 The provision of reliable information to prospective bidders regarding the state of the assets is likely to facilitate PSP. There is a trade-off however that very large spending on the part of public authorities to obtain such detailed information could end up being wasted as serious bidders will, in any case, carry out their own due diligence.
5.9 Thus, the feasibility of competitive bidding for operational contracts and concessions may be limited in a number of cases. In some places, an alternative may be to negotiate such contracts directly. Public authorities must therefore develop the capacity to negotiate effectively and gain the confidence of the public. This requires access to good information, expertise and negotiators whose integrity is unquestioned. The involvement of reputable consultants to assist public authorities can be useful. Transparency in such negotiations is essential.

5.10 If an appropriate regulatory framework is established, the larger cities in Pakistan are likely to attract enough interest to make competition fairly stiff. However, competition, however, may be apparent, but not real. Studies have shown that more interested bidders give a better result. Whether competition for the market is feasible or not, regulators can promote competition or contestability in other ways that may have more long-lasting effects. Pakistan represents a large market, and should be able to support numerous private water and wastewater operators. A single, large operator should not be allowed to control the entire market or a large portion of it. The number of contracts a single operator may win should be limited. This may result in higher bids in the short-term, but the benefits of greater contestability could lead to lower costs in the long-term, if regulators take advantage of it. Implementing such a policy would require coordination of the selection policies among the provinces.

C. The Selection Process

5.11 The following recommendations are based on experience with bidding, selection and award of concessions and contracts for the operation of large, urban water supply and sewerage services. The process for selecting small firms to provide support services may be somewhat different, but the principles are very similar.

5.12 Prequalification. The purpose of a prequalification process is to ensure that bidders meet minimum qualification criteria for the contract. The main advantages of conducting prequalification are to avoid the cost of bidding by non-qualifying firms, the cost of evaluating those bids and to confirm the interest of qualified bidders. Further, the process reduces the number of competing bidders and therefore increases the chances of the remaining bidders, which in turn strengthens the bidders’ interest in the process. Prequalification should be kept simple and should not normally require the preparation of a detailed proposal or commitment of specific individuals. It may not be necessary for small service contracts. The criteria for qualification should be specific and limited in number. Typical criteria include:

(a) minimum indicators of financial performance and solvency;
(b) requirement that bidders be actively engaged in water supply or wastewater services similar to those to be provided under the contract;
(c) minimum parameters for market served, volume of water produced or treated in the potential bidders’ existing operations; and

27 Further, in the case of Karachi, the potential size of the concession—say 1 million connections—may limit the number of companies that would have the experience and current capacity to bid for what would be the world’s largest water concession.

-36-
(d) experience providing services in an environment similar to that of Pakistan.

5.13 **Bidding Documents.** The documentation provided to qualified bidders should provide precise information on the bidding and selection process to be followed and on the nature of the services to be provided. It is very difficult to evaluate bids that are aimed at providing different types or quality of service. To ensure that the evaluation of bids is transparent and objective, bidders should be given a clear indication of the minimum standards and parameters (e.g., for the number of new connections to be created, reductions in water losses, percentage of wastewater to be treated) that the contractor would be expected to meet, along with time frames for each parameter. To enhance clarity regarding the terms of the ultimate contract, it is highly desirable to include a draft contract in the bid documents.

5.14 **Two-Stage Bidding Process.** The purpose of a two-stage bidding process is to separate technical bids from financial bids, so that the final selection process is objective. If alternative methodologies and technologies could potentially be applied to achieve the desired results, each bidder should be allowed to detail its approach in a technical proposal. If there is little flexibility for varying technical solutions, no detailed technical proposal is needed. Each bidder should simply indicate that it is committed to fulfilling the draft contract, indicating any modifications it proposes to enhance efficiency and feasibility, without changing the minimum specified parameters. Technical bids are evaluated and rated as satisfactory or not satisfactory. All bidders whose technical bids are judged satisfactory are then asked to submit a separate financial bid. In the case of service contracts, the financial bid may be in the form of a price per unit of work to be completed. For operational contracts, it is usually in the form of a tariff per unit of water delivered to the consumer. In the case of BOT, the bid usually includes a fixed minimum fee linked to a minimum volume of water to be treated, and another fee to be applied to additional, optional volumes at the discretion of the buyer. Selection is based entirely on the objective evaluation of the financial bids, and the contract is awarded to the lowest bidder.

5.15 **Alternative Selection Process.** The advantage of allowing bidders to propose the level of service to be achieved and time frames is that it encourages innovation and may result in a superior solution. The disadvantage is that, if the bidders are not expected to meet the same performance parameters, the evaluation of bids is less objective. This approach is best applied to contracts which are to be negotiated directly, rather than to competitive selection.

**D. Managing Political Risks**

5.16 If the government wishes to attract private investors to water and wastewater services, it will need to take steps to reduce perceived political risks that may threaten the profitability of investing in Pakistan. There are a number of strategies for reducing risks. A few are discussed below.

5.17 **Specificity vs. Discretion in the Regulatory Process:** Specificity in regulation refers to the precision with which rules, such as price formulas and service targets, are established in advance. Specificity usually provides comfort for a private firm that is entering uncharted waters because it establishes some predictability. On the other hand, it is desirable for a regulator to have some discretion to correct unforeseen problems or take advantage of opportunities to improve efficiency. Regulatory discretion may also work in favor of the private operator by protecting it from the negative effects of unforeseen events. There will always be some scope for interpretation, so some discretion is inevitable, but the balance between specificity and discretion should be calibrated carefully and in light of the local context.

5.18 If a country’s regulatory experience is thin and the credibility of regulatory processes is not well established, it is probably best to specify regulatory parameters with precision and limit discretion initially.
in order to attract the private sector and establish credibility. To the extent that the regulator’s limited discretion is exercised wisely and fairly, credibility will increase, and with it, the scope for greater regulatory discretion in the future.

5.19 **Fairness and Transparency in Enforcement:** The private sector needs to know what the rules are, be confident that laws and contracts will be enforced fairly and that they will not be changed suddenly. To the extent that this is not the case, the risks to a private operator, and therefore the cost of private involvement, will be higher. It is therefore important that the processes by which rules will be enforced and conflicts resolved are clearly established, and that they are respected. If the local judiciary lacks credibility or has little precedent experience with enforcing contracts for PSP in public services, risks can be reduced by agreeing to use private or international arbitration to settle disputes.

5.20 **Direct Access to Revenues:** Private service providers prefer not to depend on a public authority for payment of services. They usually prefer to have direct access to consumers for the collection of revenues. If consumers are not accustomed to paying the full cost of service, or if the nature of the service to be provided is such that payment cannot be collected directly from consumers (e.g., wastewater treatment services which are to be provided in bulk to a public water company), then special arrangements to ensure payment, such as guarantees, may be needed.

5.21 **Sovereign Guarantees:** A sovereign guarantee is an instrument under which a private contractor is protected against certain political risks, for example the risk that political authorities might not respect commitments regarding tariff adjustments or that a public company might not pay the service provider. The World Bank guarantee facility enables governments to provide such sovereign guarantees. In the event the government fails to respect its commitment, and after other approaches to resolve the problem have failed, the World Bank’s guarantee would become callable.

5.22 **Joint Ventures and Local Investors:** Joint ventures between international private operators and local entrepreneurs in order to reduce country risk is recommended. Local partners contribute considerable country knowledge and experience to project preparation.

### 6. NEXT STEPS

6.1 The sector study workshop that was held in July 1996 in Islamabad to review, discuss and finalize a draft of this document moved current thinking within the government forward on several fronts. First, the workshop served to educate the participants about (1) issues involved in PSP at various levels of government (i.e., federal, provincial and municipal) and (2) experience in PSP in urban environmental services internationally and PSP in other sectors in Pakistan. Secondly, the workshop served to generate ideas about moving PSP forward in Pakistan. The participants, who were divided into working groups according to their organizational affiliation (i.e., federal government, provincial government, utility group), tackled questions relating to three issues involving PSP: regulation, cost of services and labor. Annex G provides a full summary of the workshop results. Differing points of view were drawn from the three groups. However, common ground was found along with support for further dialogue on private sector issues.

6.2 Discussion on the topic of **regulatory issues** was particularly enlightening for the workshop participants who eventually agreed on the need for a regulatory authority, despite skepticism on how independent such a regulator could be in Pakistan. They also concluded that the regulator should be located at the provincial level and that clear legal powers would need to be given to the regulator.
Water and Wastewater Services

6.3 Labor issues were discussed in the context of the need for a decline in staffing levels and in the ratio between the number of employees and water connections. The group concluded that unions should be brought into the discussions early whenever private sector initiatives are being considered. Regarding retrenchment, the utility group indicated that studies would be required to determine what staff skill mix was required and the numbers of staff needed to operate efficiently.

6.4 Discussion on issues related to the cost of services centered on the principle that the cost of service has to be reflected in the tariff or price of the service in order to attract serious private sector interest. Agreement was also reached in principle that access to water is a public right. (The government advocated universal coverage.) However, the three groups were at an impasse regarding the disconnect that exists between the need for tariffs to reflect the cost of services and the affordability of increased tariffs and the willingness of consumers to pay for these services.

6.5 A second workshop was held in Karachi in May 1997. The finalized sector study served as the background document at this workshop. The discussion centered on the water and wastewater sector only. The audience for the workshop was widely based and included participants from government, utilities, the private sector, user groups and NGOs. The theme of the workshop was the regulation of privatized water utilities. Discussion centered on two issues, one was the operation and independence of regulators and the second, was the role of the regulator in protecting the consumer. An outcome of the workshop was the request for more information on the PSP process. The more information made available on “best practice” in the regulation of water utilities under private sector management and ownership, the smoother will be the transition to more active PSP in the sector. The report of the workshop is in Annex G.

6.6 Progress toward substantial private sector participation in water and wastewater services in Pakistan can move forward on two fronts, at the federal and provincial levels. If following the successful models of the power and telecom sectors, Pakistan would require a central authority at the federal level to act as a strong sponsor and advocate, coordinate efforts and deal with national issues, such as international investors. Future efforts then should focus on the creation of a small, specialized cell at the federal level that would promote private sector participation in the provision of water-related services nationwide. In parallel, private sector participation can be promoted at the provincial level on a project-by-project basis whereby regulation would be based on specific transactions, such as the possible concession arrangement for water services in Karachi. For both options, the most immediate requirement is the clarification of the legal basis that will permit the provision of “core” water and wastewater services by the private sector.

---

With respect to Karachi’s possible water supply and wastewater concession, several recent water supply concessions are being negotiated with minimal regulatory change through the concession contract. Recent examples include: (1) Manila, Philippines - the regulatory department for water and wastewater private sector intervention will be initially within the existing public body and there will be a minimum of legislative change; and (2) Trinidad - a similar situation exists as Manila, with a two stage model in place—first stage regulation within the contract and second stage—a more comprehensive legislative change.
PART TWO: SOLID WASTE MANAGEMENT

7. INTRODUCTION

7.1 This part of the study reviews the current environment in Pakistan’s solid waste subsector in a developing country context and introduces various strategies for expanding private sector participation in solid waste services. It includes an analysis of the contextual issues affecting private sector participation at four levels (federal provincial, municipal, and service provider) for regulatory, financial, institutional and technical issues. Preliminary recommendations focus on the conditions that should be met to optimize private sector participation, solid waste management activities most amenable to private sector participation and privatization methods appropriate to each activity and that are appropriate to Pakistan’s needs for solid waste management. The technical, legal and financial aspects of Pakistan’s solid waste system were analyzed from data collected initially in four Pakistani cities: Islamabad, Lahore, Faisalabad and Karachi. Data from Peshawar, Quetta, Sheikhupura, Hyderabad and Rawalpindi were added later to make the study more complete. Key solid waste managers and health officers assisted the World Bank mission in collecting data and observing existing systems and facilities in the cities visited.

7.2 This study is intended to support Pakistan’s efforts to increase private sector participation in solid waste services and achieve the following objectives: (1) to obtain private sector investment financing in equipment and facilities; (2) to introduce appropriate technical systems; (3) to introduce efficient management and operating practices; and (4) to develop competitive forces that motivate productivity gains.

8. SUBSECTOR CONTEXT

8.1 Urban Waste Quantities. Urban solid wastes include residential, commercial, industrial, institutional, and tourist wastes, as well as wastes from streets sweeping and cleaning open drains. Urban areas of Pakistan are generating about 25,000 tonnes per day of municipal solid waste, based on data available from planning efforts in Pakistan and waste quantities typical for low-income developing countries, as indicated in Table 8.1 below.

8.2 Mixed municipal solid waste quantities in major urban areas are generated in the ranges shown in Table 8.1, and are strongly correlated to economic productivity (i.e., GDP). Residential waste quantities per capita are strongly correlated to income level.

8.3 Waste Characteristics. Pakistan’s solid wastes are very wet due to a high vegetable content. Furthermore, they are particularly low in combustible materials such as plastic, paper, textile, cardboard, wood and bone. Table 8.2 shows how municipal solid wastes of developing countries compare with the waste of high-income, industrialized countries.

29 Construction/demolition debris and yard waste are not typically included in the estimated quantity of municipal solid waste, as it is highly variable and skews quantity assessments. Also, construction/demolition debris and yard waste do not require disposal standards that are as stringent to meet as other solid waste standards.
Table 8.1
Global Perspective on Refuse Quantities

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>LOW INCOME COUNTRY</th>
<th>MIDDLE INCOME COUNTRY</th>
<th>HIGH INCOME COUNTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIXED URBAN WASTE - LARGE CITY KG/CAPITA/DAY</td>
<td>0.4 to 0.65</td>
<td>0.5 to 0.95</td>
<td>0.7 to 1.8</td>
</tr>
<tr>
<td>MIXED URBAN WASTE - MEDIUM CITY KG/CAPITA/DAY</td>
<td>0.3 to 0.55</td>
<td>0.4 to 0.75</td>
<td>0.6 to 1.5</td>
</tr>
<tr>
<td>RESIDENTIAL WASTE ONLY KG/CAPITA/DAY</td>
<td>0.2 to 0.45</td>
<td>0.3 to 0.6</td>
<td>0.5 to 1.0</td>
</tr>
</tbody>
</table>

Notes:
1. Country categorization by income is based on 1992 GNP data from the 1994 World Development Report. Data is based on a wet, "as received," condition (i.e., not oven dried).
2. For purposes of this table, a medium city is assumed to be 500,000 to 1,000,000 residents; a large city is one above 1,000,000 residents.

Source: Sandra Cointreau-Levine

Table 8.2
Global Perspective on Refuse Characteristics

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>LOW INCOME COUNTRY</th>
<th>MIDDLE INCOME COUNTRY</th>
<th>HIGH INCOME COUNTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUTRESCIBLES(%)</td>
<td>40 to 85</td>
<td>20 to 65</td>
<td>20 to 50</td>
</tr>
<tr>
<td>PAPER (%)</td>
<td>1 to 10</td>
<td>15 to 40</td>
<td>15 to 40</td>
</tr>
<tr>
<td>PLASTIC (%)</td>
<td>1 to 5</td>
<td>2 to 6</td>
<td>2 to 10</td>
</tr>
<tr>
<td>METAL (%)</td>
<td>1 to 5</td>
<td>1 to 5</td>
<td>3 to 13</td>
</tr>
<tr>
<td>GLASS (%)</td>
<td>1 to 10</td>
<td>1 to 10</td>
<td>4 to 10</td>
</tr>
<tr>
<td>RUBBER,MISC.(%)</td>
<td>1 to 5</td>
<td>1 to 5</td>
<td>2 to 10</td>
</tr>
<tr>
<td>FINES (%)</td>
<td>15 to 60</td>
<td>15 to 50</td>
<td>5 to 20</td>
</tr>
<tr>
<td>MOISTURE (%)</td>
<td>40 to 80</td>
<td>40 to 60</td>
<td>20 to 30</td>
</tr>
<tr>
<td>DENSITY (KG/C.M.)</td>
<td>250 to 500</td>
<td>170 to 330</td>
<td>100 to 170</td>
</tr>
<tr>
<td>LOWER KCAL/KG</td>
<td>800 to 1100</td>
<td>1000 to 1300</td>
<td>1500 to 2700</td>
</tr>
</tbody>
</table>

Note: Country categorization by income is based on 1992 GNP data from the 1994 World Development Report published by the World Bank. Waste data is based on a wet, "as received," condition (i.e., not oven dried).

Source: Sandra Cointreau-Levine

8.4 The quantity of industrial hazardous waste generated in most Pakistan cities is probably small. However, it is not separated at the source of generation and requires special methods for collection, treatment and disposal.

8.5 There are roughly two hospital beds per 1,000 residents in the cities of Pakistan. Hazardous medical wastes (e.g., infectious dressings, sharps) are estimated to be generated at the rate of at least 0.15 kg per bed per day, and up to 0.7 kg per bed per day. Therefore, for the urban population of 45 million, up to 63 tonnes per day of special medical wastes are generated in Pakistan's cities. Hazardous medical waste is a problem in every city of Pakistan. Source segregation is not practiced, except in only a few isolated cases, such as the Shaukat Khanum Memorial Cancer Hospital. Bloodied rags, used syringes, surgical wastes and pharmaceuticals are openly discarded with general hospital wastes, except in a few cases where burning in pits or small furnaces is practiced. Infectious dressings and sharps are readily discarded improperly.
Solid Waste Management

visible in every municipal dump and often are recycled by the informal sector. The significant risk to public health necessitates special methods for collection, treatment and disposal.

A. Collection Services

8.6 Solid waste collection by government owned and operated services in Pakistan's cities currently averages only 50 percent of waste quantities generated (from 40 percent in Hyderabad to 90 percent in Islamabad). About 12,500 tonnes per day (about 38,000 cubic meters per day) are uncollected. However, for cities to be relatively clean, service levels should be at least 75 percent of waste quantities generated. To bring the existing collection service level up from 50 percent to about 75 percent would require a capital investment of about Rs 4.5 billion. Demand for services will grow by about four percent per year as urban populations grow. Demand will also grow as per capita waste generation rates grow at the anticipated rate of one to three percent per year based on increased domestic production and income.

8.7 Sweepers and collection laborers provide service to middle and upper income households and establishments on an informal basis in return for tips given periodically. For sweepers in premium neighborhoods, this can amount to an additional income of up to 50 percent of their salary. Recovery of recyclables provides additional income of up to 50 percent of salary. However, there is no income incentive to provide comparable service to the poor or to clean streets and open areas.

8.8 The shortfall in collection services is largely attributable to a shortage of vehicles and related communal containers for the type of system being used. Lack of cooperation of residents also constrains implementing a more productive system. Additionally, most vehicle crews and cart workers are not working their full shift.

