

Guide on Private Sector Participation: **Solid Waste Management**

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**Guide on Private Sector Participation in Municipal
Solid Waste Management**

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Guide on Private Sector Participation in Municipal Solid Waste Management

Part I: Introduction.

Users and Uses of this Guidance Note. The purpose of this document is to assist solid waste managers and key decision-makers in municipalities to decide whether to involve the private sector in solid waste services and, if so, how best to involve them. Information about each of the privatization options is presented, including some case study experiences.¹

The Need for Guidance. At the end of the 1980's, economic advisors to many developing countries advocated private sector involvement in urban services. The premise was that market forces would automatically make the private sector more efficient than government. This premise was generally true in industrialized countries, where market forces were well developed. Unfortunately, the last decade of privatization experience has shown that market forces were not well developed in developing countries. Also, procurement procedures were commonly not transparent and ethical frameworks for doing business were not well established.

Instead of a decade of efficient privatization, numerous government monopolies have been replaced by private sector monopolies. Without competition and contestability², there is no way to assure that excessive government costs for high salaries, high social benefits, redundant personnel, low productivity are not being replaced by the private sector's costs for contract kickbacks, high commercial borrowing costs, foreign exchange risk, custom duties, corporate taxes, and insurance.

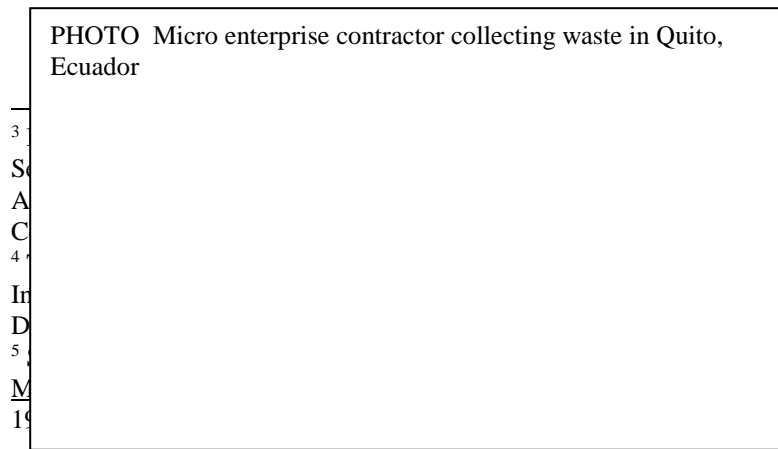
¹ Most of the case study experiences and analysis presented are not from any published sources, but are derived from the author's personal field experience. Where case study information was not gleaned from direct experience, it is referenced in a footnote.

² In some developing countries, the private sector may not be sufficiently developed for competition to occur. There may be too few companies with the resources to do the job; some or all of the various companies may have hidden family relations inhibiting competition; apparently different firms may actually be owned by the same people; and government regulation and judicial systems may be inadequate in assuring ethical business practices and minimizing collusion and cartels. In such countries, competition may need to be enhanced by government providing contestability – i.e., by government giving service in some areas while the private sector gives service in others. With government contestability, the private sector is aware that government can step in to take over service at any time that there might be abuses or defaults. In countries where professional skills are limited, field experience in providing service in one or more zones may be the best way for government to have sufficient experience to monitor performance of the private sector in other zones. Cities in the USA, Canada, and the UK with the lowest cost collection service often have government providing contestability to the private sector.

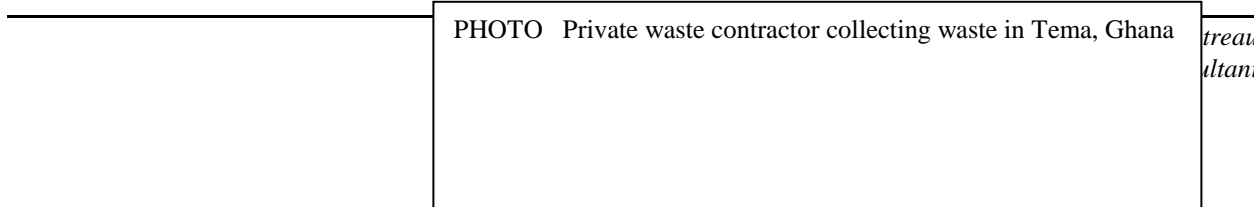
In most private sector agreements signed during the last decade, technical specifications have been poorly, and scantily, defined; sanctions for poor performance were minimal; output monitoring by government was poorly done. Furthermore, contractual agreements have been too short to enable private sector investment, with most contract periods amounting to only 10% to 30% of the depreciation period of the investment required. For example, most private contracts for solid waste collection in Mauritius specify simply “removal of refuse” and “street cleansing” on some specified schedule; include no specific default clauses or sanctions; and have only a one year duration.

Many governments moved toward privatization in the last decade, but few have done so successfully. One of the better examples of good privatization occurred in Hong Kong, and this provided an incentive to many Asian countries that wanted to replicate Hong Kong’s positive experience. The first concession to design, build, transfer ownership, and operate (DBTO) was for a solid waste transfer station, and had a 15-year plus construction contract period. Ownership was transferred upon completion of construction and one year of satisfactory start-up operations. A chemical waste treatment facility followed in 1990, then a second transfer station was contracted in 1991, then three sanitary landfills followed by design, build and operate (DBO) concessions in 1992, 1993, and 1994, and finally several more transfer stations, all by long term concession contracts, and all involving competitive international tenders and foreign/local joint venture concessionaires.^{3,4}

This document attempts to provide a few lessons from the last decade of privatization experiences in developing countries. A companion document, entitled "Private Sector Participation in Solid Waste Management in Developing Countries" was published in 1994 by the World Bank⁵ to outline some of the issues to think about before involving the private sector in urban services. At that time, there was too little experience to provide guidelines for how to privatize. This document takes the next step in providing "how to" guidance. There is still much to learn, but perhaps this snapshot of what we know today will help to avoid problems tomorrow.



and Stokoe, M.J., Lei, P.C.K., “Municipal approaches”. Hong Kong Special
 ings of the SWANA/ISWA International
 or DBOT concessions, while the
 ional Development Agency can finance only
ector Participation in Solid Waste
 t Programme Publication Number 13, May



Part II: Why Privatize?

The principle reasons to privatize are to bring in private sector investment and improve operational efficiency. In the five-year period from 1994 to 1998, by involving the private sector, Georgetown, Guyana was able to increase the number of vehicles involved in daily collection operations from 4 to 18, more than double the frequency of service, and increase city-wide service levels from 50% to 85%. Though contracting for disposal equipment, Georgetown was able to substantially improve its disposal operations. Some of the pros and cons of privatization are discussed below.

Solid Waste Management is a Public Good. Solid waste service is a public responsibility because it is a public good, as discussed in Box []. But being responsible for service does not require the government to perform the service with its own human and equipment resources. Government may choose to meet its responsibilities by involving the private sector as service providers. In such a role, government would define the work to be done, arrange for payment to the private sector, and provide oversight. Furthermore, being responsible for arranging payment does not require government to pay the private sector.

<p style="text-align: center;">Solid Waste Service Is a Public Responsibility For the Following Reasons:</p> <ul style="list-style-type: none">◆ <u>Essential:</u> Service Is Essential to Public Welfare◆ <u>Nonexclusive:</u> Benefits Derived From Service Accrue to More People Than Those Who Directly Receive Service◆ <u>Nonrivalled:</u> Benefits Derived From Service Are Shared Without Benefits to Any Individual Being Diminished <p style="text-align: right;">Box []</p>

Government may choose to arrange payment by requiring its residents to directly pay tariffs to the private sector or to commissioned bill collectors.

Solid Waste Services are Inadequate yet Costly. Solid waste services in developing countries do not address the full demand in urban areas. In the poorest countries, service may reach only 10% to 40% of the urban population. In the better-organized middle income countries, service reaches from 50% to 85% of the urban population. Most of the waste collected is discharged to open dumps, where open burning, waste picking for recyclables, and animal scavenging for food wastes prevails. Nearly all of the uncollected wastes and the wastes placed in open dumps are polluting nearby streams and underground aquifers. Despite the gross inadequacies in service, the costs are substantial, as illustrated in Box [].⁶

<p style="text-align: center;">Solid Waste Service Costs Are High</p> <p><u>Total Estimated Costs (including safe disposal):</u></p> <ul style="list-style-type: none">◆ 0.7% to 2.6% of GNP/Capita/Year in Low Income Countries◆ 0.2% to 0.5% of GNP/Capita/Year in High Income Countries <p><u>Recurrent Actual Costs (based on existing systems, usually without safe disposal in developing countries):</u></p> <ul style="list-style-type: none">◆ 20% to 50% of City Revenues in Low Income Countries◆ 1% to 10% of City Revenues in High Income Countries <p style="text-align: right;">Box []</p>
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⁶ Based on cost estimates by the author conducted in over 40 developing countries over the past 20 years. The wide range in costs, as a percentage of budget, reflects the priority placed on efficiency, level and frequency of service,

Successful Private Sector Participation Needs Careful Structuring. Involving the private sector in delivery of urban services, if properly structured, does the following:

- Improves service efficiency, and
- Increases investment.

However, if improperly structured, privatization may not achieve any of these objectives, regardless of the effect of market forces. The success of privatization is outlined in Box [], based on data presented in several studies.⁷

Take, for example, the objective of improving service efficiency. Improving efficiency requires improving knowledge and skill, equipment, rationalization of operations and maintenance, accountability, and performance monitoring. In many developing countries, the private sector has not yet worked in provision of solid waste services and has no knowledge of how to rationalize service delivery. Unless the contractual arrangement specifically encourages the private sector to draw on international experience and, perhaps, involve international specialists, the private sector may only copy government service. Also, unless the contractual arrangement enables new and efficient equipment to be purchased, the private sector may be burdened with using existing old equipment which is more inefficiently designed for solid waste services than government's.

Evidence from Around the World

▫ UK and USA Studies

- Private sector service costs at least 25% lower due to rationalized operations and greater management flexibility.
- Managed competition, with a balanced mix of competitive government and private sector service areas, is the most cost-effective option.

▫ Canadian Studies

- Private sector service costs over 25% lower in most provinces, and over 60% lower in Atlantic Province.
- Comparatively high costs for the private sector in Quebec Province were due to older and larger equipment, larger crew sizes, and lower productivity.

▫ Latin American Studies

- Private sector service costs about 50% lower due to higher labor and vehicle productivity.

▫ Malaysian Study

- Private sector service costs over 20% lower due to greater efficiency.

Box []

Remember the End Game – Low Costs. Higher productivity alone does not lead to lower costs. Even though the private sector tends to handle more waste in a daily shift than government, it has to bear many

and environmental acceptability of disposal. Also, the percentage of budget depends on the number of urban services that are decentralized to the local level. Size of city is not a major factor affecting the percentage of budget expended for solid waste service.

⁷Sources on cost benefits of the private sector include: Donahue, J.D. *The Privatization Decision: Public Ends, Private Means*. New York: Basic Books. 1989; Stevens, B.J. *Handbook of Municipal Waste Management Systems: Planning and Practice*. New York: Van Nostrand Reinhold. 1980; Bartone, C.R., Leite, L., Triche, T. and Schertenleib, R. "Private Sector Participation in Municipal Solid Waste Service: Experiences in Latin America" *Waste Management & Research* 9(6): 495-509 (December 1991); Bartone, C.R. slide presentation, 1997; McDavid, J.C., Eder, K.A. *The Efficiency of Residential Solid Waste Collection Services in Canada: The National Survey Report*. Local Government Institute, U of Victoria. June 1997.

costs beyond what government has to bear. As a result, even a highly efficient privatized service could be more costly than government service. For example, local governments in developing countries typically have access to lower cost capital financing, because they have the backing of their national treasury. Where local governments receive grants or transfers from central governments, these should be noted within an accounting of total finance cost. While local governments do not usually pay interest on such grants or transfers, the total finance cost should account for the interest rate which central government pays on its treasury notes, as an opportunity cost of capital.