8.9 Appropriately, the methods of solid waste pre-collection and collection are highly varied in Pakistan's cities. In the slow-moving traffic of Faisalabad, where there are poor roads and numerous animal drawn carts, the use of farm tractors with trailers loaded by wheeled loaders is cost-effective. On the other hand, for Islamabad's broad streets and laid out developments, use of compaction trucks which mechanically unload from communal containers is cost-effective. In Lahore's old city, narrow streets and congested development justify the use of sweepers for pre-collection and bullock carts for collection, followed by truck transfer. Countrywide, the productivity of solid waste collection vehicles will decrease as traffic increases and distances to disposal sites increase.

B. Disposal Services

8.10 All residential, industrial, institutional, and commercial solid waste streams are mixed. Only construction and demolition debris are kept separate during the collection and transportation stages, although they are co-disposed with the other solid wastes. Disposal is by open dumping, primarily on flood plains and into ponds (apparently formed by either perched water or high groundwater), at sites which typically have less than one year of capacity. Few official disposal sites are used on a long-term basis. Most of the cities have no system of recording all loads of refuse as they are delivered to the disposal site, so clandestine dumping on open lots or paid landfill of privately owned land is substantial.

8.11 Methods of disposal are limited by waste characteristics. Incineration, for example, is not technically viable, except in central metropolitan areas and industrial estates, because the solid waste in Pakistan is too wet and too low in combustible materials to be able to self-sustain combustion. Composting is technically viable because the waste has a high vegetable content; however, the market price which is affordable to farmers is not likely to sustain substantial supply of compost.

-42-
Modern sanitary landfill is considered the most cost-effective of the treatment technologies, as indicated in Table 8.3 below. For minimal upgrading of existing dumps to controlled landfills, investments in equipment to spread, grade and cover the waste with daily soil cover are needed. Such an upgrade would require an additional capital investment in equipment of about Rs 0.60 billion. Eventually, implementation of new sanitary landfill would require capital costs (without interest) from Rs 1.13 to Rs 2.03 billion, including provision of landfill equipment.

Table 8.3: Disposal Costs by Alternative Technologies

<table>
<thead>
<tr>
<th>LOW INCOME COUNTRY</th>
<th>MIDDLE INCOME COUNTRY</th>
<th>HIGH INCOME COUNTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVE. GNP (per capita per year)</td>
<td>370</td>
<td>2,400</td>
</tr>
<tr>
<td>OPEN DUMPING (per m.t.)</td>
<td>0.5-2</td>
<td>1-3.</td>
</tr>
<tr>
<td>SANITARY LANDFILL (per m.t.)</td>
<td>1-5</td>
<td>3-10</td>
</tr>
<tr>
<td>TIDAL LAND RECLAMATION (per m.t.)</td>
<td>3-15</td>
<td>10-40</td>
</tr>
<tr>
<td>COMPOSTING (per m.t.)</td>
<td>5-20</td>
<td>10-40</td>
</tr>
<tr>
<td>INCINERATION (per m.t.)</td>
<td>40-60</td>
<td>30-80</td>
</tr>
</tbody>
</table>

Table Notes:

2. Composting costs in 1990 in Delhi, India and Bandung, Indonesia, by labor intensive systems of lowest costs were about $7 per metric tonne. Composting costs in Bangkok, Thailand for a slightly more mechanized system are about $36 per metric tonne.
3. Incineration costs in 1992 in Surabaya, Indonesia (without pollution control) were about $43 per metric tonne., for refuse at a calorific value of 1100 kcal/kg at the source and 1200 kcal/kg after five days of drying in the pit. Fuel must be added daily, even during the dry season and even after five days drying in the pit, in order to sustain combustion.
4. Incineration costs in 1992 in Japan were about $90 per metric tonne, for refuse at a calorific value of 1600 kcal/kg at the source and 2000 kcal/kg after source segregation of dry wastes. No fuel is required as the refuse is well above the 1300 kcal/kg minimum year-round to sustain combustion.

Source: Sandra Cointreau-Levine, 1996

Transfer Service Needs. Assuming that at least 20 percent of the waste would need to be transferred, instead of hauled directly in solid waste collection vehicles, transfer facility capital costs (without interest) would be from Rs 0.77 to Rs .86 billion, including provision of transfer trucks and trailers.

Public compliance with municipal bylaws is poor: littering and clandestine dumping is evident. Solid waste collection services are hampered by improper discharge of household wastes. Furthermore, the continuation of rural immigration of uneducated people to urban areas will negatively affect solid waste collection services. Such immigration adversely affects vehicle productivity because it takes longer to collect waste that has been improperly discharged from households.

Cost analysis conducted for Lahore shows that Pakistan's cities pay a high price for allowing their residents to behave in a completely undisciplined manner regarding their solid waste. For example, for a direct haul distance of 10 km, a rear loading compactor collecting waste piles on the ground costs Rs 1,101 per tonne compared to Rs 860 per tonne when loading from households—a difference of 28 percent. When the same compactor collects waste from the small communal containers provided by the government, it costs about Rs 1,290 per tonne compared to Rs 860 per tonne when utilizing a rear loading compactor that loads from dustbins—a difference of 50 percent. When these communal containers are
filled by sweepers with handcarts, instead of being directly filled by residents, the cost is even higher: Rs 1,860 per tonne (i.e., Rs 1,290 per tonne for the compactor plus Rs 570 per tonne for the hand cart), compared to the cost of Rs 860 per tonne for the compactor loading from dustbins—a difference of 116 percent. Public education is necessary, backed up with enforcement of existing bylaws.

8.16 If full service were provided, Pakistan's urban staffing ratio of solid waste operational personnel to total population, which is 2 : 1000, would be about optimal for full service using labor-intensive systems. However, given that service levels are only 50 percent, the staffing ratio relative to population served is really 4 : 1000, which is quite high. Solid waste managers, however, are burdened with unproductive and undisciplined operational staff. They are not free to terminate employment, except in extreme cases and through burdensome procedures. Since the labor supply comes largely from a small Christian minority, labor unions representing solid waste workers are strong and able to resist efforts to increase work loads. Municipal salary scales for skilled staff, such as drivers and mechanics, are significantly below market scales. Managers are not free to use monetary incentives to award good performance. Therefore, underutilized labor, rather than redundant labor, is characteristic of the system.

8.17 Depending on the city interviewed, nearly all solid waste employees are permanent. Hiring, however, has been frozen in many cities and reduction through natural attrition is slowly occurring. From 5 percent to 20 percent of the employees within the solid waste public sector will reach retirement age within the next five years. Because of the shortfall in service in nearly all of the cities interviewed and the anticipated levels of retirement, the private sector could handle from 20 percent to 40 percent of the waste in most cities without having any dispute with labor over redundancy.

C. Legal Context

8.18 Municipalities and union councils have clear ownership of the solid wastes placed outside for collection. They also are clearly given authority to contract for any services under their responsibility, including solid waste management. Whether they are permitted to award franchises to private companies is not clear, because it could be perceived as giving away responsibility. They are free, however, to lease equipment and facilities and sell assets.

8.19 At the federal level, laws and regulations for environmental protection provide general goals but only limited specific discharge or design standards. The private sector is hindered by an inability to determine the standards to which it will be held accountable because of insufficiencies in the regulatory environment. Thus, the private sector is constrained in its development of technical solutions to waste treatment and disposal.

8.20 At the provincial level, the enforcement of existing environmental laws is lacking. Understaffing, lack of precise standards, lack of information, limited transport and monitoring equipment, inadequate sanctions and corruption undermine enforcement; thus, disreputable waste generators and transporters practicing clandestine or unsafe disposal have a competitive economic advantage.

8.21 At the municipal level, sanctions for littering and clandestine dumping are too small to provide disincentives; processing of arrests is slow due to heavy case loads and the low priority assigned by magistrates. Staffing focuses heavily on sweeping and collection labor, with only minimal staff for inspection and education. Enforcement is also hampered by insufficient numbers of transport units. The willingness of the private sector to undertake the risk of meeting public cleansing contractual specifications will be hampered unless public cooperation is achieved through compliance with an appropriate regulatory environment at the municipal level.
8.22 Service providers are also insufficiently regulated and enforcement of municipal bylaws is poor. License programs for all private waste haulers of construction debris, infectious medical waste, and hazardous industrial waste do not exist. Furthermore, waste generators are not obliged to work with only licensed haulers.

8.23 In time, as the regulatory framework of Pakistan develops along with the trends of other countries in the region, Pakistan's cities will be obligated by the new environmental protection laws to provide safe disposal of solid waste.

**D. Institutional Context**

8.24 Existing institutional arrangements for solid waste management are fragmented, leading to inefficiencies and lack of accountability for overall city cleanliness. Staffing at the professional and skilled levels is inadequate. There are too few managers, field supervisors and inspectors. Most cities have no engineers within the solid waste service. Instead, the key professional staff are physicians and trained sanitarians. None of the cities have a unit for data collection and planning activities designed to rationalize operations. Essentially staff are focused on the day-to-day job of removing solid waste from the city's main streets and responding to a flood of complaints and political pressures.

8.25 At the federal level existing institutional arrangements are not conducive to providing the necessary technical assistance to Pakistan's provincial and municipal governments. The environment ministry lacks a unit of well trained and experienced staff to develop the sector's knowledge base on a countrywide basis.

8.26 Similarly at the provincial level, organizational and institutional arrangements for solid waste services are insufficient. Given the high profile and cost of the solid waste sector, it is surprising that solid waste management is not organized under a free-standing department or authority.

8.27 Solid waste services in most cities are separated by function. Most cities divide the solid waste functions of street sweeping and small drain cleaning from solid waste collection, transport, disposal and fleet maintenance. Solid waste offices do not include civil and mechanical engineers to work alongside sanitary officers. Solid waste managers are typically placed under a medical officer, whose responsibilities include pest control, vaccination and food quality control. Maintenance and repair of the fleet typically is conducted separately in the municipal workshop. Accountability for performance and cost is thus fragmented and inadequate.

**E. Financial/Budgetary Issues**

8.28 The federal government and other donors provide grants to finance capital development projects at the municipal level. High duties and taxes are charged to the private sector for specialized refuse collection and treatment equipment.

8.29 At the provincial level, contracting policies do not encourage multi-year obligations that match the period of depreciation. Multi-year municipal obligations with private parties are needed where capital investments are involved. For public hospitals, budgets do not presently include an allocation for source segregation, special transport and safe disposal of hazardous medical wastes.

8.30 Solid waste management consumes from 15 percent to 35 percent of recurrent budgets in Pakistan's cities. Recurrent budgets reflect only salaries, fuel and parts. Furthermore, long-term budget planning is not conducted; such planning would enable a steady program of resource expansion and
renewal. If the private sector provides greater service, recurrent budgets would need to cover total costs and therefore be increased twofold or threefold. This would not be a real increase in overall costs, but only a shift in expenditure from capital development budgets to recurrent budgets, since the private sector would charge for capital investment within their service fee structure.

8.31 Based on cost analysis conducted for this study, the recurrent cost for government collection and sweeping service, reflected in municipal budgets cover only direct operational staff salaries, fuel and repairs, and amount to about Rs 600 per tonne of waste collected. Total costs which additionally include hidden costs of depreciation, debt service, preventative maintenance, administration, social benefits, insurance, vehicle registration, would actually be about Rs 1,200 per tonne. If proper solid waste disposal in controlled landfills with daily soil cover were provided, total costs would increase to about Rs 1,400 per tonne. If the private sector were involved in providing service, all costs would need to be directly covered in the recurrent budget. While costs would appear to increase, the reality would be that hidden costs are exposed. Chart 8.1 provides an illustration of the breakdown of costs into elements of depreciation, salaries, consumables, etc., for Pakistan's solid waste management systems.

8.32 Hidden subsidies to government give the false impression that government costs for solid waste services are low. For example, interest rates for private sector borrowing from government development banks and commercial banks currently range from 13 percent for low-risk depositors to 20 percent for high-risk unknown applicants. On the other hand, municipal capital is obtained through grants or at concessional interest rates from five percent to 12 percent. Customs and value-added taxes paid by the private sector are high, adding about 105 percent to the estimated value of the equipment. On the other hand, municipalities pay only about 50 percent for customs and value added taxes.

8.33 None of the cities interviewed have a system of cost recovery through direct user charges. For full cost recovery and renewal, tariff levels of one to two percent of income would be needed. In Faisalabad, there are special tariffs for only the largest hotel and largest hospitals. Faisalabad recovers some of its costs by selling the manure which it collects.

8.34 Municipalities are restricted in their award of contracts for solid waste services. For contracts over Rs 6 million, provincial government approval is needed; for contracts over Rs 100 million, federal approval is needed. For economies of scale, a five year contract for five solid waste collection vehicles to operate in one zone would involve a total cost of at least Rs 100 million per year. Delays and corruption costs for approvals at each level of government could be a constraint to privatization.

8.35 Municipalities are free to implement user charges for solid waste services. However, it is politically difficult to do so without some general policy directive from a higher level of government to seek cost recovery.
Chart 8.1

COST/TONNE OF SOLID WASTE SYSTEMS
PAKISTAN

BREAKDOWN OF COSTS

- Depreciation
- Personnel
- Consumables
- Miscellaneous

Collection ■ Transfer ■ Landfill ■ Sweeping

1 SUS = 30 RUPEES
PRIVATE SECTOR SERVICE

Source: Sandra Cointreau-Levine
8.36 Budgets of service providers are maintained on a cash flow basis, showing only salaries and consumables, and are fragmented among several departments with roles in solid waste management. As a result, costs are unknown. Service levels are also not known, and there is no accountability for performance and related costs on a per tonnage basis. Solid waste costs are covered through general revenues. There are no segregated reliable revenues that are free of political interference. Recurrent budgets are inadequate for covering capital depreciation and debt service costs, and would need to be amplified for private sector participation to be implemented.

F. Technical Issues

8.37 Several technical issues undermine efforts to promote an increase in private sector participation in solid waste management. At the federal level, for example, information on waste quantities and appropriate techniques of private sector involvement have not been compiled. Such information should be disseminated to municipalities, so that they avoid duplication of study and planning efforts. Also, solid waste managers do not have a forum to share information and experience on a regular basis, such as a national solid waste association and journal.

8.38 Feasibility studies of technical options and costs (e.g., for transfer stations and controlled landfill) have also not been conducted at the provincial level except in isolated cases involving donor projects. Furthermore, the lack of facilities to treat/dispose of hazardous industrial wastes and infectious medical wastes at this level results in unsafe co-disposal with general municipal solid waste. Through licensing or concessional private sector arrangements, regional facilities could be developed to serve multiple generators of these special wastes.

8.39 Neither municipalities nor service providers conduct studies to adequately assess issues involving solid waste management. At the municipal level, the lack of complete census data hinders all planning and analysis efforts designed to rationalize the cost of solid waste systems. Service providers also do not regularly record, weigh, or conduct time-and-motion studies of their solid waste collection activities. Thus, quantities generated, collected and disposed are not known. Total costs also are unknown. Without baseline costing data, it is not possible to assess whether bids offered for private sector service are cost-effective.
9. PRIVATE SECTOR PARTICIPATION IN THE PROVISION OF SOLID WASTE SERVICES IN PAKISTAN

9.1 Major cities in Pakistan are already experimenting with private sector participation in solid waste management. In the Pakistani cities contacted, private haulers provide waste collection services on a private subscription basis with various private developments (e.g., cantonments, industrial estates, airports, ports and commercial establishments). Also, construction/demolition debris is transported through private subscription. Some individual households and neighborhood organizations subscribe for pre-collection service with private entrepreneurs with hand carts or donkeys. The private haulers working on this basis are not licensed or monitored by municipal government, so clandestine dumping on open lands unnecessarily occurs.

9.2 In all of the cities, about one percent of the total urban population is informally engaged in collection of recyclables. These are itinerant "waste pickers" who collect recyclables door-to-door and sort through waste left curbside or on open lots. They earn only subsistent level incomes from this effort. Whole families work together in an attempt to earn sufficient income to survive; the children are seldom educated. In limited instances, some of these waste pickers become involved in pre-collection service for a fee. As non-governmental organizations and communities move toward more self-financed pre-collection, these waste pickers could increasingly take on the role of full service of waste collection and recycling. Presently, there is no program of registration for these waste pickers. Furthermore, they have not organized into cooperatives, unions or micro-enterprises. This lack of legitimacy and organized status hinders their development potential.

9.3 In most of the Pakistani cities contacted, private workshops are regularly awarded small individual repair jobs, after consideration of competitive local quotations. Some cities (e.g., Karachi) also lease vehicles from the private sector to augment their refuse collection fleets. In addition to the above experiences, private sector collection of solid waste has been conducted in specific private developments, such as the Quetta Railway Colony (since 1975) and the Lahore Cantonment Cooperative Housing Society (since 1990) through one-year contracts.

9.4 In interviews for this study, government officials strongly conveyed their interest in involving the private sector in service delivery. Officials are concerned about their lack of knowledge on how best to proceed with privatization. They are also concerned about political intervention in the procurement and actual performance of the private sector services, as well as government's ability to supervise and pay for private sector services. More than 25 solid waste managers in government and the private sector were interviewed to determine the perceptions of Pakistani solid waste managers experienced in privatization. Advantages cited by those experienced in privatization include:

- the contractor is free to hire and fire employees on the basis of performance;
- the contractor does not have time-consuming, bureaucratic procedures for procurement and other decision-making activities;
- the contractor can seek commercial loans when needed;
- the contractor has flexibility in determining working hours and has the ability to assign work on a task basis; and
• the contractor can hire qualified technical and skilled people of the ability desired.

9.5 These interviews also revealed the following concerns of solid waste managers not experienced in private sector involvement in the provision of solid waste services:

• political intervention in the award, performance and payment;

• involvement of auditors who may seek to debit pensions for any perceived government losses;

• high private sector costs due to the lack of subsidies and the desire for profit;

• strikes and other forms of opposition from government labor unions;

• lack of a government policy to help deal with labor redundancy;

• lack of government guidance on how to conduct privatization;

• lack of privatization demonstration efforts which they could replicate; and

• potential for the lowest bidder hired through competitive bidding to fail in providing reliable service.

9.6 When dealing with private companies, customs officials reputedly do not accept the written receipt of purchase as the value of the equipment and estimate duties on an arbitrary and more elevated perception of value. Private companies, when they finance vehicles with commercial loans, are required to carry comprehensive insurance coverage, which annually costs about five percent of the vehicle replacement value. Government does not carry such insurance, but has a hidden cost for replacement or repair. Private sector solid waste collectors in Pakistan are required to pay income taxes of five percent; usually, these taxes are deducted from the payment by the client.