Costs were comparatively analyzed in Quito, Ecuador between government and private sector collection of solid waste.⁸ Interestingly, there was no significant difference between costs on a per tonne basis. While total costs were similar, there were numerous differences on specific components of the costs, including differences in the following:

- Finance costs at current borrowing rates and payback periods (42% over 9 years for government, 46% over 5 years for the private sector),
- Customs duties (23% for the private sector, 0% for government),
- Basic salaries and benefits (personnel costs are 3 times higher per person for government, mostly due to social benefits),
- Administration (higher for government),
- Insurance (5% for the private sector),
- Repairs (slower by government),
- Length of daily work shift (7 hours for government, 9 hours for the private sector),
- Size of collection crew (smaller crews of 4 in government, larger crews of 6 for the private sector),
- Profit required for return on investment (10% for the private sector).

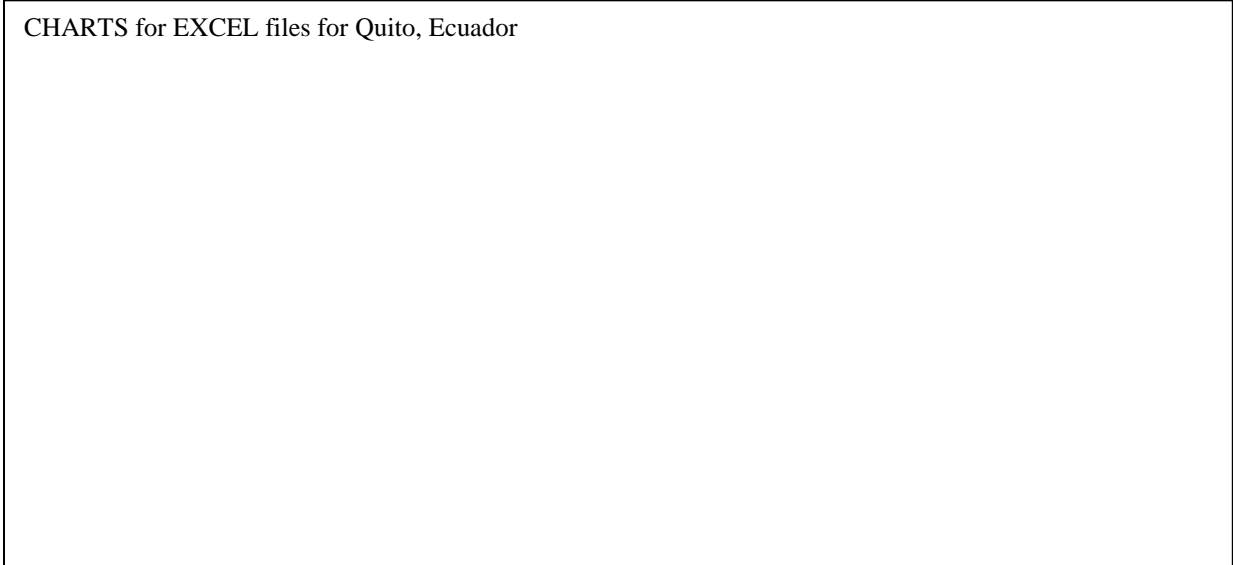
One reason for the higher personnel costs in government was because most workers had many years of service (44% of the workers have more than 15 years of service). Also, the labor unions had, over time, negotiated high cost of benefits (250% over basic salaries).

One of the few comparable items was time and motion of the collection worker's productivity; it was similar for both per hour of work. A 10% profit was assumed for the private. The similarity between costs of government and the private sector was determined to be largely because government had worked hard in the past 4 years to rationalize its collection routes, improve its worker and vehicle productivity, minimize vehicle downtime, control consumables, and create public cooperation. Quito improved its government collection worker productivity from 1.19 to 3.06 tonnes/collector between 1993 and 1997, and its vehicle productivity from 7.69 to 11.91 tonnes/vehicle.

⁸ Sandra Cointreau-Levine estimates done in 1998.

Box [] shows the higher productivity of the private sector in Quito, Ecuador; yet, there is a relatively low difference in cost between the private sector and government.

CHARTS for EXCEL files for Quito, Ecuador



Account for the Cost of Financing. There are not enough government revenues available in developing countries to cover their infrastructure needs. Loans from international agencies and donor countries can do little more than support investments in important replicable models of new infrastructure concepts. A key objective of involving the private sector is to open up a new venue for capital financing.

Private sector companies in developing countries typically borrow the money to make investments for new contracts. The private sector typically has 10% to 20% higher interest rates than government's opportunity cost of capital.⁹ Smaller private companies pay higher interest rates, because of perceived risk and limited collateral...even though experience shows that small businesses default less frequently on bank loans than middle-sized businesses.

Other Costs which the Private Sector Pays. Additional costs which the private sector bears, regardless of their quality and efficiency of service, include: customs duties, equipment insurance, vehicle and company registration, company income and property taxes, sales taxes, and marketing costs. See Box []. Customs duties in a developing country typically add from 20% to 100% to the cost of any imported equipment and spare parts; plus there often are hidden costs for obtaining the cooperation of customs officials. Comprehensive insurance, which is required by any commercial bank financing equipment, adds 3% to 6% of equipment's assessed value to its annual cost of ownership. Vehicle and company registration costs carry the added hidden cost to grease the government's bureaucratic wheels so that paperwork and approvals are done properly and on schedule. Company income and property taxes may

⁹ Based on data collected by the Sandra Cointreau-Levine in various developing countries.

be small, but the cost of negotiating these taxes downwards needs to be recognized. Foreign companies typically pay full freight when it comes to taxes, which creates an uneven playing field in developing countries. Marketing costs involve entertainment and gifts, as well as the costs for preparation of proposals. Costs for collecting payments involve more than just bill preparation and follow up calls, because of the high “payment for payment” costs which are demanded in some countries.¹⁰

The above extra costs do not exist for government, except as hidden subsidies. Box [] summarizes some of the extra costs of the private sector. While the private sector bears hidden costs, government has hidden subsidies – which are also costs. These costs might not necessarily accrue directly to the residents receiving the local government service under consideration; but might be covered by taxes collected from residents living elsewhere in the same country.