9.7 Aside from hidden subsidies to government, there are other cost differences between private and public service in Pakistan. The private sector anticipates a profit margin of 7 percent to 15 percent. Private companies are paying higher salaries to drivers, mechanics and supervisors than government, by 20 percent to 50 percent, although worker salaries are sometimes lower by as much as 20 percent. Benefit and administrative costs in the private sector are lower than government’s. On the other hand, consumables such as fuel, engine oil and parts are purchased on the open market by both government and the private sector for comparable prices.

9.8 Risks to the private sector in Pakistan include: (1) environmental regulatory requirements and enforcement are undefined; (2) costs of obtaining contracts, collecting contract payments, customs and taxes are unknown, all of which could limit profit potential; (3) market demand for service and related revenue potential is not well developed; (4) senior management personnel change frequently; and (5) government has a history of arbitrary contract termination and payment default. All private firms interviewed for this study have experienced significant delays in obtaining their payments, by several months. The cost of client-related corruption to obtain contracts and payments is said to add up to 20 percent of contract value in this sector. Corruption costs which are not related to the client, such as the costs for importing equipment, registering the company, and negotiating taxes, can add as much as
another 20 percent. Risk assumption for these problems is expensive. High risk leads to higher interest rates charged by commercial banks and extra costs of comprehensive insurance.

9.9 Clearly, the private sector is more productive than government. Workers tend to be younger; usually about 80 percent fall in the age group of 20 to 40 years old. The ‘down’ time of their vehicles is measured only in a few short hours, versus days and even weeks for government vehicles. The private sector collects more waste per truck and per person during a work shift than government service providers.

9.10 Nevertheless, the risks and hidden subsidies to government, as well as unproductive costs related to hidden marketing and client relations, appear to lead to higher private sector costs—by as much as 25 percent. Simply arranging for the private sector to have an exemption for vehicles used in refuse collection that is comparable to government exemption would lower the overall cost per tonne of private sector service by 25 percent to 30 percent and make it comparable to government exemption. Creating a transparent, competitive and accountable procurement process and ensuring that the private sector works without political intervention likely would lead to private sector costs which are lower than government's costs.

9.11 Islamabad's Privatization Experience. In 1991, Islamabad tendered its first service contract in solid waste collection and street sweeping. In 1996, Islamabad will award a contract for a fourth zone to be handled by the private sector. Currently each zone can be served by one compaction truck. The private contractors lease compaction trucks from the city, with city drivers, workers, fuel and maintenance provided. Leasing arrangements also oblige the government to provide a vehicle on a reliable basis and limit political intervention in the use of equipment for other activities. The contractors provide management, supervision, and sweeping/pre-collection labor; thus enabling more productive performance from the city's fleet and labor force.

9.12 Because no significant investment is involved, the contractual agreement is awarded on a one-year basis, with annual renewals if performance is satisfactory. This arrangement apparently works in Islamabad because the solid waste collection fleet is adequate to meet full service needs. Also, the fleet is comprised of highly specialized compaction trucks which cannot be misused in transport of other materials. Furthermore, Islamabad has a shortage of labor to provide full service; thus, there has been minimal labor resistance to the privatization effort.

9.13 Lahore's Privatization Experience. In 1995, Lahore tendered its first service contract in solid waste transfer and long haul for disposal. The private contractor provides leased equipment, fuel and labor for this activity and is paid on a per tonnage basis to handle all of Lahore's waste. Vehicle numbers and times for each load are recorded at the transfer depots, at two points along the transport route and at the disposal site. Every two weeks, about 15 trucks are weighed to determine representative performance quantities for payment purposes. The agreement is for six months, with the potential for a multi-year (five plus years) agreement to be awarded after this initial demonstration period so that investments can be made and depreciated appropriately. The contractor has experienced two problems: (1) the city has not delivered all of the collected refuse to the transfer depots as promised, and (2) payments have not been made in a timely manner. If these problems are not soon corrected, the privatization effort could fail.

9.14 In 1996, Lahore arranged to lease 50 open tipper trucks for a two month, city-wide clean-up effort prior to hosting the World Cup. The city anticipated tendering multi-year service contracts to collect solid wastes from one or two zones immediately after the games were held; by doing so the private sector could begin work in relatively clean zones and user charges (e.g., a waste tax) could be justified to city
residents. Additionally, Lahore has requested proposals toward a possible concession contract to design, build, own and operate a regional incinerator.

9.15 Karachi's Privatization Experience. In 1995, Karachi pre-qualified firms for two anticipated privatization efforts. In one, a private company will be awarded a service contract through competitive tender and will utilize newly purchased, government-owned wheeled loaders to clean up clandestine refuse heaps. In the other, a private company will be awarded a management contract and will utilize government equipment, drivers, laborers and superintendents to collect waste and provide public cleansing of one large zone (covering a population of about two million). The management contractor is expected to provide appropriate incentives and disincentives to substantially increase the productivity of existing government resources in the zone. Because only modest capital investment will be required from the management contractor, only annual contractual agreements are anticipated. Payment will be on a tonnage basis, following implementation of weighbridges at transfer stations.

9.16 For infectious medical wastes, Karachi recently purchased and is awaiting delivery on two regional incinerators of ten tonnes per day capacity each. They are considering the operation of these incinerators by the private sector.

10. PRIVATIZATION ACTIVITIES AND ISSUES COMMON TO SOLID WASTE MANAGEMENT: INTERNATIONAL EXPERIENCE

10.1 Privatization in solid waste management may involve any of the following activities:

- provision of vehicles or heavy equipment by lease/rental agreement
- pre-collection of residential solid waste by private subscription (with handcarts or animals)
- collection of construction/demolition debris by private subscription (with transporters)
- collection of industrial wastes from large factories by private subscription (with transporters)
- collection of commercial wastes from large hotels, markets or stores by private subscription (with transporters)
- collection and final disposal of infectious medical wastes from hospitals by private subscription with private hospitals and concession or service contract with public hospitals
- collection of general municipal wastes from entire neighborhoods by service contract (i.e., where city pays the private company) or franchise (i.e., where user pays private company) or management contract (i.e., where city pays for management of government equipment and staff)
- sweeping or cleaning of streets or open areas by service contract
- repair of city solid waste equipment by service contract on an as needed basis (e.g., daily) with small workshops
- repair of city solid waste equipment by service contract on a long-term basis (e.g., annual)
- conversion of waste to compost by service contract or concession
- operation of a city transfer station and long distance hauling system by service contract or concession
- operation of a city disposal site by service contract or concession
- mining of a city disposal site for compost soil conditioner by concession
- collection of user charges or waste taxes by concession with bill collection agents, water authority, or electrical utility

10.2 During the 1980's the thrust of multilateral and bilateral development agencies' efforts in solid waste management was to upgrade municipal government's, solid waste collection systems. In the first
half of the 1990's, the emphasis changed to implementing safe disposal, often requiring the use of private contractors for operation. Currently, the emphasis (in projects such as for Colombo, Sri Lanka) is on development of sanitary landfills through DBOO (design, build, own, operate) or DBOT (design, build, own, transfer) concession agreements, following the highly successful model developed in Hong Kong.

10.3 Table 10.1 (page 54) provides a partial listing of privatization initiatives taken in developing countries in the past decade.

A. Maintaining Private Sector and Government Balance

10.4 The key to successful privatization is the development of service arrangements that are long enough to allow depreciation of investment, large enough to allow economies of scale, and competitive enough to encourage efficiency. Until the private sector within a developing country has developed, it is strongly recommended that government maintain a significant percentage (say 50 percent) of the overall collection service area during the first five years of privatization. Thereafter, to maximize contestability and minimize the potential for collusion, government should continue to maintain at least 25 percent of the overall collection service area. Ideally, contestability and therefore competition will be increased if the number of different private sector operators can be maximized. Collusion can be controlled through the adoption of adequate selection mechanisms.

10.5 These guidelines were well implemented in Bogota, Colombia, where initially (1990) only one zone of service was awarded to a contractor, with government continuing service in about two-thirds of the city. Over the next several years, eventually there were three contractors in three zones, with government operating in only about one-third of the city. To minimize the potential for collusion and cooperation, only international corporations in joint ventures with local firms were pre-qualified to bid. The contractors and the Bogota government service zones were comparably monitored by an independent consulting company, to optimize contestability. In 1993, because government did not improve service performance in its zones, even with the phased increasing contestability, the city converted to an entirely privatized system, which now has seven zones with four private concessionaires. User fees are collected by these companies through a unique company in which each is a stockholder.

30 Alternately, a credible mechanism must be in place to ensure that operators will get paid for the residual value of their investments at the end of their contracts.
### Table 10.1:
**Who Is Doing What In Privatization?**

<table>
<thead>
<tr>
<th>Commercialization of the Solid Waste Management</th>
<th>Franchise for Pre-Collection:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agency:</strong> Abidjan, Ivory Coast</td>
<td><strong>Agency:</strong> Lima, Peru</td>
</tr>
<tr>
<td>Bandung, Indonesia</td>
<td>Bamako, Mali</td>
</tr>
<tr>
<td>Lagos, Nigeria</td>
<td>Faisalabad, Pakistan</td>
</tr>
<tr>
<td>Onitsha, Nigeria</td>
<td>Conakry, Guinea</td>
</tr>
<tr>
<td>Conakry, Guinea</td>
<td></td>
</tr>
<tr>
<td>Lima, Peru</td>
<td></td>
</tr>
<tr>
<td><strong>Commercialization of Composting:</strong> Ho Chi Minh City, Viet Nam</td>
<td>Franchise for Collection: Accra, Ghana</td>
</tr>
<tr>
<td></td>
<td>Bogota, Colombia</td>
</tr>
<tr>
<td><strong>Public/Private Partnership for Collection</strong></td>
<td>Franchise for Collection of Recyclables: Cairo, Egypt</td>
</tr>
<tr>
<td><strong>Agency:</strong> Riga Latvia</td>
<td></td>
</tr>
<tr>
<td><strong>Agency:</strong> Medan, Indonesia</td>
<td></td>
</tr>
<tr>
<td><strong>Agency:</strong> Surabaya, Indonesia</td>
<td></td>
</tr>
<tr>
<td><strong>Service Contracting for Collection:</strong> Caracas, Venezuela</td>
<td>Franchise for Construction Debris Recycling: Riga, Latvia</td>
</tr>
<tr>
<td>Santiago, Chile</td>
<td></td>
</tr>
<tr>
<td>Sao Paulo, Brazil</td>
<td></td>
</tr>
<tr>
<td>Rio de Janeiro, Brazil</td>
<td></td>
</tr>
<tr>
<td>Tema, Ghana</td>
<td></td>
</tr>
<tr>
<td>Jakarta, Indonesia</td>
<td></td>
</tr>
<tr>
<td>Semarang, Indonesia</td>
<td></td>
</tr>
<tr>
<td>Kuala Lumpur, Malaysia</td>
<td></td>
</tr>
<tr>
<td>Montego Bay, Jamaica</td>
<td></td>
</tr>
<tr>
<td>Dar-es-Salaam, Tanzania</td>
<td></td>
</tr>
<tr>
<td>Banjul, The Gambia</td>
<td></td>
</tr>
<tr>
<td>Abidjan, Ivory Coast</td>
<td></td>
</tr>
<tr>
<td><strong>Service Contracting for Street Sweeping:</strong> Surabaya, Indonesia</td>
<td>Franchise for Fee-Based Cost Recovery : Surabaya, Indonesia</td>
</tr>
<tr>
<td><strong>Agency:</strong> Lahore, Pakistan</td>
<td></td>
</tr>
<tr>
<td><strong>Service Contracting for Transfer:</strong> Lahore, Pakistan</td>
<td></td>
</tr>
<tr>
<td><strong>Service Contracting for Sanitary Landfill:</strong> Buenos Aires, Argentina</td>
<td>Concession to Build, Own, Operate Sanitary Landfill: Colombo, Sri Lanka</td>
</tr>
<tr>
<td>Bogota, Colombia</td>
<td></td>
</tr>
<tr>
<td>Casablanca, Morocco</td>
<td></td>
</tr>
<tr>
<td><strong>Contracting for Repair and Maintenance:</strong> Pandang, Indonesia</td>
<td>Concession to Build, Own Operate Compost Plant: Semarang, Indonesia</td>
</tr>
<tr>
<td>Semarang, Indonesia</td>
<td></td>
</tr>
<tr>
<td><strong>Contracting for Performance Monitoring:</strong> Buneos Aires, Argentina</td>
<td>Open Competition for Waste Picking at Disposal: Most cities</td>
</tr>
<tr>
<td><strong>Agency:</strong> Montego Bay, Jamaica</td>
<td></td>
</tr>
<tr>
<td><strong>Agency:</strong> Colombo, Sri Lanka</td>
<td></td>
</tr>
<tr>
<td><strong>Agency:</strong> Dar-es-Salaam, Tanzania</td>
<td></td>
</tr>
<tr>
<td><strong>Agency:</strong> Banjul, The Gambia</td>
<td></td>
</tr>
<tr>
<td><strong>Agency:</strong> Concession to Build, Own Operate Sanitary Landfill: Colombo, Sri Lanka</td>
<td></td>
</tr>
<tr>
<td><strong>Agency:</strong> Concession to Build, Own Operate Compost Plant: Semarang, Indonesia</td>
<td></td>
</tr>
<tr>
<td><strong>Agency:</strong> Most cities</td>
<td></td>
</tr>
<tr>
<td><strong>Agency:</strong> Most cities</td>
<td></td>
</tr>
<tr>
<td><strong>Agency:</strong> Most cities</td>
<td></td>
</tr>
<tr>
<td><strong>Agency:</strong> Most cities</td>
<td></td>
</tr>
</tbody>
</table>

Source: Various.
Equitable Collection Zone Definition.

10.6 In developing countries the private sector is not well developed for solid waste management, and the ethical framework to minimize collusion and procurement irregularities is inadequate. Therefore, it is essential to contestability that the zones delineated for private and government service be equitable. For privatization to be efficient, there should be a competitive tender process which recognizes that each zone is unique and allows contractors or franchisees to bid according to the zonal conditions.

10.7 For reliable collection service, it is recommended that a minimum zone size for private sector service allow for at least three vehicles; if even one of the vehicles breaks down, same-day service can be provided by operating two trucks during a second shift. However, for economies of scale, the optimum span of management for supervisor and mechanics to trucks is normally about five to one, suggesting zone sizes for five vehicles (50,000 to 100,000 people). For example, zones for privatization in Caracas, Venezuela and Bogota, Colombia were developed to attract international waste management contractors that usually required zone populations of 500,000.

10.8 To make the zones equitable, each zone should have a comparable level of difficulty to service (or a compensation in operators’ renumeration to reflect differences in the degree of difficulty) and a comparable opportunity for generating income—in other words, the problems and the prospects should be equitably shared. Conakry, Guinea recently conducted zoning for its pending award of zonal franchises for street cleaning and solid waste collection. In Guinea’s case, each household and establishment will directly pay for service to the franchisee; tariff ceilings will be established only for the low and middle income households and small businesses. Franchisees are required to obtain more subscribers and increase service levels yearly, over a seven year franchise period until full service is provided. If subscription and service level targets are not met, the franchise can be revoked by the city.

B. Appropriate Duration of Agreements

10.9 Contracts or franchises that involve investment in vehicles should have a minimum length of five years, or the approximate length of mobile assets depreciation\(^{31}\) and investment in facilities requires a minimum contract length of ten years. Shorter periods lead to higher prices, because contractors or franchisees are forced to depreciate their investments over periods shorter than the normal economic life. If the private sector has limited capacity to invest in solid waste management, low cost borrowing through subsidized credit lines could be arranged. If not, the privatization commitments could be extended beyond the standard depreciation period so that the amortization period can be extended. Solid waste collection contracts in Bogota, Colombia were set for a five year period. Transfer station concession contracts in Jakarta, Indonesia are set for a ten year period, and for 15 years in Hong Kong.

10.10 Shorter periods of obligation are possible for privatization of pre-collection services because the investments are for shorter-lived equipment, e.g., handcarts. Beginning in the late 1970’s, in Surabaya and Jakarta, Indonesia, neighborhood pre-collection systems (involving local neighborhood leaders and workers hired from the community) were pilot tested. Pre-collection is now common in most Indonesia cities, reaching about 70 percent of the country's urban population. In these cities, pre-collection involves hand carts or tricycle carts collecting waste door-to-door. In some neighborhoods, pre-collection involves individuals hired at the neighborhood level and paid a salary by the neighborhood leader. In other neighborhoods, pre-collection is part of a zonal service contract with the city for solid waste management.

\(^{31}\) Mobile assets can be transported and used elsewhere but this option usually results in “fire sale” valuations.
waste collection. In both cases, residents pay fully through direct user charges to cover the cost of pre-collection and part of the cost of collection.

10.11 In the mid-1980's, neighborhood pre-collection systems (involving micro-enterprises formed with neighborhood residents) began to be developed in Peru and now are being developed in other Latin American cities. Since 1990, a significant number of African cities are also implementing pre-collection services. The African examples include micro-enterprises of neighborhood youths that have been established in (1) Abidjan, Ivory Coast, and Dakar, Senegal, (2) by non-governmental organizations in Coutonou, Benin, and (3) by private entrepreneurs in Conakry, Guinea.

C. Flow Control

10.12 A significant issue for successful implementation of regional solid waste facilities is flow control. This issue would need to be carefully addressed through the regulatory framework for Pakistan in order to minimize risk to private investors. Flow control involves the guarantee of a minimum quantity of waste. While municipalities would necessarily be signatories as part of an intermunicipal agreement for the regional facilities, experience in other developing countries has indicated that this would not be enough to make private sector investors undertake the financial risk. For example, flow control problems led to the closure of a regional privatized sanitary landfill in Buenos Aires, Argentina during the 1980's and the closure of a composting plant in Semarang, Indonesia in the 1990's.

10.13 In the case of regional disposal facilities, the Pakistani provincial governments and/or central government would need to provide flow control guarantees, obliging municipalities in the region to take their waste to the facility or provide payment as part of a traditional "take or pay" contractual agreement. Any study conducted by the Pakistan government on the privatization of solid waste disposal at the regional level would need to examine this issue closely.

D. Performance Measures

10.14 Performance terms in privatization agreements need to be carefully specified, with adequate provision made for vigilance and sanctions commensurate with performance failures. Many developing countries specify only "cleaning" the zone—a performance measure which is essentially unmeasurable. Such was the case in Jakarta, Indonesia, where contractors were paid on a lump sum basis for cleaning; the payment structure zone-to-zone was not varied for distance to disposal and difficulty of zone cleaning. Outputs should address the quantity and frequency of waste to be collected. Environmental requirements, such as covering each load with a tarp, need to be included. Worker safety protection standards, including provision of gloves, boots and uniforms, should be specified. Each contractor in Jakarta, for example, has uniforms and vehicles of a different bright color, thus facilitating performance monitoring by residents and city officials.

E. License Control over Private Subscription

10.15 For collection of special wastes or service of large generators, private firms may be allowed to compete freely in getting subscribers to their service. However, a program to license only reputable firms is essential to avoid problems of clandestine disposal. Such a licensing program was implemented in Jakarta, Indonesia and Lagos, Nigeria, for service of large commercial and industrial generators. When open competition is allowed without a license program, reputable companies are reluctant to compete because there is not a level playing field. As part of a licensing program, laws are necessary to require all waste generators to hire only licensed haulers or risk sanction.
10.16 Door-to-door collection of solid waste by itinerant waste pickers that results in recycling is to be encouraged. However, picking activities at transfer depots and disposal sites interferes with the operation of heavy equipment and leads to casualties, sometimes deaths. Surabaya, Indonesia implemented a program of registering waste pickers and provided assistance in organizing them into a cooperative which could receive special training and assistance in making arrangement for agents to buy recyclables. While any individual is allowed to collect waste door-to-door, only registered pickers (with photo identification cards) are allowed at transfer and disposal facilities. As a result, more than half of the Surabaya's waste pickers have elected to register.

10.17 Private haulers collecting hazardous wastes should be required to have a special license, separate from the one above for general industrial refuse. To qualify for this license, they should be required to complete hazardous waste materials health and safety training. So that hazardous wastes are managed separately from general urban solid wastes, a regulatory framework for hazardous wastes is necessary. Izmir, Turkey requires special management of hazardous wastes and provides a separate burial area at their sanitary landfill. Private haulers are charged a special tipping (dumping) fee for disposal of hazardous waste. Because the hazardous waste tipping fee is higher than the tipping fee for general municipal waste, the haulers make every effort to optimize source segregation. Sanctions for clandestine dumping and good enforcement have been essential components of Izmir's success.

10.18 Licensing of private haulers should be income generating. At a minimum, the costs for all necessary audit, administration and monitoring of licensees should be covered by the established fees. Licensing programs in the United States are significant income generators for cities; license fees equivalent to five to 20 percent of estimated gross revenues are commonly charged. As large commercial and industrial establishments have the greatest ability to pay, service to these waste generators should not be given away freely; this income is necessary for cross-subsidy of service to low income residents.32

F. Performance Monitoring

10.19 The key control node of the solid waste system is the unloading point. Check points in the collection service area and along the main route to transfer and disposal are also advisable. For performance monitoring of public versus private services in urban environments, records of all load volumes and weights delivered at these points are essential. For comparable performance monitoring of public versus private service, creation of an independent arrangement has merit. To this end, a separate monitoring office within local government could be created or a private consulting firm could be contracted. In Bogota, government maintained over 30 percent of the city area for its service efforts for nearly five years; the service delivery performance of both government and the private firms were comparatively monitored by an independent consulting company. The independent consulting company operates the weighbridge at the disposal site as part of its contract requirements.

10.20 All private sector waste collectors and transporters should be charged a tipping fee at their unloading point (e.g., at the transfer or disposal site). To safeguard against clandestine dumping, prohibition of clandestine dumping and vigilant enforcement would be essential. Such a program has been successfully implemented in Izmir, Turkey. Initially, tipping fees are set at a low enough rate to encourage full compliance with safe disposal. Eventually, once the discharge records of all generators

---

32 Ideally, if it is necessary to subsidize services to some consumers, it is better to let the Government pay a subsidy to the operator for each service provided to an eligible customer.
and haulers are clearly established, tipping fees should cover the full costs for transfer, disposal and vigilance against illegal dumping.

G. Capacity Building

10.21 Local governments need to be able to write competent tender documents for privatization of solid waste services, prepare government estimates and monitor service delivery. Information is needed on the technical aspects of solid waste management and procurement procedures. When preparing government estimates for tendering, the government needs to carefully consider the full range of costs that the private sector needs to bear (including debt service on investments, insurance, registration, fair worker wages and benefits, worker uniforms and protective gear, and marketing) and provide for an acceptable profit margin. A first step in this type of government versus private sector cost comparison has been conducted for Lahore.  

H. Financing

10.22 For proper finance planning the following breakdown of costs in developing countries provides a planning framework. For solid waste collection, capital costs range from 30 to 40 percent; labor costs range from 15 to 40 percent; consumables and maintenance costs range from 30 to 45 percent. For sweeping, capital costs are proportionately much lower and labor costs are much higher: with capital from 20 to 30 percent of total costs, labor costs ranging from 50 to 70 percent, and consumables and maintenance costs ranging from only 10 to 20 percent. Disposal requires proportionately more capital than collection or sweeping: capital costs range from 50 to 55 percent, labor from 10 to 20 percent, and consumables and maintenance costs range from 30 to 35 percent.

10.23 Financing to cover capital costs may be obtained from the following potential sources:

- transfers from central government;
- grants from multilateral and bilateral organizations;
- borrowings from multilateral and bilateral organizations, development banks, communal funds and commercial banks;
- renewal funds from user fees or other solid waste tariffs;
- municipal bonds; and
- private sector participation.

10.24 Increasingly, more and more developing countries are looking to the private sector for capital investment in the solid waste sector. Hong Kong, while not a developing country, set the trend for East Asian developing countries. Hong Kong has implemented an entirely new set of transfer and sanitary landfill facilities in the past six years—all with private sector financing through concessional contracts. Indonesia and Malaysia have focused heavily on this over the past five years in order to address the shortfall in collection service and to implement new transfer facilities. The Philippines obtained private sector financing to close the notorious "Smokey Mountain Open Dump" and provide new housing for the families of more than 5,000 waste pickers that had lived and worked at that dump, in return for the development use of the site.

---

33 Comparative cost analysis of private versus public solid waste services was conducted by Sandra Cointreau-Levine, as part of a World Bank mission to Lahore in 1995.
### I. Cost Recovery

10.25 Finance to cover recurrent costs (e.g., salaries, spare parts, fuel, tires, utilities) for solid waste management may be obtained from the following sources:

- penalties for littering, clandestine dumping and other solid waste infractions;
- license fees from private haulers of solid waste;
- local governments general revenues;
- revenues from sale of recyclables and recovered resources (such as compost);
- direct user charges for collection services; and
- direct user charges for use of transfer or disposal facilities.

10.26 Direct user charges lead to greater accountability to the consumer and provide revenues which can be reliably ear-marked for the solid waste sector. Also, the private sector is more willing to invest when there is a source of revenue that is not subject to political whim. In its national strategy in 1988, Indonesia set a policy for municipalities to implement cost recovery through direct user charges, recommending tariffs averaging one percent of household income. Several Indonesian cities have been successful in implementing this strategy, recovering from 35 percent to 70 percent of total costs, notably: Bandung, Medan, Surabaya, and Jakarta. In 1991, Olongapo City, the Philippines became the first city to implement direct user charges to cover solid waste management costs and cost recovery of about 35 percent of total costs is being achieved.

10.27 Accra (Ghana), Ouagadougou (Bukina Faso), Coutounou (Benin), and Bamako (Mali) are among the growing number of major cities in Africa to implement city-wide cost recovery through direct user charges. The charges in Accra cover about 25 percent of total system costs and are collected by special government bill collectors and deposited in a segregated account dedicated for solid waste management except in those zones served by a private concessionaire who collects the fees directly from residents served. Charges in Tema, Ghana, are collected by private, commissioned bill collectors hired by government; all collections are placed in the general city treasury. Citizens of Coutounou bring their user fee to a local fee collection office. While the gains in these cities are substantial, none have achieved full cost recovery of both capital and recurrent expenditures.

10.28 Pre-collection is proving to be one means of developing financial sustainability, as well as obtaining public cooperation with waste collection systems. In nearly all cases, direct user charges cover the full costs of pre-collection. In some cases, such as Conakry, Guinea and Surabaya, Indonesia, the neighborhood revenues are also large enough to provide at least partial payment toward collection costs related to emptying the communal container or cleaning the communal collection depot.

### J. National Policy Support

10.29 Several developing countries have dramatically supported their privatization activities by changing national laws and policies. Colombia uniquely modified its constitution to state that the private sector could participate directly in performing public services. In 1994, Congress issued the "Public Services Law" which established free access and competition in all public services. Before that, public services were under monopoly government enterprises. Also, they enacted the "International Investment Statute" to protect foreign investors from any kind of local discrimination.
10.30 Malaysia developed a national program to privatize solid waste services. They provided local governments with technical assistance, model contracting specifications, prequalification guidance and encouragement for multi-year contracts. By the end of 1992, most local governments in Malaysia had contracted out 10 percent to 80 percent of solid waste collection service to between one to nine contractors. Nationwide comparative monitoring of local government versus private sector service was conducted and showed increased efficiency from the contractors.

10.31 Indonesia and Tunisia have nationwide private sector participation programs for urban environmental services, which have been developed with United States Agency for International Development (USAID) technical and grant assistance. These nationwide programs include regulatory and policy changes, coupled with replicable pilot projects to build government privatization capacity and develop the local private sector. In both countries, the privatization program is directed by an active multi-ministerial steering committee and supported by a USAID funded consulting team.

K. Labor Redundancy

10.32 One of the most pressing concerns of developing countries when privatizing is how to minimize the termination of employees. Most countries address this by first freezing new hiring and then by phasing in the private sector participation to address the shortfall in service and to match attrition of retiring older government workers and departure of younger staff to the private sector. Over the past eight years, Jakarta, Indonesia has been slowly phasing in private sector participation to meet the shortfall in service as the government workforce gradually reduces naturally, resulting in no job terminations. Privatization in Bogota, Colombia did not result in job terminations for government workers until the fifth year, when the city went completely private because it could not obtain improved productivity from government workers.

10.33 Other cities of Colombia arranged government workers into cooperatives and transferred government equipment to these cooperatives. The cooperatives were then given multi-year contracts to provide collection services. After several years of experience in operating commercially, the cooperatives participated in competitive tenders with private companies. This is similar to the British example, where after 1989 all local government solid waste service organizations were required by national law to commercialize and compete for contracts to serve collection zones. The British experience has led to overall cost reduction for collection service of about 25 percent; commercialized government service organizations work in about two-thirds of the collection zones.
11. PRELIMINARY RECOMMENDATIONS

11.1 For successful privatization of solid waste management activities, the main conditions which are necessary are:

- to provide a clear and secure regulatory framework and enabling environment for the private sector to operate efficiently and profitably;
- to define outputs from private sector service which are equitable and measurable; and
- to develop a reliable revenue base to cover the private sector's needs to meet its cash flow obligations for debt service, capital replacement, operation, maintenance, and repair.

11.2 The structuring and phasing of privatization arrangements need to be carefully developed in order to optimize competition, accountability, and transparency, as well as to avoid serious labor and social problems.

A. Enabling Environment

11.3 The enabling environment for securing private investment in solid waste management should focus on the following items:

- municipal bylaws, sanctions, sanitary inspectors, and special magistrates to require public cooperation and participation with the solid waste collection and disposal system, including cost recovery;
- central and provincial government regulations that specify safe disposal practices for general municipal wastes and require special handling and disposal for hazardous wastes;
- procurement procedures for multi-year agreements that are competitive, and transparent, complete with timely and adequate technical, economic, and environmental reviews;
- shifting municipal solid waste budget allocations from capital development into recurrent expenditures to cover private sector depreciation and debt service costs;
- cash flow financing of municipal government's solid waste services and contract payments from sustainable and reliable sources through a combination of general revenues, user charges, license fees, sanctions and tipping fees; and
- procedures for handling labor redundancy necessitated by down-sizing; become more efficient or privatize.

11.4 Regulation, Vigilance and Enforcement go Hand-in-Hand. To encourage the participation of households, commercial establishments, institutions, markets and industries with the solid waste collection and disposal system, a regulatory framework is required. The framework should provide vigilance and sanction offenders of solid waste management bylaws; bylaws require safe storage and containerization of waste at the source and prohibit littering and clandestine dumping of wastes. To support this regulatory framework, government police or inspectors would need to receive clear authority and authorization to issue warnings and sanctions to those who refuse to comply with the law. Police and inspectors involved in regulation would need sensitization and training on the importance of their activities and the procedures to be followed. Provision of a special city magistrate assigned to solid waste related offenses is desirable.

11.5 Regulate Hazardous Wastes. The regulatory framework should require storage and containerization of hazardous wastes (including pathogenic medical wastes) separately from general
Solid Waste Management

nonhazardous refuse. While a system of separate collection and disposal is not yet available in Pakistan's cities, the regulatory framework would lay the basis for eventually implementing one. For hazardous wastes, the polluter would subscribe and pay directly for special service. Implementation of regional hazardous waste treatment and disposal facilities could be done through licensing or through build, own, operate types of franchise agreements.

11.6 Public Education Brings Public Cooperation. The residents of each city would need to be sensitized to a new system of solid waste management that involves private sector participation, collection of direct user charges and public participation. Public sensitization activities would be done on a number of fronts. For the long term, education in the primary and secondary school system needs to include complete discussion of solid waste management issues and individual obligations to the solid waste system. For the immediate term, public announcements need to explain the city-wide changes that are to take place. For the immediate and long term, public clean-up campaigns could be conducted (e.g., a monthly environmental sanitation day in which residents volunteer their time to clean up their neighborhood and private establishments volunteer their equipment and drivers to support the clean-up activities). In addition to the above, under the terms and conditions of the privatized service, contractors should be required to provide all residents with brochures and regular information about how to cooperate with the system of collection.

11.7 Introduce Independent Audits. The performance requirements of private service providers should be monitored (e.g., by experienced consulting engineering firm, such as one with experience in supervising national highway construction contracts). The monitoring firms would operate the weighbridges for recording of all loads, would collect and review the trucker's books, observe zone cleanliness, compute average vehicle and staff productivity, record vehicle availability and absenteeism, record and follow up on the handling of complaints, note timeliness of payments to the contractors, record offenses and sanctions, etc. Monthly reports would be provided to top city officials comparing performance of the contractors. In addition, at least one comparable zone receiving government service would be monitored on the same basis. Comparative monitoring will optimize contestability and thus motivate efficient service by both government and the private sector.

11.8 Direct Cost Recovery Attracts the Private Sector. Private investors are more amenable to entering the solid waste business when there is a discrete source of revenue to cover costs. Tariff structures should be designed to cover total city-wide service costs for solid waste management, including collection, sweeping, cleaning of open drains, transport and disposal. Solid wastes services are expensive. In low-income countries, solid waste collection and disposal costs, when adequately and efficiently provided, are likely to consume one percent to two of average income. For Lahore, it was calculated that total cost recovery could consume two percent to three percent of average household income. For each type of residential neighborhood, the tariff charged is based on the area of the property. Since large properties tend to be owned by higher income residents than small properties, cross-subsidy is automatically built into the tariff structure. For commercial establishments, the tariff also would be based on property area. However, where the waste quantities are large (e.g., larger than 0.5 cubic meters per day), the tariff would be volume based. For establishments generating hazardous wastes, a higher tariff may be designed to cover the added costs of special handling and disposal. Central government laws and municipal bylaws should allow for the tariffs to be regularly and easily increased based on pricing indices, such as fuel cost indices or labor rates.

11.9 Direct user charges should be set aside in a segregated account to enable greater accountability and transparency in the service expenditures. Ideally, the segregated account should allow savings for renewal purposes.
B. Privatization Conditions for General Municipal Solid Waste

11.10 **The Need for Contestability.** For maximum contestability, a mix of government and private service is desirable. To achieve competitive tension, government would provide collection service to some zones, the private sector would provide collection service to the other zones, and all of the zones would be comparable in terms of performance difficulty and profit potential. Similarly, for contestability purposes, private companies that provide transfer or disposal services would be different from those providing collection services. If there are multiple transfer or disposal facilities, each would ideally be owned and/or operated by a different private company.

11.11 **Enable Bidders to Propose Economic Systems.** Tender documents need to outline clear deliverables, such as frequency of collection service, location where collection service is provided, provision of soil cover at disposal sites and control of leachate discharges. However, to the extent possible, the specifications should focus on performance requirements and not constrain the bidder from innovation or efficiency. For large, concession types of projects, such as transfer stations and sanitary landfills, the bidder should provide the design in accordance with performance specifications and design guidance outlined in the tender document.

11.12 **Prequalify Bidders.** Competition is fundamental to efficiency. For competition to be equitable and eventually lead to contracting with the best bidder, it is strongly recommended that bidders be pre-qualified. This is particularly important for the DBOO and DBOT types of concession agreements which involve costly and time-consuming bid preparation efforts of design and sometimes land acquisition.

11.13 **Economies of Scale for Collection and Transfer.** Based on cost analysis conducted in Lahore for a haul distance of 15 km one way, the following minimum zone sizes are suggested for privatization of solid waste services:

**Pre-Collection:**
- 10 hand carts — 100 tonnes/year each — population of 5,000
- 5 bullock carts — 260 tonnes/year each — population of 6,500
- 5 mini pick up trucks — 600 tonnes/year each — population of 15,000

**Collection:**
- 5 farm tractors with trailers — 700 tonnes/year each — population of 17,500
- 5 open tippers (with wheeled loader) — 3,000 tonnes/year each — population of 75,000
- 5 open tippers (loaded manually) — 900 tonnes/year each — population of 22,500
- 5 compaction trucks (loaded manually) — 2,000 tonnes/year each — population of 50,000
- 5 compaction trucks (loaded mechanically) — 3,300 tonnes/year each — population of 82,500
- 2 communal arm roll container trucks — 3,900 tonnes/year each — population of 39,000

**Transfer Station:**
- 2 transfer arm roll container trucks — 10,500 tonnes/year each — population of 105,000

11.14 **Regional Solid Waste Facilities are More Attractive to Investors.** Based on economies of scale, a sanitary landfill operated by government would need at least 250 tonnes per day of solid waste to productively use small-sized landfill equipment. For each urban resident in Pakistan, an average of 0.2 tonnes of annual capacity of disposal capacity is required. For economies of scale, a facility below 250 tonnes per day (or 91,150 tonnes per year of design capacity) would not make full utilization of the
equipment necessary for operations. Therefore, regional facilities would need to serve the needs of at least 455,750 people to achieve economies of scale.

11.15 For foreign solid waste service companies to be attracted to implementing sanitary landfills in Pakistan, they need to be guaranteed enough waste and income to justify foreign expertise. According to the interviews conducted with major international solid waste companies, they would want landfill facilities to handle at least 400 tonnes per day. This necessitates a disposal facility that would handle (at 0.2 tonnes per capita per year) over 730,000 people.