Hidden subsidies usually are not discernible in the local government budget for services. The costs for such subsidies may be shown under general administration budgets, rather than under the solid waste service’s budget. Sometimes, operational subsidies are buried within capital development budgets, which include transfers from central government. Some hidden costs of government service are listed in Box [].

Hidden Costs of Government Service	
v	Depreciation of Assets (buildings and equipment)
v	Debt Service on Capital Investment Utilities and Infrastructure Services
v	Replacement of Equipment Destroyed by Accidents versus Insurance
v	Seconded Staff from other Municipal Departments or from Central Government
v	Administration Overhead
v	Social Benefits (vacation, pension, medical)
v	Loss of Income from Corporate Taxes and Value Added Taxes
Box []	

Minimize Risks to Maximize Cost Savings. To tap the private sector’s investment potential, governments need to take the steps necessary to minimize investment risk and enable safe and appropriate periods of financing.

Nevertheless, most privatization contracts in the solid waste sector are still for periods of 3 to 12 months regardless of the nature of the investment, rather than the 5 to 15 years (i.e., 5 years for refuse collection and 15 for major

Hidden Costs of Private Sector Service	
v	Marketing, Political Manipulation
v	Debt Service of Borrowing for Capital and to Cover Cash Flow Needs when Payments are Delayed
v	Customs Duties and Value Added Taxes
v	Corporate and Property Income Taxes
v	Equipment Insurance and Registration
v	Company Registration
v	Cost of Corruption
v	Cost of Transactions
Box []	

transfer or disposal facilities) needed to match a new investment's depreciation period. When queried about this conflicting behavior, governments have several responses. Often, there is procurement ceiling on what local officials can award without provincial or central government review and approval.

Government’s desire to maintain autonomy and control may override its desire to obtain investment. Sometimes this leads to 3-month service contracts with small companies, regardless of the greater opportunity for efficiency and reliability from 5-year investment-based contracts with larger companies.

¹⁰ Based on data collected by Sandra Cointreau-Levine in various developing countries.

Contestability and Competition.

Developing countries, which contract for solid waste collection service, assume that privatization automatically means lower prices. Government costs are seldom analyzed in advance of privatizing to provide a baseline for assessing the private sector's costs. Comparative monitoring of costs from various private contractors is not conducted. The private sector does not realize low prices unless there is contestability (through comparison with the costs of government service) and competition (through comparative cost monitoring of all the private contractors).

Competition is not what it Seems.

The appearance of competition is greater than the reality in most developing countries. In some, companies will register several times, under different names, with changes in the names of directors, while the owners are the same in each case. In others, there's the appearance of competition while the companies are actually owned by key government officials and given favorable treatment in contract awards. Even when companies have distinctly separate and private ownership, there is a tendency for them to get together and agree on prices and conditions. In countries that have no social safety nets (i.e., any medical insurance, unemployment benefits, welfare, and disability compensation) and no explicit business ethical framework, relationships need to be protected. To the extent that there is competition, it typically occurs with mutual agreement and harmony.

Reasons for Private Sector Efficiency?	
▫	Accountable to Customers
▫	Contestability -- Competition Counts
▫	Clear Performance Measures Specified
▫	Management Flexibility
⇒	To Hire Qualified Staff
⇒	To Pay according to Performance
⇒	To Terminate Staff for Non-Performance
⇒	To Adjust Work Hours for Service Demand
▫	Freedom from Bureaucracy
⇒	To Obtain Parts for Repairs
⇒	To Lease Equipment as Needed To Subcontract to Meet Demand Peaks
▫	Freedom from Political Interference
⇒	To Optimize Ratio of Professional to Operational Staff
⇒	To Fully Apply Resources to only the Service for which they are Intended

Box []

Contestability Enhances Competition. Given that competitive forces are constrained in many developing countries, it may be advisable for the government to create contestability, i.e., government would maintain a portion of service delivery. Similarly, in small secondary cities, there may be too small a population to enable sufficient zones to stimulate competition among private firms. To create contestability in such cases, private contractors would service no more than 70% of any city area; and government would service the remainder. By having some collection fleet and labor available, government contestability if further enhanced by its ability to step in to take over the private sector service if and when there are failures, thus encouraging the private sector to perform optimally. In this example, the private sector also creates contestability, i.e., government workers realize that private sector

service could be expanded; and thus be motivated to work harder. Contestability creates a competitive tension that leads both the private sector and government to improve efficiency. Some of the USA cities with the lowest cost of solid waste collection service have achieved contestability through “managed competition”, wherein government submits bids in the tendering process with the private sector.

During tendering for solid waste services, the private sector submits bids. But government has no way of knowing the full basis for the bid price offered; nor can government readily determine whether the various bidders have gotten together to set prices (i.e., collusion). One way for government to truly understand the needs and costs of giving solid waste service is to actually be a service provider, even if only in one limited area. This allows government to monitor private sector service and prepare government estimates for tendering from a position of knowledge, rather than theory.

Co-opetition.

Co-opetition¹¹, a new business philosophy, combines the advantages of competition with cooperation. Co-opetition applies the principles of game theory, which originated as a branch of applied mathematics, to business management. Some of the premises of co-opetition, relative to privatization of the solid waste sector, are discussed below.

Government Makes the Rules. Government, residents (the customers it serves), and contractors (the private sector service providers) are all partners in providing solid waste management within each city. Government has the key role of creating the rules of the game. Government is obligated to develop rules that protect the interests of residents and level the playing field for contractors to compete equitably.

Government creates direct rules that require residents to comply with the safe discharge of their wastes and pay charges to cover costs, and require contractors to submit bids according to specified procurement procedures and abide by contract law. It also creates indirect rules, such as tax laws, registration requirements, environmental controls, minimum wage standards, arbitration procedures, and antitrust laws. In developing countries, government may further control the game by controlling the flow and pricing of various goods, such as electricity, water and fuel. Government may affect whether foreign companies participate in the game, depending on the nature of its rules about foreign exchange, repatriation of funds, work permissions for foreign specialists, and foreign ownership of local assets and corporate holdings.

Residents and Contractors Try to Change the Rules. Residents try to change the rules to give themselves a stronger position -- whether it is for lower prices, more personalized service, more frequent service, obligatory public consultation on new facilities, or more remote facilities (e.g., the NIMBY syndrome of public resistance, or "not in my backyard").

¹¹ Adam M. Brandenburger (Harvard Business School professor) and Barry J. Nalebuff (Yale School of Management professor), Co-opetition, A Currency Book published by Doubleday, a division of Bantam Doubleday Dell Publishing Group, Inc., New York, NY, USA, May 1996.

Contractors try to change the rules to give themselves the upper hand -- whether it is for higher prices, less specific terms of performance, fewer investment requirements, preference for local firms, tax breaks, or a monopolistic position. Contractors may even try to influence the environmental and occupational health and safety rules that government establishes. For example, in the United States, private waste management companies lobbied hard for stringent sanitary landfill regulations during the 1970's. Stricter regulation forced most government landfills and small privately owned landfills to be closed -- leaving only the sites owned by large companies still operating.

Government typically has more authority to change the rules of the game than the private sector. Unfortunately, one of the biggest problems with privatization in developing countries is that government changes the rules frequently and substantially. Often, rule changing occurs with each new political administration, to suit personal and political agendas. Most contracts for solid waste collection in developing countries include no penalty clauses, defining the precise activities or lack of services that comprise the basis for sanction. Yet, they often include a termination clause, allowing government to terminate the contract without reason within a specified number of days of notice.

Under the new concept of co-opetition, the players compete and cooperate. Co-opetition is a win-win game for all the players, rather than win-lose. In developing countries, the number of financially strong and technically competent private companies is limited, i.e., there are too few players to take the risk of playing by win-lose rules. For financial sustainability, and to develop the private sector capacity, a win-win strategy is essential. The first step to co-opetition is dialogue. Recent privatization efforts in Ghana, Guyana and Guinea involved government working side-by-side with the private sector to develop reasonable terms of performance in their waste collection contractual agreements, contracts or franchises which are longer than a year in duration, guaranteed and timely payment structures, and other ways to minimize risk to investors. In these countries the private sector capacity has developed substantially; and small firms which started with only one old open tipper are now operating several relatively new trucks, some of which are specially designed for refuse collection.

In Ghana, privatization workshops included private company representatives and government officials, working together to develop a model contract agreement. The agreement was designed to encourage investment from the private sector, provide profitability opportunities, and secure good service delivery for a reasonable price to government. In Quito, Ecuador, the city solid waste agency worked closely to create and train two micro-enterprises for solid waste collection, each comprised from residents of the neighborhoods they would serve. Every few months, the city solid waste managers work with the micro-enterprises to assist with accounting and service rationalization.

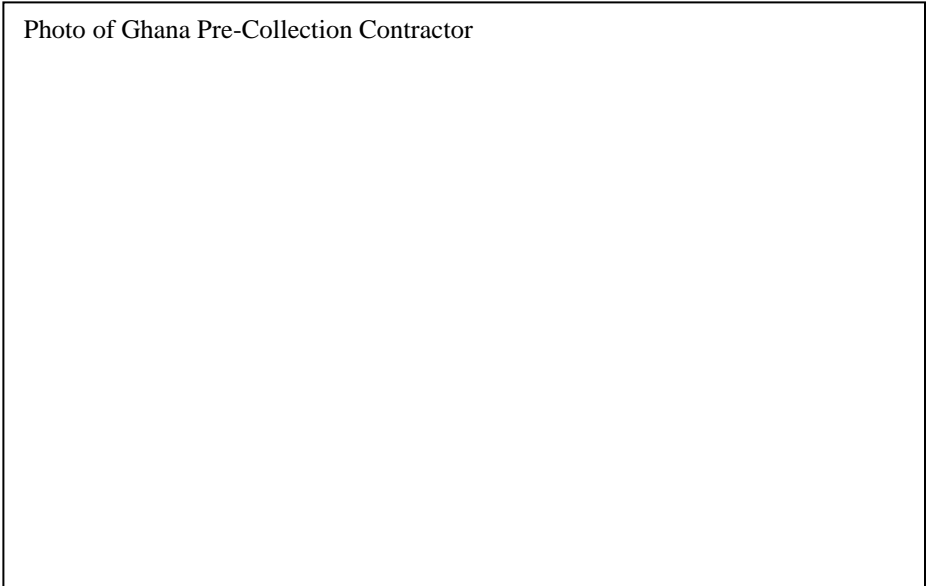
Managed Competition. In a number of local governments in the United States, "managed competition" is being conducted. It involves direct competition between municipal solid waste departments and private sector service companies for a publicly tendered service contract. To participate fairly, contractor selection is done by a different department of the municipality and the bids are carefully scrutinized by an independent auditor. An important aspect of making the process equitable is to have a full accounting

of all indirect costs that are more commonly hidden in government. Whether the municipality wins the bid or not for a service area, as Sacramento, California, has learned, developing a bid forces full accounting to be done and leads public sector staff to brainstorm over ways to reduce costs, find ways to rationalize operations, assess the competition and “think private”.

Photo of Quito Micro-Enterprise



Photo of Ghana Pre-Collection Contractor



Part III: Options for Private Sector Participation.