11.16 **Labor Resistance is Avoidable.** Initially, to minimize labor resistance to privatization, the private sector would address only the gap in service presently being experienced. Subsequent phasing of privatization should take into consideration the natural reduction of staffing through retirement attrition. The cities should consult early with personnel administration and labor union leaders, in order to develop a consensus on the number of retirees anticipated each year and the optimal method of handling surplus workers (e.g., a surplus pool or golden handshake). It is anticipated that a significant number of younger staff, with less than ten years of service and with limited investment in the pension system, will seek work with the private contractors. The cities should take strong action to suspend and eventually dismiss those staff who are not working at all or are working at only very low levels.

11.17 **Match Contract Periods to Depreciation.** To obtain private sector investment, the duration of the obligation should match the normal depreciation period, or longer (i.e., at least two years for sweeping and pre-collection, five years for collection, eight years for landfill and transfer). Multi-year obligations need to be encouraged and approved by provincial government with appropriate recurrent budget allocations to cover depreciation and debt service. Because there has been poor payment performance by government in some of the solid waste privatization efforts already undertaken by Pakistan cities, the private sector will require payment guarantees and delivery of minimum waste quantities.

11.18 **Monitor Performance to Increase Accountability.** Efficient and effective service delivery, whether by public or private means, can occur only in an environment where performance is regularly monitored and appropriate performance incentives and disincentives are equitably and reliably applied. To this end, the monitoring and regulatory capacity of each city needs to be strengthened. (Current laws concerning staff reduction through surplus labor pools and equal reduction in all staff categories would negate this strengthening requirement of effective privatization.)

11.19 **Competent Siting of Facilities Saves Money.** Private firms are willing to design, build, own and operate disposal facilities. However, given the difficulties of acquiring land in Pakistan and the uncertainties of environmental regulation, they are likely to require government to identify and acquire the landfill sites. Costs for constructing modern sanitary landfill can range substantially, by as much as five-fold, depending on the appropriateness of the site selected. To assure safe disposal and minimize costs, significant priority must be given to siting activities. Annex H provides design and siting guidance for sanitary landfill.

11.20 **Recover Costs based on Willingness and Ability to Pay.** Solid waste costs in low-income developing countries require one percent to two percent of per capita income, as indicated in Table 11.1. Direct solid waste user charges covering the costs of collection, transport and disposal are desirable for accountability and reliability of the revenue base for solid waste services. Before such charges are implemented, each city should survey residents for information indicating their demand for service, preferences regarding service options, and willingness to pay. Within the survey the residents will be questioned with regard to the amount they would be willing to pay for various levels and methods of
service, as well as to the level of effort and cooperation they would be willing to extend to assist in the upgrading and extension of service delivery.

Table 11.1: Global Perspective on Solid Waste Management Costs Versus Income

<table>
<thead>
<tr>
<th></th>
<th>LOW INCOME COUNTRY</th>
<th>MIDDLE INCOME COUNTRY</th>
<th>HIGH INCOME COUNTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>WASTE GENERATION ($m.t/cap/yr)</td>
<td>0.2</td>
<td>0.3</td>
<td>0.6</td>
</tr>
<tr>
<td>AVE. INCOME FROM GNP (per capita per year)</td>
<td>$370</td>
<td>$2,400</td>
<td>$2,000</td>
</tr>
<tr>
<td>COLLECTION COST (per metric ton)</td>
<td>$10-30</td>
<td>$30-70.</td>
<td>$70-120</td>
</tr>
<tr>
<td>TRANSFER COST (per metric ton)</td>
<td>$3-5</td>
<td>$5-15.</td>
<td>$15-20.</td>
</tr>
<tr>
<td>SANITARY LANDFILL COST (per metric ton)</td>
<td>$1-5</td>
<td>$3-10</td>
<td>$20-50</td>
</tr>
<tr>
<td>TOTAL COST (per metric ton)</td>
<td>$14-40</td>
<td>$38-95</td>
<td>$105-190</td>
</tr>
<tr>
<td>COST AS % OF INCOME</td>
<td>0.8 - 2.2</td>
<td>0.5 - 1.2</td>
<td>0.3 - 0.5</td>
</tr>
</tbody>
</table>

Table Notes:
2. Costs are for owning, operation, maintenance and debt service in 1992, assuming no equipment provision through grants.
3. If sanitary landfill can be located with an economic haul distance allowing direct haul in collection vehicles, the cost of transfer can be avoided. An economic haul time for a truck carrying two to six tonnes is typically 30 minutes one-way from the collection area to the unloading point. Depending on traffic conditions, 30 minutes one-way would be 15 to 20 kilometers one-way.
4. m.t. means metric tonne, and cap/yr means per capita per year.
Source: Sandra Cointreau-Levine

11.21 Government shall anticipate paying for the cost of sweeping of public streets, cleaning of small drains, cleaning of public lands and parks, and collection service to government buildings (including hospitals, offices, barracks, etc.). It is estimated that such costs would amount to roughly 30 percent of the overall cost of privatized service and should not be considered as a subsidy within the context of the cost recovery system but rather as a fee for service. Given the potentially high portion of costs attributable to service of government properties and public areas, government default or delay on payment of charges related to its own properties could seriously jeopardize the cost recovery system.

11.22 To cover the costs for providing upgraded disposal, a tipping fee would be charged to all private companies providing collection service. To limit the disposal company from exploiting its position as the monopoly provider of safe disposal facilities, it is preferable that it be excluded from being one of the private contractors for refuse collection. If this is not accomplished, the costs for disposal would need to be carefully audited to ensure that charges are equitable. Therefore, its accounting practices for disposal operations need to be fully transparent and the private collection companies need to each pay the same disposal fee per tonne of refuse delivered to the site.
11.23 Direct solid waste user charges are typically designed to increase gradually to meet cost recovery targets. Experience from other developing countries indicates that full cost recovery for pre-collection is possible within only one to five years. However, it takes about ten years of concerted effort to achieve full cost recovery of the overall pre-collection and collection system. Cost recovery for disposal is difficult to achieve, because tariffs must not be set so high that they lead to clandestine dumping. The tariff structures should allow for cross-subsidies between the high and low income waste generators. Large generators, such as hotels, hospitals, industries, markets, and truck stands, should be charged on a volume basis. All other generators should be charged on the basis of the size and value of property being occupied, as well as the type of use for the property. Residential units will be charged on a different tariff basis per area of property than commercial units.

11.24 **Create a Segregated Solid Waste Account.** It is recommended that the billing and fee collection activities be privatized through a concession agreement, wherein the private firm keeps about ten percent of the fees collected. All fees should be placed within a special account available only for the use of the solid waste department.

11.25 **Pay per Tonne of Waste Handled.** It is desirable that private firms providing collection and transfer services be paid on the basis of tonnage of waste collected, rather than on a volume basis. For medium to large sized cities, a weighbridge is a minor investment, costing less than the one truck. For pre-collection through private subscription, payment would be based on provision of regular household service and lane cleaning, and fees typically would be unregulated.

**C. Privatization Conditions for Special Wastes**

11.26 The quantity of industrial hazardous waste generated in most Pakistani cities can be readily absorbed at sanitary landfills in a special burial area without providing secured landfill containment. The first step in addressing the management of hazardous wastes is the creation of a central government regulatory framework which requires special handling, collection and disposal.

11.27 Large industries, once regulated, will usually be able to accommodate the small quantity of hazardous wastes they generate on their own site. If not, they can work through their industry association to develop a joint facility that meets regulatory requirements. In those few places where a hazardous waste treatment facility is required, central government could implement this through a private concession or license, requiring industry to fully cover the costs through tipping fees. While studies to identify hazardous waste quantities and characteristics by source are needed for monitoring and enforcement, a list of industries (by type and production level) and environmental discharge requirements could be adequate to begin the process of seeking proposals for a plant to handle part of the total waste generated.

11.28 Local bylaws appear to be adequate to require hospitals to properly manage their wastes. However, hospitals need assistance so that they pool their resources to share a disposal facility. Public hospitals also need to be encouraged and supported by their directing department of health services to include proper waste management within their budgets. For proper hospital waste collection and incineration, a capital investment of about Rs 150 million would be needed.
ANNEX A
Page 1 of 4

DETAILED LEGISLATIVE SYNOPSIS

Karachi

1. "By the provisions of the Karachi Water and Sewerage Board Act, 1996\(^1\), of the Sindh Provincial Government, a so-called Karachi Water and Sewerage Board "(KWSB") has been constituted as a semi-autonomous provincial corporate entity with all (initially not less than 17) Board members chosen by the Provincial Government. The territorial jurisdiction of the Board extends to the limits of the Karachi Metropolitan Corporation and any additional areas as are notified by the Sindh Provincial Government. The powers and functions of KWSB\(^2\), include:

   (i) the "sanctioning" of water connections, waters supply to tankers and sewerage connections (as may be prescribed by whatever regulations the KWSB devises, provided the proposed regulations are approved by the Provincial Government);

   (ii) the levying and collecting of rates and charges for water supply and sewerage services;

   (iii) the imposition of surcharges in the event rates or charges are unpaid within the time fixed by the Board;

   (iv) the undertaking of construction, improvement, maintenance and operation of water and sewerage works; and

   (v) the reviewing of existing "schemes and the preparation of new "schemes" relating to water and sewerage works and undertaking execution of these schemes with the approval of the Provincial Government.

2. "KWSB likewise has responsibility for the bulk production of potable water and its distribution. It also has the duty to ensure that the water supplied by it is duly filtered, treated and tested and fit for human consumption. KWSB also arranges for retail distribution of water within its jurisdiction and provides bulk water supply to the so-called "Constituent Bodies" at such rates and subject to such conditions as it determines. "Constituent Bodies" include the Karachi Development Authority, Karachi Port Trust, Cantonment Board of Karachi, Sindh Industrial & Trading Estate, Karachi, Pakistan Steel Mills Corporation, Defense Services and any other organization notified to KWSB by the Sindh Government."

3. KWSB now exercises the function of water supply in the entire Karachi area including the Cantonment. And, although some production of water and its purification is still carried out by the Karachi Development Authority, these functions are increasingly being handled by KWSB which procures water for filtration in its plants from: (i) Karli Lake which is maintained by the Sindh provincial

---

\(^1\) The Karachi Water and Sewerage Board Act, 1996 (Sindh Act No. X of 1996).

\(^2\) See section 7 of Sindh Act No. X of 1996.
government some 60 miles from Karachi;³ and (ii) the federally maintained Hub Project near Karachi, in the province of Balochistan.⁴

Lahore

4. In accordance with existing legislation, there are three authorities in Lahore which are responsible for the supply of water.

5. One is the Water and Sanitation Agency (WASA) which has been created under the Lahore Development Authority Act, 1975 (Punjab Act XXX of 1975) (LDA Act).⁵ By the terms of this Act, WASA is required to develop, operate and maintain water supply, sewerage and drainage systems. It is also required to prepare an Annual Development Program for the Lahore area and evaluate the performance of the program at the end of each year.

6. As authorized by the same Act, the LDA created and delegated to WASA its powers regarding water supply, sewerage and drainage and the charging and collecting of rates, fees and charges in respect of the same.

7. A second authority is the Lahore Municipal Corporation functioning under the local government laws. Under Section 40 of the Punjab Local Government Ordinance, 1979 (VI of 1979), the provincial government may provide for the preparation of plans and assessments for works to be executed by local councils. The functions of local councils are given in Section 49 which include, inter alia, sanitation, conservancy and the adoption of other measures for the cleanliness of the local area, maintenance of wells, water pumps and other works for the supply of water, adoption of measures for preventing the contamination of the source of water supply for drinking, prohibition of the use of the water of wells suspected to be dangerous to public health and prohibition of cattle bathing or washing near wells, ponds or other sources of water. Local councils also have the duty to provide wholesome water for public and private purposes and adequate public drains and sewerage system for commercial and industrial areas.

8. A third authority supplying water is the Cantonment Board constituted under the Cantonment Act, 1924 (II of 1924). The Cantonment Board has its own tube wells and charges a nominal rate for water supply.

9. All three authorities own tube wells and as far as Lahore is concerned, ground water is the exclusive source. Water is not supplied to Lahore from any canal or river.

Faisalabad

10. Pursuant to the Punjab Development of Cities Act, 1976,⁶ the Faisalabad Development Authority (FDA) has been established for the planning and development of the city. This Act specifies the powers

---

³ Water in this instance is provided free of charge and without written contract.

⁴ Water from Hub is provided without a written contract; there is an ongoing dispute over rates/charges for the provision thereof.

⁵ (XXX of 1975) - see section 10(2).

⁶ XIX of 1976.
and functions of the FDA, one of which is to "develop, operate and maintain the water supply, sewerage and drainage system"\(^7\) within its territorial jurisdiction. The same Act also provides the FDA with the exclusive right to use ground water resources within its jurisdiction.\(^8\)

11. With the statutory required prior approval of the Punjab Provincial Government, the FDA has established a water and sanitation agency (WASA) which has exclusive responsibility for carrying out the functions of water supply and sewerage services in the Faisalabad area.\(^9\)

12. Under the Punjab Local Government Ordinance, 1979, the Faisalabad Metropolitan Corporation is also empowered to provide, or cause to be provided, water within its jurisdiction for public and private purposes. In fact, Section 59 of the 1979 Ordinance expressly provides that all private sources of water supply within the jurisdiction of the Corporation shall be subject to control, regulation and inspection by it.

13. Notwithstanding the above, the supply of water in Faisalabad is presently exclusively controlled by the FDA through WASA which procures water through tube wells dug by it. The FDA does not grant permission to private persons to install tube wells in its jurisdiction. As such, there is no private sector participation in the supply of water to Faisalabad. Nor do the municipal laws expressly provide for such participation.

**Capital Territory of Islamabad**

14. In the Capital Territory of Islamabad, the Capital Development Authority ("CDA")\(^10\) is a body corporate with powers to acquire and hold property and to sue and be sued in its own name. Its general direction and administration vest in a Board\(^11\) which, from time to time, prepares a Master Plan and master programs for the regulation of development in Islamabad\(^12\) regarding the utilization of water, power and community facilities including water supply, sewerage, drainage and sewage disposal. The CDA has exclusive jurisdiction in these respects.

15. The CDA may prepare schemes for the utilization of water, power and other natural resources whenever it considers it in the public interest to do so.\(^13\) Although such schemes have to be prepared in such manner and form as the federal government may specify,\(^14\) no schemes—at least in relation to water supply—have yet been prepared by the CDA.

---

\(^7\) See section 7.

\(^8\) See section 28.

\(^9\) With the prior approval of the provincial government, Section 7 (2) (xvi) of the 1976 Act specifically allows the FDA to establish any agency and entrust it with such powers and functions as the FDA may deem fit.

\(^10\) Set up under Section 4 of the Capital Development Authority Ordinance, 1960 (XXIII of 1960) ("CDA Ordinance").

\(^11\) See sections 5 and 6 of the CDA Ordinance.

\(^12\) Pursuant to sections 11 and 12 of the CDA Ordinance. Local Authorities set up under the Capital Territory Local Government Ordinance, 1979 (Ordinance XXXIX of 1979) may participate in schemes made pursuant to the Master Plan/Programs.

\(^13\) See especially sections 13 and 12(2) of the CDA Ordinance.

\(^14\) Pursuant to section 14 of the CDA Ordinance.
16. Pursuant to the terms of the CDA Ordinance\textsuperscript{15} and of the Municipal Administration Ordinance, 1960\textsuperscript{16}, Municipal bylaws for Islamabad were framed in 1968.\textsuperscript{17} A chapter of these bylaws\textsuperscript{18} relates to water supply pursuant to which the so-called “Director Maintenance” is authorized to supply water from any source of public water supply\textsuperscript{19} to any person, building or land in Islamabad for domestic and other purposes. He is authorized to maintain all types of works and fittings connected with the supply of water and is also authorized to collect dues for the supply of water. In practice the Director Maintenance actually supplies water to all domestic and other consumers in Islamabad for which he levies a charge fixed in accordance with the rules framed under these bylaws.

17. The CDA may require\textsuperscript{20} any local body\textsuperscript{21} or an agency within whose jurisdiction any particular area covered by a “scheme” (prepared by CDA) lies:

   (a) to execute the scheme in consultation with CDA;

   (b) to take over and maintain any of the works and services in that area; and

   (c) to enforce regulations, on behalf of CDA.

18. It is important to note, however, that for these purposes, the terms “local body” and “agency” mean a public institution. There is no authority for private sector participation under section 17.

\textsuperscript{15} See section 15 A.

\textsuperscript{16} (X of 1960) See section 122.

\textsuperscript{17} See Islamabad Capital Territory Municipal bylaws, 1968 (No. 296/70).

\textsuperscript{18} Chapter 16.

\textsuperscript{19} The source of water in Islamabad is the Simly Dam which is situated in the Islamabad Capital Territory. This dam is owned and maintained by the CDA.

\textsuperscript{20} Pursuant to section 17 of the CDA Ordinance.

\textsuperscript{21} Set up under the Capital Territory Local Government Ordinance, 1979.
PAKISTAN: LABOR ISSUES IN THE PRIVATIZATION OF PUBLIC SERVICES

1. In a low income developing country such as Pakistan, the existing local government and municipal public services providers tend to use labor intensive technologies for urban services such as water supply, wastewater and solid waste management. Private sector participation in the provision of public services, however, is anticipated to introduce new technology requiring more-skilled labor and thus replace labor intensive technologies and displace workers. For successful privatization efforts, increasing labor market flexibility is critical; labor immobility, wage inflexibility, non-wage social benefits and inadequate skills all contribute to a labor environment that is resistant to privatization.

2. Attempts at privatizing public services in Pakistan have so far anticipated major transformations in terms of employment restructuring. Uncertainty for workers is, therefore, characteristic of privatization efforts to date. The following is a brief summary of four recent attempts by the Government of Pakistan to divest itself from government-owned operations focusing on their labor-related issues.

Kot Addu Power Plant

3. The attempt to privatize the Kot Addu Power Plant (KAPP) can be regarded as an important model for the study of the labor issues involved in the privatization of government-owned operations. KAPP, a thermal power generation station with assets valued at Rs 36 billion (approximately US$1.03 billion equivalent), was targeted by the Government of Pakistan to be privatized by transferring 26 percent of the power station shares and management control to a prequalified and reputable electric utility operator by early 1996.

4. The privatization process ran into opposition from KAPP labor in January 1995 when the process was at an advanced stage with the prequalification of interested firms already completed. Labor truculence began during a visit to the plant by the Advisor, Privatization Commission on January 1, 1995. (The Privatization Commission was in charge of the privatization process on behalf of the Government.) Demands by labor and slogans against privatization of the plant were raised during the Advisor's plant address. Physical danger to expatriates working in the plant was also sensed. The following day the local labor union formally called for a hunger strike by labor against privatization and declared that a scheduled inspection visit to the plant on January 4 by several foreign investors would not be allowed to take place.