Most Solid Waste Activities can be Privatized. Most activities conducted by government can be done with some level of private sector participation. Governments should focus on privatizing those activities that are most inefficiently done by government and consume a significant portion of government budgets. For example, solid waste collection should be a privatization priority, because it is typically inefficiently done if there is no contestability to government service. Furthermore, solid waste services are considered relatively easy for the private sector to undertake, regarding skill level required, dimension of the investment required, and investment risk. Maintenance should also be given priority for private sector participation, because of the delays typical of government workshops (e.g., due to slow procurement procedures and cash flow problems in purchasing spare parts). Sweeping is another area for potential privatization, because it is often subject to labor restrictions on the hours of worked and cost of overtime.

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

- Provision of vehicles or heavy equipment - by lease/rental agreement with equipment owners which provide their own drivers and maintenance
- Pre-collection of residential solid waste - by private subscription (i.e., where the household engages any licensed collector of its own choosing and multiple collectors may service the same neighborhood, and each user pays directly to the licensed collector)
- Pre-collection residential solid waste – by service contract (i.e., where the City selects the company which receives the contract, based on qualifications and competitive bidding, and pays the private company) or franchise (i.e., where the City selects the company which receives the franchise, based on qualifications and proposals, and the user pays directly to the private company)
- Collection of construction/demolition debris - by private subscription
- Collection of industrial wastes from large factories - by private subscription
- Collection of commercial wastes from large hotels, markets or stores - by private subscription
- 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 or franchise, or management contract (i.e., where City selects a company to manage government equipment and staff, and pays for that management oversight)
- 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 with small workshops, where each repair job is contracted after solicitation of several quotes from a list of accepted suppliers
- Repair of City solid waste equipment - by service contract on a long-term basis
- 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

Types of Private Sector Arrangements.

Privatization involves reducing government ownership and/or activity within a service, such as solid waste collection and disposal, traditionally conducted by government. Government ownership is reduced when government agencies are commercialized, when government-owned enterprises are divested, and when public/private joint ventures are formed. See Box [] below.

REDUCING GOVERNMENT OWNERSHIP

Commercialization

Government agencies for solid waste management are restructured into semi-private enterprises with some degree of government oversight, but with the management freedom to operate at optimum efficiency and generate revenues. This typically includes establishment of a segregated or enterprise fund, set aside from general revenues, for sole use of the commercialized solid waste entity. In the case of such enterprises, the assets are typically owned by the enterprise and government is a shareholder of the enterprise (but not necessarily the only shareholder). Various forms of commercialization include: private corporations, public corporations, semi-private corporations, and public authorities.

Divestiture

Government-owned enterprises and their related assets are partially or wholly sold to the private sector, with the expectation that the basic function of the enterprise would continue.

Public/Private Partnership

Government establishes a joint venture with the private sector to which each party contributes assets and resources, and each party assumes certain risks and responsibilities defined in contractual agreements. While this term is sometimes used broadly to mean all public/private arrangements, it is a legally defined terms in some countries (such as Indonesia) to mean joint venture.

Box []

Privatization is also a means of as reducing government activity. Government activity is reduced when the private sector participates in service delivery through contracts, franchises, concessions, and open competition. See Box 2 that follows.

REDUCING GOVERNMENT ACTIVITY

Contracting

Government awards a finite-term service contract to a private firm to provide solid waste services and government pays the firm for the services delivered; or government awards a management contract to a private firm to provide management oversight to others providing solid waste services.

Franchise¹²

Government grants a private firm an exclusive monopoly to provide a specific type of solid waste service within a specific zone and the firm generates its own revenues from customers within the zone or solid waste by-products removed from the zone.

Concession

As with the concept of logging, mining or water concessions, government allows the private sector to utilize one of its resources, in this case solid waste, for profit-making purposes. Concessions typically involve construction of major long-term facilities to sort, treat, transfer, or dispose of solid waste. Government may pay a tipping fee¹³ or service charge to defray part of the costs of processing the solid waste, but sale of the concession's product (such as compost) or service to non-government customers typically covers the remaining costs. Government provides a guarantee of flow control, so that wastes received closely match facility design capacity. Most concessions are operated on a "take or pay" basis, where tipping fees are paid even if the guaranteed flow of waste is not provided.

Open Competition

Government licenses private firms to freely compete with each other in providing solid waste management services. No firm has monopoly within a zone and price regulation is not required. Each firm generates its own revenues from the subscribers to its services.

Box []

Privatization Arrangements for Waste Collection. Each of the above options has value and selection among these options should depend on site-specific conditions. Generally, in middle-income and high-income countries, contracting for household collection services is preferred over franchise and open competition. In contracting, government is the client and payee, and therefore has control to demand the contractor that performance expectations be met. For contracting of collection service to be possible, government needs to have sufficient revenues to fully cover total costs of service, including depreciation, interest on borrowing, salaries, consumables, insurance and profit. When governments conduct collection service with their own staff and equipment, their budgets typically include only salaries and consumables – and depreciation costs are hidden subsidies. For collection contracting to be possible, government budgets for recurrent may need to be doubled or tripled to enable the private sector to fully cover its costs. When such dramatic budget increases are not possible, government should explore the other options of privatization, namely franchise and open competition.

¹² There is some confusion about this English term, "franchise", since the French term for this type of arrangement is similar to the word "concession". However, in English the term "concession" does not refer to a zonal monopoly, but only to a major new facility.

¹³ Tipping fees refer to the payment made to discharge waste at a transfer station, disposal site, or treatment facility. The origin of the term "tipping fee" comes from the concept of unloading – or tipping. In an inter-municipal disposal facility, each municipality may pay tipping fees. At most disposal facilities, individual contractors and private vehicles from commercial and industrial sources, commonly pay tipping fees. On the other hand, "user fees" in solid waste typically refer to payments made at the source of waste generation for collection services received at the source (as well as related costs for transporting and disposing of the wastes which were collected).

Franchise is sometimes the preferred method of privatizing solid waste collection in low-income countries that have very constrained government revenues. Also, in countries which have had a strong socialist/communist tradition in which all services have been heavily subsidized, and in countries with a particularly well-known tradition of corruption, residents may not be willing to pay taxes or user fees to government. In such countries, residents may prefer the franchise method of solid waste collection, because they feel that the private sector will be motivated to provide service in return for fees. Conducting willingness-to-pay surveys prior to privatization is one way to obtain insight on residents' preferences. Theoretically, individuals paying for service under franchise arrangements have limited individual bargaining power or performance influence with the franchisee because he/she has a zonal monopoly. However, the franchise is financially motivated to satisfy their customers in order to be paid, and experience indicates that franchises are very customer-responsive. Government, while not the payee, still has responsibility to award the franchises to only qualified responsible firms and to monitor their performance with respect to agreed specifications.

Open competition is not generally recommended for household refuse collection in laid-out residential areas, because it does not allow economies-of-contiguity (i.e., wherein only one collection vehicle travels a continuous collection route to provide service). However, open competition is the most common and preferred method of waste collection from large generators, such as large hotels, embassies, industries, and commercial establishments. Open competition may also be viable for large residential apartment complexes. Typically, cities require that large commercial and industrial generators with (say) over 2 cubic meters daily of waste make their own arrangements through private subscription directly with private haulers. It is the government's responsibility to license private haulers and make sure they comply with licensing criteria. Special wastes are also handled through open competition arrangements, wherein households request special collection of bulky wastes, construction/demolition debris, and yard wastes on an as-needed basis; and establishments request special collection of infectious medical wastes, hazardous wastes, and spoiled or dated foods or medicines.

Pre-collection is typically conducted through franchise arrangements. In small communities, individuals gather the waste from door-to-door and take it to a communal collection point for removal. 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 now is common in most Indonesia cities, reaching about 70% of the country's urban population. In these cities, pre-collection involves hand carts or tri-cycle carts collecting the waste from 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 collection. In both cases, residents pay through direct user charges to cover the cost of pre-collection and part of the cost of collection.

In the mid-1980's, neighborhood pre-collection systems (involving micro-enterprises created from neighborhood residents¹⁴) began to be developed in Peru and now are spreading throughout Latin American cities, including cities in El Salvador and Ecuador. Experience in many developing countries over the past twenty years has proven that households are commonly willing to pay for pre-collection service directly to a franchisee.

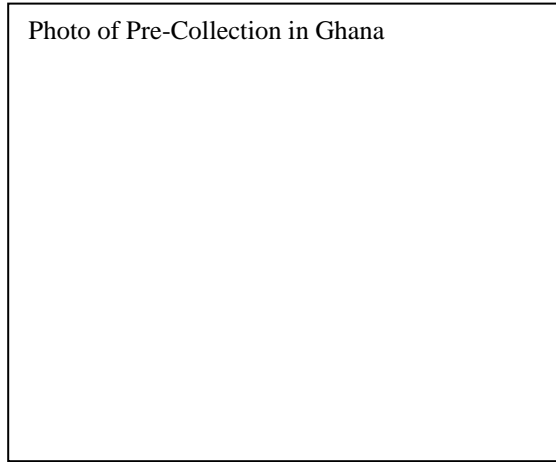
Since 1990, a significant number of African cities are implementing pre-collection. The African examples include micro-enterprises of neighborhood youths have been established in Abidjan, Ivory Coast, and Dakar, Senegal; non-government organizations (NGO's) in Cotonou, Benin; and private entrepreneurs in Conakry, Guinea.

In 1995, only 10% of Conakry's solid waste were being collected. From some neighborhoods, individuals with carts or tractors were conducting pre-collection for a fee and taking the wastes to the city's communal containers. The city collection fleet could not be maintained because of inadequate municipal revenues; and city emptying of these communal containers was irregular and inadequate. Residents were unwilling to pay taxes or user fees to the city for improvements to be made; however, willingness-to-pay survey showed they would be willing to pay directly for service to the private sector. In 1998, various small enterprises were awarded franchise zones for waste collection and residents were advised to privately subscribe for service with these franchisees. For an average monthly fee of about 3 \$US/month, households are now subscribing for private service and the city has become significantly cleaner.

Photo of Pre-Collection in Indonesia



Photo of Pre-Collection in Ghana



¹⁴ The term micro-enterprise, when used in solid waste, means more than "very small". It typically refers to creation of a new organization from among residents in the neighborhood to be served for the specific purpose of cleaning the neighborhood. In some cases these micro-enterprises then venture beyond their neighborhood to provide cleansing service in other neighborhoods, as in the case of Quito, Ecuador.

Phnom Penh, Cambodia has a citywide franchise collection system managed by one company. That company sub-franchises with several companies, through a fee-sharing arrangement. While the city would have preferred to contract for service, the revenue base was far too inadequate to consider this option (e.g., tax revenues to the country in 1996 were less than 8% of income).

The biggest concern with having open competition and franchise systems of solid waste collection is that some waste generators would not participate in subscribing to service and would not properly dispose of their wastes themselves. In the USA's rural areas, where economies-of-contiguity are of less importance than in urban areas, open competition is the most common method of solid waste collection despite its higher cost – because people like to choose their own service provider and solid waste costs are only a small portion of household income. However, every rural community provides a local collection point, so that residents who are not willing or able to pay for service can take their wastes to the collection point. These collection points have become popular places for village politicians to do their weekend campaigning prior to elections. To ensure that wastes are not dumped illegally, open competition necessitates a strong regulatory and enforcement framework.

Privatization Arrangements for Disposal. For disposal services, in the context of a good environmental regulatory framework and enforcement, open competition is preferred over contract. In open competition, private companies with disposal facilities are able to compete for clients, regardless of how far away these clients might be from the facility. On the other hand, when government contracts for disposal service, it limits the service wastes within its respective jurisdiction.