5. Labor protests were consolidated early on by the WAPDA Hydroelectric Central Labor Union (HECLU); the specifics of labor opposition to KAPP's privatization were addressed in a letter to the Prime Minister. The letter stated that privatization: (a) was not in the national interest; (b) was opposed by all political parties; and (c) was in violation of the Constitution. Further, it was claimed that WAPDA, the owner of the plant, was a symbol of national integrity and economic unity which was responsible for supplying electricity to the whole country at uniform rates; the private sector had failed miserably in that regard in the past. Instead of privatizing the plant, WAPDA should be given full autonomy and private enterprise should only be allowed to set up new power plants. In a letter to the
Privatization Commission, HECLU’s General Secretary wrote that privatization of the plant should be stopped since it would lead to price hikes, hardships to consumers, and affect industrial productivity. No mention was made of the anticipated impact on labor interests. Despite the rigidity of labor’s stand, the Government decided to continue efforts to arrive at an understanding with labor through negotiations. The proposed prerequisite visits to KAPP by intending bidders were postponed and the privatization project was thrown off schedule.

6. During April, the Privatization Commission explained in a written reply to a 16 page HECLU communication the factors that had led to the Government’s decision to privatize KAPP. These factors included, inter alia:

- worldwide experience of privatization of utilities as being in the interest of consumers;
- proper regulatory bodies were planned to check against monopolization following transition to a fully competitive, privatized market;
- an explanation of how the decision did not contradict the Government’s manifesto;
- the remaining shares (74 percent) held by WAPDA employees or the general public would improve in value as the private utilities would make the plant more profitable;
- the process of shortlisting bidders had undergone thorough and meticulous preparation and had been completely transparent;
- the unusually low cost of generation of electricity at KAPP cited in the Union’s letter did not take into consideration the plant’s full fixed and hidden costs;
- fixation of tariff after privatization will be done by the regulatory body, National Electric Power Regulatory Agency (NEPRA);
- a Cabinet decision was made disallowing retrenchment of employees;
- employees will stand to benefit the most by way of increase in salaries, share in profitability through share ownership and better training; and
- a draft privatization package had been approved by the Government which guaranteed full protection of services at existing terms for all employees, without any time limit.

7. After additional exchanges of correspondence, meetings between HECLU and the Privatization Commission, and a further consolidation of HECLU’s demands to be followed after privatization, an agreement was reached in August 1995 which guaranteed:

1. security of service to all KAPP staff as approved by the Cabinet;
2. a 35 percent raise in basic pay of the entire KAPP staff;
3. an increase in various existing allowances;
4. 10 percent of the private entity’s shares were to be offered to WAPDA employees at the bid price; and
5. WAPDA employees will be allowed to participate in bidding for all the thermal power plants to be privatized in the future.

The agreement ended organized resistance to the privatization of the plant.

United Bank Limited

8. United Bank Limited (UBL) was the first bank to be privatized with the sale of 26 percent of its shares and a strategic stake in privatization to be offered. A Steering Committee on Privatization of Banks and Development Finance Institutions was appointed by the Cabinet which included the chairmen of Pakistan Banking Council, Corporate Law Authority, and the Privatization Commission, the executive director of the State Bank of Pakistan, the secretary and additional secretary, Ministry of Finance, and
the secretary, Privatization Commission. The Steering Committee began deliberations of the labor issues, the package for voluntary separation, and negotiations with the labor union in July 1995. It directed the Privatization Commission to complete an independent evaluation of the financial impact and other implications of the package which had been prepared by the UBL management.

9. In the few months following the meeting of the Steering Committee, representatives of the United Bank Ltd. Employees Federation (UBLEF) and Officers Federation (UBLOF) met jointly with the Privatization Commission and eventually joined together in the United Group of Employees Management (UNIGEM) to suggest changes in the golden handshake scheme. Representatives of UNIGEM and a Privatization Commission committee reached a draft agreement on issues relating to employees of UBL after daily meetings were held for several days in early November. Additionally, a demand was made for the regularization of employment of casual workers employed on a daily wage/temporary basis in UBL.

10. UNIGEM consolidated their position and presented five major issues for consideration by the Privatization Commission. In January 1996, an agreement was reached between UBL employees and the Privatization Commission. The following represents issues proposed by UNIGEM followed by the result as incorporated in the final agreement:

1. Proposed by UNIGEM: employees to have option to buy 20 percent share of the Bank at the price paid by the strategic investor with proportionate representation on the Board of Directors of UBL.

   Per Final Agreement: employees to be entitled to purchase up to 20 percent of the total existing paid-up capital of UBL only if any of the shares of UBL are offered for sale to the public at large or the strategic investor from time to time by the Government; representation terms were also agreed as proposed.

2. Proposed by UNIGEM: no retrenchment during the first year of private operation and no illegal large-scale retrenchment subsequently.

   Per Final Agreement: no retrenchment for one year from the date of transfer of management to the strategic investor, who will agree to not indulge in mass retrenchment of officers and workmen without giving the affected employees an opportunity of being heard; UBLEF and UBLOF must also be taken into confidence in the event to such retrenchment.

---

22 The golden handshake—scheme, voluntary and applicable to unionized staff only—entitled those who elected voluntary termination of service to one basic pay last drawn for each completed year of service plus four basic pays last drawn for each completed year of service. The voluntary separation scheme, applicable to officers in industrial units, entitled those who elected voluntary termination of service to one basic pay last drawn for each completed year of service plus two basic pays last drawn for each completed year of service. Those employees not accepting their respective termination scheme are provided one year’s guaranteed protection of service.
3. Proposed by UNIGEM: the new owners shall be bound to grant increases in salaries, benefits, loans, etc., to employees of UBL with effect from January 1, 1996 as per awards of the Wage Commission for workers and staff and the Pay Commission for officers

Per Final Agreement: employees to be entitled to the salary package applicable to the nationalized banks with effect from January 1, 1996 as awarded by the Pay and Wage Commissions. In the event that the two commissions are not constituted, the new management will be obliged to negotiate the terms and conditions of the salary package with UBLEF and UBLOF

4. Proposed by UNIGEM: regularization of services of UBL’s temporary/casual employees

Per Final Agreement: the top 1,500 casual or temporary workers/employees according to seniority to be confirmed by the Commission; (2) above also to be applied to them

Sui Northern Gas Pipelines

11. The Government of Pakistan decided in February 1994 to sell 26 percent of the shares of Sui Northern Gas Pipelines, Ltd. (SNGPL) with management control to a strategic investor. SNGPL serves over 1.1 million consumers in more than 83 towns through the purification, transmission and distribution of natural gas.

12. Prior to meeting with employees to be affected by privatization, the SNGPL Labor/Management Issue Regulation Committee (LIR Committee) was constituted and agreed to the following strategy for conducting discussions/negotiations with labor:

1. matters relating to management/labor buyout should be treated totally separately from labor issues;

2. separate discussions/negotiations should be held with the Executives Associations and Union; and

3. discussion with the Union should be initiated first; then a specific strategy would be evolved.

13. The LIR Committee also decided to initiate the collection of data on temporary workers, on SNGPL employees by category and on terms of service for major categories, and put a monetary value on non-monetary benefits.

14. In September a meeting of the LIR Committee, attended by representatives of the Privatization Commission, the financial advisor from First Capital Security Corporation, SNGPL management, SNGPL Union and SNGPL Executives Association was held during which labor and management presented their respective concerns. At a meeting of the LIR Committee later that month, labor requested copies of labor agreements for other utilities. The collective bargaining agent for labor expressed the concern that greater security of service for those employees continuing and greater benefits
for those employees leaving under the golden handshake scheme and voluntary separation scheme be provided in view of the specialized nature of a gas company.

15. In October, labor representatives submitted a Charter of Demands with twelve items to the LIR Committee. The management representative said that the nature of their concerns would depend on the identity of the actual strategic investor and his policy towards labor, etc. The chairman of the meeting requested the management of SNGPL to provide a monetized comparative table of the financial implications of the Charter demands. Negotiations broke down at the following meeting, during which the Committee responded that the financial conditions of SNGPL did not allow any room to accommodate the demands labor put forth in the Charter.

16. No further meetings between labor representatives and the Committee have been held.

Sui Southern Gas Company

17. The Government of Pakistan decided in September 1994 to privatize Sui Southern Gas Company (SSGC), which serves over 1.1 million consumers in more than 60 towns through the purification, transmission and distribution of natural gas. Future prospects of the company are very bright since a large portion of the population in its command area remains unserved. Expansion of its transmission capacity is to be completed by 1998 with a per annum increase in domestic consumers of over 100,000.

18. The privatization process was referred to the Privatization Commission for off-loading of a certain percentage of equity to the general public, including a reasonable share for the employees before privatization. It was agreed by the Government, the Privatization Commission, and the Asian Development Bank (lenders of SSGC) that studies on gas pricing and the regulatory framework regime should be completed before the sale of 26 percent of SSGC’s shares to a strategic investor.

19. Executives of SSGC have expressed interest in participating in the privatization of SSGC by negotiating purchase of 10 percent of the total equity of the company and have proceeded with the registration of a trust for this purpose, formulation of its rules, etc.

20. Protests against privatization of SSGC include complaints that have been sent by a labor union in Hyderabad for not taking labor into confidence prior to initiating the privatization process and by the SSGC’s workers union who prayed that the process be stopped.

21. Currently the appointment of financial advisors for SSGC’s privatization is being processed. Negotiations with labor have not begun.
JUSTIFICATION AND OBJECTIVES OF REGULATION

1. Water and wastewater services are associated with several types of market failure which require different regulatory approaches. First of all, raw water resources are a common good. Unless access is regulated, there is a risk that these resources will be overused or abused. A water resources management scheme, which integrates both quantity and quality considerations, is needed to ensure that the allocation of water among competing uses, i.e., agricultural, urban and industrial, reflects its economic value.

2. Economic externalities are costs and benefits which are associated with producing and consuming a good or service, but which producers and consumers fail to take into account. Water supply and wastewater services involve a number of externalities, both positive and negative, such as the improvements in public health that result from widespread access to these services and the pollution that results from lack of sewerage service and the disposal of untreated wastewater in rivers, lakes and oceans. Water services are also negatively affected by agricultural and industrial producers who pollute water sources. In Pakistan, drinking water quality is regulated by health authorities. Environmental standards are the responsibility of the Environmental Protection Agency. Since these standards affect the cost and efficiency of water and wastewater services, sector actors should be involved in setting the standards.

3. Finally, piped water supply and sewerage networks are characterized by economies of scale and are usually considered natural monopolies. The investment costs are so great that building more than one system to serve the same location does not make sense, so competition is limited. In the absence of competition, there are few incentives for efficiency; costs are likely to be too high and access to service restricted. The objectives of utility regulation are therefore to protect consumers by regulating tariffs and setting and enforcing service standards which ensure high quality, low cost service and universal access to service. These objectives are discussed in more detail below:

Financial Viability

4. Tariffs which cover the full cost of service ensure that utilities are financially viable that is, that they can operate existing assets effectively and reliably and invest some of their own funds in the expansion of services to satisfy the needs of a growing population. Strong financial viability is an essential component of a strategy to attract investment finance to supplement self-generated in efficiency finance. In addition, full-cost recovery promotes efficient use of water by consumers, and is thus an essential part of a water resources management strategy. But a tariff policy which guarantees financial viability by allowing all costs (even excessive costs) to be passed on to consumers, provides no incentives for producers to be efficient. Thus, the main challenge that a regulator faces is to select a tariff level that makes it possible for an efficient operator to be financially viable without guaranteeing financial viability to an inefficient operator.

Economic Efficiency

5. In a competitive market, producers have a natural incentive to be efficient. When a monopoly exists, the regulator must attempt to introduce competition whenever possible and, in the absence of
competition, provide other incentives for efficiency. This is accomplished primarily by setting minimum standards for service quality and limiting tariffs. Further to these objectives, the regulator can convey the benefits of private sector participation, e.g., cost efficiency, to consumers, once costs have been quantified.

Access to Service

6. Because water and sewerage services fill basic needs, they have wide-ranging economic impacts on the overall welfare of the population and on the development prospects of a country. For this reason, maximizing access to service is desirable. Under monopoly conditions, the availability of services, and choices among different types of services, may be restricted. Part of the regulator’s role is thus to ensure that services are available at a reasonable cost to as large a majority of the population as feasible and that alternatives are offered where appropriate. Sometimes, this means requiring service providers to develop institutional arrangements that facilitate the introduction of services in low-income neighborhoods and low-cost technologies which the poor can afford. Subsidies to ensure access to services should be carefully targeted and temporary in nature. Direct subsidies to eligible households are preferable to cross subsidies, because they are more transparent and create fewer economic distortions. While subsidy policy falls into the domain of public policy rather than regulation per se, the regulator should provide advice to policymakers aimed at ensuring that the benefits of any subsidies are not outweighed by losses or financial viability.
STRUCTURE OF PROPOSED PROVINCIAL REGULATORY COMMISSION

1. Creation of an independent regulatory commission for Islamabad and one in each province is recommended. Their independence could be assured in two key ways: first, decisions of the regulatory commissions should not be subject to review or approval by political authorities, and secondly, they could be funded through a fee to be paid by consumers of the services. Although their decisions would not be subject to political review, they could be challenged in an appropriate court or administrative tribunal. Alternatively, conflicts could be resolved through arbitration in certain cases. The regulatory commission would include three to five commissioners and should have autonomy in the choice of staff and in personnel management matters.

2. The commissioners should be technically qualified, reputable professionals who would serve in a full-time capacity and would not be allowed to hold political office or have an interest in any water supply and/or wastewater services company, or in any associated concern. To avoid political ties and influence, their terms should not coincide with the term of office of political authorities. To ensure continuity, their terms would be staggered.

3. Three technical departments would advise the commissioners regarding the key regulatory issues:

   (a) The Legal Department would have responsibility for:

      (i) legal due diligence and recommendation for the award of concessions, i.e., the right to operate services

      (ii) the guidelines governing the award of contracts for operation and/or investment in services; and

      (iii) the preparation of new regulatory legislation as appropriate.

   (b) The Service Standards Department would have responsibility for:

      (i) proposals for new service standards or revisions in existing standards

      (ii) monitoring and enforcement of service standards; and

      (iii) review of investment programs proposed by water and wastewater companies to confirm adherence to technical standards and service objectives.

   (c) The Tariff Department would have responsibility for:

      (i) the analysis of the tariff implications of investment programs;

      (ii) the analysis of the tariff implications of service standards, environmental and health standards, and water resources management policies;

      (iii) price cap formulas for tariff adjustments and increases; and
(iv) collecting comparative information on the cost of service and the potential for improvements in efficiency.

4. An administration/contracting officer would handle administrative, personnel management and contractual matters.

5. A regulatory coordination advisor would liaise with environmental, health and water resources regulators as well as with authorities responsible for regulation of other public services to ensure consistency in regulatory approaches and to keep the technical departments informed about potential changes in regulations and standards that would affect the services.

6. A public relations advisor would assist the commissioners in communicating with the public regarding major regulatory decisions and in the design of educational programs.

7. A consumer advisory committee composed of representatives of consumer groups would report to the commissioners on consumer concerns and opinions twice annually. It would have a budget to conduct surveys and to organize forums for the airing of public concerns. Its opinion would be sought prior to all major regulatory decisions.

8. The staff of the regulatory commission should be limited to the minimum required to carry out core analysis functions and supervise contracts for support activities. The commission could make extensive use of contracts with laboratories and private audit firms for inspections, information collection and analysis of data on the performance of water and wastewater companies. Public relations firms and educational institutions would be contracted as appropriate to present programs to the public.

9. The total number of staff and the cost of regulation would need to be tailored to each province. The following table provides a few indicators for regulatory authorities in other countries.
## Table D1

### Urban Water and Wastewater Regulatory Authorities

#### Selected Indicators

<table>
<thead>
<tr>
<th>Regulatory Commission</th>
<th>Number of Staff</th>
<th>Number of Companies Regulated</th>
<th>Population Served (millions)</th>
<th>Annual Budget of Reg. Authority (US$ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>England and Wales: OFWAT (1993/94)</td>
<td>190</td>
<td>10 regional companies and 17 water-only companies.</td>
<td>51.5</td>
<td>13.0</td>
</tr>
<tr>
<td>Chile: SSS (1994)</td>
<td>79</td>
<td>13 regional companies, 1 municipal company and numerous small private systems</td>
<td>12</td>
<td>2.0</td>
</tr>
<tr>
<td>Buenos Aires: ETOSS (1996)</td>
<td>100</td>
<td>1</td>
<td>9</td>
<td>8.0</td>
</tr>
</tbody>
</table>
TELECOMMUNICATIONS SECTOR REGULATIONS IN PAKISTAN

The Ministry of Communications (MOC) is the main policy maker for the sector. A Telecommunications Ordinance, originally issued in July 1994, created two regulatory authorities, Pakistan Telecommunications Authority (PTA) and Frequency Allocation Board (FAB) as a temporary arrangement until the Parliament approves the Telecommunications Act. The Ordinance provides PTA funding from GOP grants (including a Rs 50 million initial grant); loans raised by PTA; license fees from applications; and annual fees payable by the licensees. Once fully operational, it would be funded by fees on the operators and no direct GOP support would be required.

The functions and responsibilities of MOC, PTA and FAB are summarized below:

<table>
<thead>
<tr>
<th>Regulatory Authority</th>
<th>Regulatory Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Communications (MOC)</td>
<td>- overall sector policy-making</td>
</tr>
<tr>
<td></td>
<td>- licensing policy (criteria for amendment)</td>
</tr>
<tr>
<td></td>
<td>- representation on international bodies (with</td>
</tr>
<tr>
<td></td>
<td>assistance from PTA and/or FAB)</td>
</tr>
<tr>
<td>Pakistan Telecommunications Authority (PTA)</td>
<td>- policy advice to MOC</td>
</tr>
<tr>
<td></td>
<td>- sector monitoring</td>
</tr>
<tr>
<td></td>
<td>- licensing</td>
</tr>
<tr>
<td></td>
<td>- tariff regulation</td>
</tr>
<tr>
<td></td>
<td>- arbitration of interconnection disputes</td>
</tr>
<tr>
<td></td>
<td>- complaints handling</td>
</tr>
<tr>
<td></td>
<td>- technical regulation (standards and type</td>
</tr>
<tr>
<td></td>
<td>approval)</td>
</tr>
<tr>
<td>Frequency Allocation Board (FAB)</td>
<td>- policy advice to MOC</td>
</tr>
<tr>
<td></td>
<td>- allocation of radio frequencies</td>
</tr>
<tr>
<td></td>
<td>- monitoring of use and interference</td>
</tr>
</tbody>
</table>

PTA is governed by a three person board: one board member serves as chairman, and the others are economic/commercial expert and a professional telecommunications engineer. Each member is appointed for a four year term and is eligible for re-appointment for a similar or shorter term.

FAB is located in MOC and consists of six members, including the Secretary of Communications, Chairman of PTA, a nominee of each of the Ministries of Defense, Information & Broadcasting, and Interior. The sixth member appointed by GOP serves as full time Executive Vice Chairman and CEO and the Secretary of Communications serves as Chairman of the FAB.
POWER SECTOR REGULATION IN PAKISTAN

The Ministry of Water and Power (MWP) was the policymaker, and regulator of the power sector. Further, the two public electric utilities, i.e., the Water and Power Development Authority (WAPDA, and the Karachi Electric Supply Corporation (KESC), have been under the administration and jurisdiction of MWP. In July 1992, the Government adopted a Strategic Plan for the Privatization of the Power Sector envisaging the unbundling of the generation, transmission and distribution activities of WAPDA, their restructuring, corporatization and privatization. The first thermal power plant, Kot Addu (1600MW) has been privatized, one distribution district (Faisalabad Area Electricity Board), and another thermal power plant (Jamshoro, 880MW) are also being privatized. In parallel, on January 14, 1995, the Cabinet approved the Ordinance which established the National Electric Power Regulatory Authority (NEPRA) for the regulation of the privatized power sector. The functions and responsibilities of NEPRA will evolve over time along with the restructuring of the power sector, according to the different stages outlined in the Strategic Plan. In this context, the functions and responsibilities and MWP and NEPRA are the following:

Institutions and Regulatory Responsibilities

<table>
<thead>
<tr>
<th>Regulatory Authority</th>
<th>Regulatory Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Government and Ministry of Water and Power (MWP)</td>
<td>- overall sector policy making, including formulation of national energy plans</td>
</tr>
<tr>
<td></td>
<td>- issue policy guidelines including tariffs</td>
</tr>
<tr>
<td>National Electric Power Regulatory Authority (NEPRA)</td>
<td>- policy advice to MWP</td>
</tr>
<tr>
<td></td>
<td>- protect consumers against monopolistic prices</td>
</tr>
<tr>
<td></td>
<td>- encourage economic efficiency in the electric power industry</td>
</tr>
<tr>
<td></td>
<td>In particular,</td>
</tr>
<tr>
<td></td>
<td>- grant licenses for generation, transmission and distribution of electric power</td>
</tr>
<tr>
<td></td>
<td>- approve tariff, rates, charges and other conditions for supply of electric power</td>
</tr>
<tr>
<td></td>
<td>- develop and enforce performance standards</td>
</tr>
<tr>
<td></td>
<td>- prescribe procedures and standards for investment programs by generation, transmission and distribution companies</td>
</tr>
<tr>
<td></td>
<td>- encourage uniform industry standards and code of conduct for generation, transmission and distribution companies</td>
</tr>
<tr>
<td></td>
<td>- complaints handling</td>
</tr>
</tbody>
</table>

NEPRA is governed by a five persons Authority comprising the Chairman and four members, all appointed for a four year term. The annual budget of NEPRA is to be submitted to the Federal Government for approval.
1. Sector Study Background

1.1 Introduction and Purpose of the Sector Study

Increasing the quality and quantity of infrastructure services can deliver major benefits in economic growth, poverty alleviation and environmental sustainability. The adequacy of infrastructure helps determine one country’s success and another’s failure in diversifying production, expanding trade, coping with population growth, reducing poverty or improving environmental conditions. Although the overall magnitude of urban environmental services infrastructure (water supply, wastewater disposal and treatment and solid waste management) needs to be increased in Pakistan, at the same time, it is essential that existing assets are utilized more efficiently since the costs of inefficiencies in the existing system, in terms of forgone economic growth and lost opportunities for poverty reduction and environmental improvement, are high and unacceptable.

Given the rapid increase in population growth in urban centers and the constraints on government resources to provide the needed investment for expansion and maintenance of environmental infrastructure in Pakistan, all parties appear to agree that private sector options that augment scarce public sector resources should be explored. The private sector has become more active worldwide in urban services, especially water and wastewater services, and is interested in developing new public-private partnerships. By its active support of private sector participation in telecommunications, transport and power services, the Government of Pakistan is seen as a progressive and interested partner in the development of new contractual arrangements with the private sector.

A World Bank mission visited Pakistan in January 1996. The purpose of the mission was to consult with concerned government officials and interested individuals and gather information for the preparation of a sector study that deals with private sector participation in urban environmental services. The private sector is seen as a potential source of additional providers to redress the serious shortfalls in the resources of current public sector service providers; as service providers, the private sector would help ensure that anticipated increases in the demand for these important services are met. The primary goal of the sector work is to develop a policy framework that could become the basis of a sound approach for attracting private sector participation, both for operations and investment, in urban environmental services delivery.

The Ministry of Environment, Local Government and Rural Development, as Federal Client for the sector work, provided assistance and cooperation to the mission. The mission spent considerable time visiting four major urban centers (Karachi, Lahore, Faisalabad and Islamabad); the concerned provincial and municipal authorities and related agencies gave valuable assistance and cooperation during the January field work.
1.2 Main Findings of the Sector Study Mission

Several topic areas were considered particularly critical to the encouragement of private sector participation in urban environmental services and were explored in the sector study discussion papers. These findings included:

- **legal amendments**: legal opinion is that legislative changes would have to be made at the provincial level before private sector participation in the delivery of full services is permitted;

- **governmental approval process**: both at the federal and provincial levels, the official procedures for involving private sector investment in urban services remain unclear;

- **progress on environmental regulation**: the uncertainty of the draft Pakistan Environmental Protection Act, 1995 was seen as a deterrent to serious private sector investors who want to know what standards they are required to meet and what penalties exist for performance deficiencies. This uncertainty was in part resolved with the introduction of National Environmental Quality Standards on July 1, 1996; however, issues of level and events of enforcement remain;

- **location, governance and autonomy of regulatory capacity**: the autonomy, location and independence of the regulatory framework are critical issues;

- **tariff policy and cost of services**: the issue of affordability and the perception by the public and politicians of the mismatch between the private sector's inherent profit motive and the public sector's traditional role in promoting social welfare through services such as the provision of drinking water raised concerns. Public awareness and education programs were seen as extremely important; and

- **labor issues**: overstaffing was seen as a serious problem.

2. Workshop

2.1 Purpose and Objectives

During discussions with the MEUAFW at the conclusion of the mission, it was agreed to hold a workshop to review the findings of the sector work later in the year. The main goal of the workshop was to review, discuss, add to and finalize the draft sector study. The objectives of the two day workshop were to:

- discuss issues of private sector participation in urban environmental services at various levels (national, provincial and municipal levels) in Pakistan;

---

23 The Sector Study draft is presented in two documents: “Strategies for Increasing Private Sector Participation in Solid Waste Services in Pakistan” and “A Strategy for Introducing Private Participation in Urban Water Supply and Wastewater Services in Pakistan.”
• share lessons from private sector initiatives in other sectors in Pakistan and international experiences in private sector involvement of urban environmental services;

• discuss and recommend options for dealing with specific issues of private sector participation in urban environmental services in Pakistan (such as tariff levels, legal and regulatory issues, labor issues); and

• identify next steps in the initiation of private sector participation in urban environmental services.

2.2 Structure and Process

The workshop was held on July 3rd and 4th, 1996 at the Holiday Inn in Islamabad and was designed to be participatory. Presentations were given by expert consultants and staff from the World Bank and International Finance Corporation on the key findings of the sector study. During the limited two day time period of the workshop, it was only possible to focus on three key issues under water and wastewater provision: the introduction of sector regulation and its organization; the problem of overstaffing and labor issues; and questions concerning tariffs and likely increases in rates that would reflect full costs of services to be provided by the private sector. Solid waste management had a single module on the issue of cost recovery and the problems of contracting with municipal authorities. The presentations on these three topics were followed by focused small group discussion of eight to ten participants. Each group was given specific questions to answer and present to the plenary for further discussion. A professionally facilitated and participatory approach to the workshop was used to increase ownership of the sector work and to enhance awareness of new concepts included in the study.

2.3 Government Representation

Participants in the workshop were drawn from the following governmental departments and agencies:

Federal

– Ministry of Environment, Local Government and Rural Development
– Planning and Development Division
– Privatization Commission
– Capital Development Authority
– Environmental Protection Agency

Punjab

– Planning and Development Board
– Lahore Development Authority (WASA)
– Metropolitan Corporation, Lahore
– Faisalabad Development Authority (FWASA)
– Punjab Environmental Protection Agency

Sindh

– Planning and Development Department
2.4 The Presenters

The workshop included a number of presentations from several international experts on findings from the draft sector study and the experience of private sector participation in environmental services provided internationally. These were:

- Mr. Per Ljung, Chief, Energy and Project Finance Division, World Bank
- Mrs. Jane Walker, Project Finance Specialist, World Bank
- Ms. Thelma Triche, Consultant, Regulatory Aspects
- Ms. Sandra Cointreau-Levine, Consultant, Solid Waste Management
- Mr. Bosworth Monck, International Finance Corporation
- Dr. Khalid Rashid, Consultant, Cost of Services

Working group discussions followed the presentations.

The workshop was inaugurated by Senator Waqar Ahmad, Chairman of the Task Force on Environment Issues. Mr. A.R. Kemal, Chief Economist, Federal Planning and Development Department, Mr. Per Ljung, World Bank and Mr. Hikmat Nasr, Head of Projects Unit, RMP gave the keynote speeches. Mr. Mohammad Nawaz Khan, Section Chief (ECA) Planning and Development Department, Government of Punjab, gave the closing remarks and thanked the participants for their attendance and for their considerable efforts in realizing the workshop's objectives.

The workshop was facilitated by Ms. Kathy Alison (consultant) and coordinated locally by MEUAFW, the Resident Mission and Mr. Brian Ellis (consultant).

3. Findings and Issues

The workshop presenters provided detailed information to the participants on the following topics:

- regulatory issues
- cost of services
- labor issues
- solid waste management

The overheads utilized in these presentations are provided in Volume II.

3.1 Water and Wastewater Services

Following the presentations, the participants broke up into three working groups to discuss the questions set out below. The three groups comprised (i) federal planning and development interests, (ii)
provincial planning and development interests and (iii) utility groups providing and operating environmental services.

Question 1 How would you set up an independent regulator for water and sewerage services?

Question 2 How could the regulator’s independence be ensured?

Question 3 What next steps are needed, at both federal and provincial levels, to develop regulation of water services in Pakistan?

3.1.1 Regulatory Issues for Water and Wastewater Services:

A Water Regulatory Board

Federal government participants advocated that a water regulatory board (WRB) should be established at the federal level that would have planning, coordination and monitoring functions. The federal WRB would be linked with provincial water regulatory Boards (PWRBs) that would be responsible for necessary mechanisms, consumer affairs/dispute resolution and performance monitoring for efficiency.

Provincial government participants identified a need for a regulatory body to safeguard the interests of the consumer, to act as a neutral arbitrator and to ensure sustainability. The regulator would be required only at the provincial level with a WRB set up by the provincial governments each comprising a chairman, and technical, financial, legal and management members selected on a merit basis.

The Utility groups preferred that the independent regulator be located at the provincial level where new legislation and amendments to existing laws and ordinances would be required. The scope of the regulator’s action should cover water, sewerage and drainage. The group also identified a need for city administrations to monitor compliance with the legal code.

Regulator’s independence to be ensured

Federal government participants thought that the independence of the chairman of the federal water regulatory body could be ensured if he was appointed by the president of Pakistan. The chairman would appoint four provincial ex-officio members (unpaid) along with one representative from a consumer/business body. In addition, they thought that at the provincial level the chairmen of the provincial water regulatory boards should be appointed by the governor of the province with the chairman appointing members for finance, legal and technical functions. This PWRB would be served by a standing committee comprising public, private and professional interests.

The provincial participants group considered that the regulator should have legal powers, direct contact with a chief executive, security of tenure for a specific period and should not be answerable to any department or agency.

The Utilities group advocated that the regulator report to the governor of the province. The regulator and board members should have fixed tenure and be recognized specialists with relevant education and experience. The regulatory body should be fully autonomous with its powers defined in
full in advance and have final power of decision making. The regulatory body should be self financing and paid through fees charged to the concessionaires.

3.1.2 Report on Labor Issues

The panel presentation on identified labor issues was given by Jane Walker. The questions for group discussions were:

Question 1  How and when should you involve labor unions in the process of private sector participation?

Question 2  What suggestions do you have to deal with overstaffing/redundancy?

Question 3  What steps are needed at the federal level to find ways to involve labor unions in the process of private sector participation?

Mr. M. Iqbal Bela, Managing Director, WASA, Lahore reported on the group’s discussions.

Informing the unions

The group recommended that agencies considering private sector participation should conduct informal meetings with labor unions and staff before schemes became general knowledge and especially from the day the concept is approved by the political leadership and accepted by the management. Active support from political leadership was necessary and available information, particularly benefits and concerns, should be fully shared. Unions and other interested parties should participate in study tours; collective bargaining agents should be given a mandate long enough to complete the process of agreement on key issues. Information should be provided to the media to mold public and labor opinion. Questions and concerns from labor unions should be anticipated and timely answers provided.

Staffing issues

Regarding staffing issues, the group believed it would be desirable to impose a ban on fresh recruitment while determining desirable staffing at all levels. If some redundancy was necessary, the principles for retrenchment should be established and legal advice should be made available to those persons affected; otherwise 'echoes' would continue to be heard. In addition practical time frames should be established for separation and time should be invested in the planning of this work prior to consultation and agreement with the unions. The financial implications should be worked out including the identification of sources of finance to execute the plan.

3.1.3 Report on cost of services

The cost of service panel discussion was led by Mr. Bosworth Monck and Dr. Khalid Rashid; Ms. Thelma Triche also participated. The points was made that it is essential that tariffs cover the full cost of service regardless of the service provider. In order to attract the private sector, tariff levels need to be close to the full cost of service. Therefore, one of the major tradeoffs to the participation of the private sector in the delivery of services will be the need to adjust tariffs so that close to the full cost of these services is covered. The questions for discussion were:
Question 1  What do you see as the greatest impediments or constraints to adjusting tariffs for these services to approach the full cost of service? How would you overcome these constraints?

Question 2  What next steps are needed, at both the federal and provincial levels, to reach full cost recovery?

Mr. M. Amin, Managing Director, WASA Faisalabad, as spokesman for the working group gave the following replies.

Impediments to tariff adjustments

The working group identified that the constraints to tariffs adjustments were due to unsatisfactory provision and maintenance of services, political interference and lack of autonomy in decision making. They were concerned about affordability for consumers and for their willingness to pay user charges. Other impediments were law and order problems, incomplete consumer records and processing delays in obtaining timely tariff increases.

Overcoming constraints to tariff increases

To overcome these constraints the working group believed that better consumer participation would occur if services were improved. This could happen if the water company was given full autonomy including political support and improvement of law and order. Operationally, the updating of consumer records to include all consumers and gradually adjusting tariffs would be helpful.

3.2 Solid Waste Management

A presentation on solid waste management was given by Ms. Sandra Cointreau-Levine. The questions for discussion by the working groups were:

Question 1  How do we structure the private sector agreement so that contractors are ensured a steady, reliable cash flow?

Question 2  How do we guarantee that the agreements are honored for the full duration, as long as performance is good?

Question 3  What next steps are needed at the federal, provincial and municipal levels to enable municipalities to structure an agreement between the consumer and company for cost recovery?

Mr. Abdul Mehdi Malik, Managing Director, Solid Waste Management Unit, Metropolitan Corporation Lahore, was consolidated the working groups’ thoughts and reported on the solid waste management questions.

Cash flow smoothing

Reliable cash flow to the private sector could be ensured through performance evaluation on a regular basis by either committees or private consultants. In addition there should be a financial guarantee by a local body including penalty clauses for both parties in the event of non performance or
non compliance with agreed conditions. A neutral arbitrator whose location was not identified would be needed.

_Honoring agreements_

With respect to honoring an agreement for its full duration, it may be necessary to involve provincial government as a guarantor. Good performance would be an important factor otherwise heavy penalty clauses for either or both parties would be imposed. A neutral arbitrator should be appointed but his location was not identified.

4. The Next Steps

Towards the end of each working group discussion session, the participants were asked to identify the next steps that should be taken following the completion of the workshop. The assumption that government policy was to involve the private sector in water and wastewater services and solid waste management was confirmed.

4.1 Development of Regulation of Water and Wastewater Services

Three points of view were presented by the participants: federal, provincial and utility group.

_Federal Views_

The legal basis for private sector participation (PSP) must be established; this could be done through amendments to the Local Government Ordinances. Specifically, at the federal level, an ordinance for the provision, operation and financing of a water regulator board should be presented to the National Assembly. An appropriate ordinance could be presented to each Provincial Assembly for the establishment of a provincial water regulatory board with the requisite power for rate regulation, licensing mechanisms, dispute resolution, petitioning and monitoring performance efficiency.

They also believed that the federal level bodies could prepare policy guidelines for tariff structures and licensing; provincial governments could develop these basic rules for local application. Operationally, regulations would be required relative to performance standards, safety rules, contracting arrangements of different types and programs and projects for PSP. The federal role could be helpful in publicizing the PSP approach to policy and tariff guidelines and in obtaining feedback from consumers and users.

_Provincial Views_

The provincial view of the federal role in PSP was to develop consistent policies and guidelines for the long term.

The provincial governments too should adopt long term and consistent policies since major private sector investments could be recovered only over the medium to long term. Without a long term policy, the private sector would not be confident enough to invest in these type of services.

Specifically, there would be a need to develop policy guidelines for standards, tariff and performance monitoring. The creation of a provincial regulatory authority (PRA) should be done at an
early date and the appointment of the chairman and members made on technical merit. The role of the PRA in safeguarding consumers should have high priority.

Utility Group Views

The utility group, being drawn from operating agencies, was concerned with urban environmental services in Karachi, Lahore, Faisalabad, Islamabad and Quetta. They believed that actions were required at the federal and provincial levels.

The utility group proposed that at Federal level a federal regulation committee should be formed to evolve the national regulation policy. This committee would prepare guidelines and establish a timeframe for provincial bodies to enact local ordinances. The proposals would be submitted to Cabinet for approval.

Further, at Provincial level, a working party of the provincial government should be formed to define the roles of second and third tiers of government. Based on national guidelines, a framework for regulations should be defined and enabling legislation enacted. The provincial governors would form the regulatory board by appointing its chairman and members. To assist the regulatory board, a consultative committee should be set up to represent consumers and utility operators and to be a conduit for information to and feedback from the public.

4.2 Involvement of Labor Unions and Staffing Issues

The discussions on labor issues were consolidated and presented to the plenary session by Mr. M. Iqbal Bela.

At the federal level the working groups identified a need to mobilize and ensure the support of the political leadership and to confirm the mandate of the management of the utilities to resolve union and staffing issues.

The groups felt that the detailed discussions on staffing would occur at the provincial level and a formula for success would be the establishment of a tripartite forum between the provincial government, labor unions and the staff. Specifically the message of PSP must be conveyed to the unions and staff through roundtable discussions followed by an open and full agenda with the CBA with a prior guarantee of availability of funds to finance any job separation. Details to be tabled should include the extent and timeframe of separation and real opportunities to transfer surplus staff to other government agencies.

Before final approval of any PSP plan, it should be vetted legally, financially and operationally so that back up support for implementation could be obtained from all concerned parties, especially unions, staff and provincial government.

4.3 Reaching Full Cost Recovery from Tariffs

The group discussions were consolidated by Mr. Mian Muhammad Amin who presented their report to the plenary session.

Following the review on the constraints and opportunities for adjusting tariffs to reach the full cost of service, the overriding position was that a national policy was essential. The federal policy should establish guidelines for the provinces to consider the total cost of services including investment
costs, re-investment costs and operation and maintenance costs. Through the federal level guidelines, existing provincial laws could be amended to empower utilities to make appropriate tariff adjustments. Clarification of these guidelines and powers would help expedite the tariff adjustment approval processes that are currently cumbersome and slow.

4.4 Solid Waste Management Agreements with Private Sector for Cost Recovery

The group discussions were consolidated by Mr. Abdul Mehdi Malik who presented the group's views on the topic for federal, provincial and municipal levels.

The groups proposed that the federal government should establish a general solid waste management policy and issue technical guidelines, codes of practice, performance standards and manuals for solid waste management operations.

The provincial government should be involved in consultation at all stages of this process. The federal government should provide some technical assistance for draft contract preparation, company appraisal techniques, etc. At the provincial level, the key task was the setting of time frame guidelines for local government to implement the agreements including the calculation and levying of the user charges.

At the municipal level the key points were to adopt an effective mechanism for the collection of user charges and to introduce the concept of a special magistrate for implementation of solid waste management bylaws.

4.5 Workshop Evaluation Report

A workshop evaluation was undertaken by Ms. Kathy Alison, the workshop facilitator. A workshop evaluation form was filled out by 24 of the 35 participation. Three of the four workshop objectives were well achieved. These include the (1) discussion of issues of PSP at various levels of government in Pakistan; (2) sharing lessons of PSP experience from other sectors in Pakistan and internationally; and (3) recommending options for dealing with specific issues of PSP within the Pakistan context. The fourth objective, which was to identify next steps in private sector participation, was rated as moderately achieved. Further details on the evaluation are set out in Volume I, Annex E.

4.6 Finalizing the Sector Study Report

The sector study report will be taken to the final draft stage by World Bank staff in Washington, D.C. After an initial internal review the draft final report will be sent to the following reviewers in Pakistan who were nominated at the workshop.

Eng. Humayun Khan, Ministry of Environment, Local Government and Rural Development
Ch. Naseer Ahmad, Chief, PP&H, P&D Department, Lahore
Ms. Rehana Memon, Chief, PP&H, P&D Department, Karachi
Mr. Shahid Saleem, Dy. Managing Director, KWSB, Karachi
Mr. Hafiz Ehsan Ul Haq, Assistant Director (STP), CDA, Islamabad

4.7 Timing of Reports and Next Steps

The time frame for various reports are as follows:
mid August - the workshop proceedings
mid-September - final report for review
November - final sector study report

4.8 Acknowledgments

The Ministry of Environment, Local Government and Rural Development and the World Bank, Country Department I, South Asia Region wish to thank the participants for their active and expressive role in the workshop. This was essential in achieving the workshop's objectives.
SANITARY LANDFILL DESIGN AND SITING CRITERIA

By: Sandra Cointreau-Levine

For two decades, solid waste components in World Bank projects have focused on collection of solid wastes, with equipment provided to upgrade operations at existing open dumps. In the past several years, the private sector is increasingly being involved in the collection of solid waste and World Bank projects are beginning to place greater priority on implementation of new sanitary landfills. The following guidance provides an examination of some of the issues which need to be addressed in landfill siting and design.

Sanitary landfill is the most cost-effective system of solid waste disposal for most urban areas in developing countries. Composting of solid waste costs 2-3 times more than sanitary landfill, and incineration costs 5-10 times more.

A sanitary landfill is a contained and engineered bioreactor and attenuation structure, designed to encourage anaerobic biodegradation and consolidation of compacted refuse materials within confining layers of compacted soil. At a proper sanitary landfill, there are no nuisance impacts of constant burning, smoke, flies, windblown litter, and unsightly rubbish heaps.

Refuse in a proper sanitary landfill is not directly exposed to rainfall, surface runoff or groundwater. Leachate generation is derived only from a limited quantity of infiltration which reaches the waste deposit and captures the byproducts of waste biodegradation. While little leachate is generated in a sanitary landfill compared to an open dump, leachate concentrations are much higher -- organics are higher by a factor of more than 10 -- and thus leachate needs to be properly treated.

Sanitary landfills located in arid areas, where there is minimal potential for leachate generation, may have more relaxed design requirements than those located in wet areas. Similarly, sanitary landfills located on coastal lands underlain by naturally saline and unpotable groundwater may have more relaxed design requirements than those in inland areas overlying potentially usable groundwater regimes. In these areas of lower impact potential, impermeable lining of the landfill may be unnecessary. Instead, measures to enhance natural attenuation by soil's adsorption, precipitation, filtration, and ion exchange capacities need to be considered.

Sanitary landfill design needs to provide for daily cover of fresh refuse, incorporate mitigative measures to manage leachate and gas produced within the landfill cells, provide for a final soil and vegetative cover, and establish an environmental monitoring system of upgradient and downgradient groundwater monitoring wells and surface water sampling locations. Typically the daily cover material is soil; however, tarps or inert materials (i.e., construction debris or compost residuals) could be used.

Since the sanitary landfill is the most important control node of the refuse collection system, a gate-house for record-keeping operations and a weighbridge are recommended. A weighbridge generally costs no more to purchase than one refuse collection truck, and assures the productivity of the entire collection fleet.
<table>
<thead>
<tr>
<th>Policy, Legal &amp; Regulatory Issues</th>
<th>Financial Issues</th>
<th>Solid Waste Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy:</strong></td>
<td><strong>If GOP intends to support private sector investment in the sector, it needs to consider adopting a set of incentives, inter alia:</strong></td>
<td><strong>The federal laws and regulations for environmental protection only provide general goals and only limited specific discharge or design standards:</strong></td>
</tr>
<tr>
<td>• adopt a water resources policy which endorses the principle of water as an economic good, endorses the principles of economic efficiency, autonomy, full cost recovery, and involvement of private sector.</td>
<td>• Guaranteeing availability &amp; convertibility of foreign exchange;</td>
<td>• Clarify Federal approval process re. private sector project involving capital investment.</td>
</tr>
<tr>
<td>• clarify Federal approval process re. private sector project involving capital investment.</td>
<td>• Guaranteeing repatriation of profits;</td>
<td></td>
</tr>
<tr>
<td><strong>Legal/Regulatory</strong></td>
<td>• Tax holidays;</td>
<td></td>
</tr>
<tr>
<td>• adopt environmental regulations which take into account their economic implications and realistic schedules for phasing in.</td>
<td>• Exemption from import duties and taxes on equipment, etc.</td>
<td></td>
</tr>
<tr>
<td>• create independent authority to regulate tariffs and service quality in the event of private operation of services in Islamabad.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Financial Issues</strong></td>
<td><strong>If GOP intends to support private sector investment in the sector, it needs to consider adopting a set of incentives, inter alia:</strong></td>
<td><strong>More information should be provided on model private sector contractual agreements and tendering information.</strong></td>
</tr>
<tr>
<td>If GOP intends to support private sector investment in the sector, it needs to consider adopting a set of incentives, inter alia:</td>
<td>• Guaranteeing availability &amp; convertibility of foreign exchange;</td>
<td></td>
</tr>
<tr>
<td>• Guaranteeing repatriation of profits;</td>
<td>• Guaranteeing repatriation of profits;</td>
<td></td>
</tr>
<tr>
<td>• Tax holidays;</td>
<td>• Tax holidays;</td>
<td></td>
</tr>
<tr>
<td>• Exemption from import duties and taxes on equipment, etc.</td>
<td>• Exemption from import duties and taxes on equipment, etc.</td>
<td></td>
</tr>
<tr>
<td>• Allowing private owners/operators to qualify for subsidies offered to public sector authorities to promote introduction of environmental protection.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Institutional Issues</strong></td>
<td><strong>Short term:</strong> create a semi-autonomous capital area water and sewerage agency under CDA in which revenues are used to cover, as a minimum, the costs of operations.</td>
<td><strong>There is no unit of well trained and experienced staff in the environment ministry to develop the state of knowledge on a country-wide basis or provide technical assistance to provide technical assistance to provincial and municipal governments.</strong></td>
</tr>
<tr>
<td>Short term:</td>
<td>• medium term: create an autonomous water and wastewater services company for the capital area; give its management autonomy over the allocation and use of company resources and staff, and hold it accountable for service quality, adequate maintenance, financial performance and efficiency.</td>
<td></td>
</tr>
<tr>
<td>• Short term:</td>
<td>• strengthen capacity to monitor, promote and enforce environmental standards.</td>
<td></td>
</tr>
<tr>
<td>• create an autonomous water and wastewater services company for the capital area; give its management autonomy over the allocation and use of company resources and staff, and hold it accountable for service quality, adequate maintenance, financial performance and efficiency.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• promote dissemination of information on private sector participation</td>
<td></td>
<td><strong>Information on waste quantities and appropriate techniques of private sector involvement needs to be compiled and disseminated to municipalities.</strong></td>
</tr>
<tr>
<td>• promote sharing of experience with private sector participation among the provinces</td>
<td></td>
<td><strong>There is no forum for solid waste managers to share information and experience on a regular basis, such as a national solid waste association and journal.</strong></td>
</tr>
<tr>
<td>• Reliable census data should be available.</td>
<td>• The lack of competent census data hinders all planning and analysis efforts designed to rationalize the cost of solid waste systems.</td>
<td></td>
</tr>
<tr>
<td><strong>Operational/Technical Issues</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subject</td>
<td>Policy, Legal &amp; Regulatory Issues</td>
<td>Water &amp; Wastewater</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td><strong>Policy:</strong></td>
<td>• adopt policies as regards urban water and wastewater services which endorse the principles of economic efficiency, managerial and financial autonomy, full cost recovery, and involvement of the private sector. Such policies could include the adoption of a special approval process for private sector investments in the sector, as was the case for the electricity sector, i.e. IPPs.</td>
<td>• Enforcement of existing environmental laws is lacking.</td>
</tr>
<tr>
<td></td>
<td>• adopt subsidy policies and programs which target low-income households and apply subsidies only to the volume of water necessary to satisfy basic needs.</td>
<td>• Understaffing, lack of precise standards, lack of information, limited transport and monitoring equipment, inadequate sanctions and corruption undermine enforcement, thus giving disreputable waste generators and transporters practicing clandestine or unsafe disposal a competitive economic advantage.</td>
</tr>
<tr>
<td><strong>Legal/Regulatory:</strong></td>
<td>• amend laws to allow private investment in and operation of services, including BOT-type arrangements and full concessions.</td>
<td>• adopt rules governing the selection of private operators and approve privately financed investments which promote transparency, fairness, speed and cost effectiveness.</td>
</tr>
<tr>
<td></td>
<td>• determine locus of authority to contract with private operators - the Development Authorities, the Municipal Corporations or the Provincial Government?</td>
<td>• determine of authority to contract with private operators - the Development Authorities, the Municipal Corporations or the Provincial Government?</td>
</tr>
</tbody>
</table>
| | • create independent regulatory authority at the provincial level to regulate all urban water supply services, approve private investment plans and enforce efficiency and cost recovery policies without political interference. | • create independent regulatory authority at the provincial level to regulate all urban water supply services, approve private investment plans and enforce efficiency and cost recovery policies without political interference. | }
<table>
<thead>
<tr>
<th>Provincial</th>
<th>Waste &amp; Wastewater</th>
<th>Solid Waste Management</th>
</tr>
</thead>
</table>
| **Institutional Issues** | • organize water services as autonomous companies, giving management autonomy re. use of resources and staff, and holding it accountable for service quality and efficiency.  
• initiate discussions with labor representatives as regards potential PSP.  
• train provincial staff and water service managers in private sector participation options and contracting. | |
<p>| <strong>Operational/Technical Issues</strong> | | • Lack of facilities to treat/dispose of hazardous industrial wastes and infectious medical wastes results in unsafe co-disposal of these wastes with general municipal solid waste. Through licensing or concessional private sector arrangements, regional facilities could be developed to serve multiple generators of these special wastes. |</p>
<table>
<thead>
<tr>
<th>Policy, Legal &amp; Regulatory Issues</th>
<th>Water &amp; Wastewater</th>
<th>Solid Waste Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs for the lack of public cooperation with waste collection system are high. Public education is essential, backed up with enforcement of existing bylaws. However, existing staffing focuses heavily on sweeping and collection labor, with only minimal staff for inspection and education.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanctions for littering and clandestine dumping are too small to provide disincentives, and processing of arrests is slow due to case load and low priority of magistrates. A special solid waste magistrate would enhance enforcement success.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unless public cooperation is achievable, the private sector will not be willing to undertake the risk of meeting public cleansing contractual specifications.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Municipalities should consider adopting a cost center concept and work towards full cost recovery in pricing the services; A High level policy directive may facilitate this politically.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is no long-term budget planning process to enable a steady program of resource expansion and renewal. For privatization, recurrent budgets and need to include payment to contractors for capital investment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gradually increasing tariffs to levels of 1-2% of income are advisable over a 10 year period, until direct fees cover at least 70% of total costs, including renewal costs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institutional Issues</td>
<td>organize water services as autonomous companies, giving management autonomy re. use of resources and staff, and holding it accountable for service quality and efficiency.</td>
<td>Most cities have the solid waste functions of street sweeping and small drain cleaning, separate from solid waste collection, transport, disposal and fleet maintenance. For full accountability for public cleansing, these functions need to be put under one organizational umbrella and engineers need to be included in key staff positions alongside sanitary officers.</td>
</tr>
<tr>
<td>initiate discussions with labor representatives as regards potential PSP.</td>
<td>train provincial staff and water service managers in private sector participation options and contracting.</td>
<td></td>
</tr>
<tr>
<td>Service Provider</td>
<td>Water &amp; Wastewater</td>
<td>Solid Waste Management</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td><strong>Policy, Legal &amp; Regulatory Issues</strong></td>
<td></td>
<td>• There are inadequate numbers of sanitary inspectors and transport units to provide vigilance, education, and enforcement of municipal bylaws.</td>
</tr>
<tr>
<td><strong>Financial Issues</strong></td>
<td>• Water authorities should introduce cost center concepts so as to more accurately monitor revenues and expenses.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Service levels are not known, and there is no accountability for performance and related cost on a per tonnage basis.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• In particular, water authorities should treat sewerage as a separate cost center for purposes of accounting for revenues and expenditures.</td>
<td></td>
</tr>
<tr>
<td><strong>Institutional Issues</strong></td>
<td>• develop and implement strategies for reduction of staff which reflect the real needs of the services without burdening other parts of the administration: attrition, reassignment, negotiated voluntary retirements, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Accountability of performance and cost is fragmented and inadequate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Solid waste managers are not free to terminate employment, except in extreme cases and through burdensome procedures.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Municipal salary scales for skilled staff, such as drivers and mechanics, are significantly below market scales.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The surplus labor pool arrangement is not acceptable as a means of handling redundant staff, because it requires across-the-board reductions of all staff. Privatization should involve reduction of only operational staff, and increase in technical, monitoring, education, and enforcement staff.</td>
<td></td>
</tr>
<tr>
<td><strong>Operational/Technical Issues</strong></td>
<td></td>
<td>• There is no regular data collection effort to record, weigh, or conduct time-and-motion studies of solid waste collection activities. Quantities generated, collected, and disposed are not known. Total costs also are not known. Without baseline costing data, it is not possible to assess whether bids offered for private sector service are cost-effective.</td>
</tr>
<tr>
<td>Service Provider</td>
<td>Water &amp; Wastewater</td>
<td>Solid Waste Management</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td><strong>Policy, Legal &amp; Regulatory Issues</strong></td>
<td><em>There are inadequate numbers of sanitary inspectors and transport units to provide vigilance, education, and enforcement of municipal bylaws.</em></td>
<td></td>
</tr>
<tr>
<td><strong>Financial Issues</strong></td>
<td>• Water authorities should introduce cost center concepts so as to more accurately monitor revenues and expenses.</td>
<td><em>Service levels are not known, and there is no accountability for performance and related cost on a per tonnage basis.</em></td>
</tr>
<tr>
<td></td>
<td>• In particular, water authorities should treat sewerage as a separate cost center for purposes of accounting for revenues and expenditures.</td>
<td></td>
</tr>
<tr>
<td><strong>Institutional Issues</strong></td>
<td>• develop and implement strategies for reduction of staff which reflect the real needs of the services without burdening other parts of the administration: attrition, reassignment, negotiated voluntary retirements, etc.</td>
<td><em>Accountability of performance and cost is fragmented and inadequate.</em></td>
</tr>
<tr>
<td></td>
<td>• Accountability of performance and cost is fragmented and inadequate.</td>
<td>• Solid waste managers are not free to terminate employment, except in extreme cases and through burdensome procedures.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Municipal salary scales for skilled staff, such as drivers and mechanics, are significantly below market scales.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The surplus labor pool arrangement is not acceptable as a means of handling redundant staff, because it requires across-the-board reductions of all staff. Privatization should involve reduction of only operational staff, and increase in technical, monitoring, education, and enforcement staff.</td>
</tr>
<tr>
<td><strong>Operational/Technical Issues</strong></td>
<td>• There is no regular data collection effort to record, weigh, or conduct time-and-motion studies of solid waste collection activities. Quantities generated, collected, and disposed are not known. Total costs also are not known. Without baseline costing data, it is not possible to assess whether bids offered for private sector service are cost-effective.</td>
<td></td>
</tr>
</tbody>
</table>

m://bernie\strategy.doc
Bibliography