When a private firm or public/private partnership builds, owns, and operates a facility, it is called a BOO agreement. When a firm builds, owns (temporarily), operates and transfers ownership to government, it is known as a BOT agreement. Ownership is usually transferred to government at the end of the concession period; but, in some cases (e.g., Hong Kong) ownership is transferred to government at the end of successful start-up operations. When a firm designs, builds, owns, and operates (and/or transfers) a facility, it is called a DBOO (or DBOT) agreement. The private sector typically prefers to design the facilities it eventually must build and operate. This is particularly true for sanitary landfills, because of the potential long-term liability of these facilities if the design is inadequate in enabling environment protection. These agreements are generally referred to as concession types of contractual agreements between government and the private sector. The size of the investment and the length of the depreciation period are key differences between a contract, where the private sector invests in equipment and supplies, and a concession, where the private sector invests in a facility. Under a concession, the replacement and repair of the facilities needs to be well defined.

Privatization of collection, treatment, and disposal of high-risk hospital wastes is recommended. Because the hospitals are generally willing and able to pay for service, the preferred mode of privatization would be a *concession agreement* to design, build, own, and operate (DBO) the treatment and collection systems for special medical wastes. Also, the same private company could supply the special containers for sharps (i.e., syringes) and infectious wastes (i.e., bandages, food wastes from the infectious disease ward).

In Metro Manila, the Philippines, a private sector entrepreneur built a special high temperature incinerator for high-risk hospital wastes and established a well-controlled collection system. Wastes are sealed in a plastic covered bin at the source and given an identification code; the sealed bin is later placed directly in the incinerator, and the wastes burned along with the bin. Within several years, more than half of Metro Manila's 200 medical centers and hospitals subscribed to the service, even in the absence of an enforced regulatory framework. This is an *open competition* type of privatization, wherein each hospital privately subscribes for service.

Privatization of landfill operation at existing sites can be conducted a *service contract*. For any new sanitary landfills, full design-to-operation privatization should be considered. The mode of such privatization would be a DBOO or DBOT *concession agreement*. Colombo, Sri Lanka has been working on the implementation of a new sanitary landfill through this method; and Hong Kong has already implemented two several sanitary landfills through this method. In the Colombo, Sri Lanka example the World Bank has made available project financing for a significant part of the sanitary landfill's capital investment, thus minimizing the risk to private sector investors and making the project more attractive to them.

In Mauritius, under a World Bank project, the sanitary landfill was designed by one contractor, constructed by another contractor and operated by another. During the transition period between contractors, there were many disputes regarding the adequacy of construction, with the operating contractor resisting full responsibility for maintaining the works taken over. If, in the long-term, there were adverse environmental consequences (such as groundwater pollution), there undoubtedly would be a legal battle among the design engineer, construction contractor and operations contractor over which one is responsible. The lesson learned was clear – for sanitary landfill privatization, construction and operation responsibility is better placed under one contractor. Environmentally, this has the added advantage of clarifying cradle to grave responsibility for environmental consequences.

To deal with the need for minimizing investment risk to the private sector, the Inter-American Development Bank is now able to provide financing to government to cover part of the cost of a concession; and in the tender document it can state that financing to the private sector could be also arranged. Both the World Bank and the Inter-American Development Bank can provide guarantees against non-commercial risk.

SOME EXAMPLES OF WHO IS DOING WHAT IN PRIVATIZATION?

Commercialization of the Solid

Waste Management Agency:

Quito, Ecuador
Medan, Indonesia
Bandung, Indonesia
Lagos, Nigeria
Onitsha, Nigeria
Conakry, Guinea
Lima, Peru

Commercialization of the Composting Agency:

Ho Chi Minh City, Viet Nam

Public/Private Joint Venture for Collection:

Riga, Latvia
Semarang, Indonesia

Public/Private Joint Venture for Incineration:

Surabaya, Indonesia
Manila, Philippines

Public/Private Joint Venture for Sanitary Landfill:

San Salvador, El Salvador

Service Contract for Pre-Collection:

Fez, Morocco

Service Contract for Collection:

Sao Paulo, Brazil
Rio de Janeiro, Brazil
Santiago, Chile
Guayaquil, Ecuador
Quito, Ecuador
San Miguel, El Salvador
Banjul, Gambia
Tema, Ghana
Georgetown, Guyana
Jakarta, Indonesia
Abidjan, Ivory Coast
Montego Bay, Jamaica
Kuala Lumpur, Malaysia
Port Louis, Mauritius
Dar es Salaam, Tanzania
All cities, Trinidad and Tobago
Caracas, Venezuela

Service Contract for Street Sweeping:

Surabaya, Indonesia

Service Contract for Transfer:

Lahore, Pakistan

Damascus, Syria

Service Contract for Sanitary Landfill:

Guayaquil, Ecuador
Buenos Aires, Argentina
Bogota, Colombia
Port Louis, Mauritius
Casablanca, Morocco

Contract for Repair and Maintenance:

Padang, Indonesia
Semarang, Indonesia

Contract for Performance Monitoring:

Buenos Aires, Argentina
Sao Paulo, Brazil
Bogota, Colombia

Franchise for Pre-Collection:

Abidjan, Ivory Coast
Lima, Peru
Bamako, Mali
Faisalabad, Pakistan
Conakry, Guinea

Franchise for Collection:

Accra, Ghana
Bogota, Colombia
Conakry, Guinea

Franchise for Collection of Recyclables:

Cairo, Egypt
Medan, Indonesia

Franchise for Mining Compost from Dumpsite:

Medan, Indonesia
Bombay, India

Franchise for Construction Debris Recycling:

Riga, Latvia

Franchise for Fee-Based Cost Recovery:

Guayaquil, Ecuador
Quito, Ecuador
Surabaya, Indonesia
Padang, Indonesia
Tema, Ghana

Concession to Build, Own, Operate Transfer Station:

Port Louis, Mauritius
Jakarta, Indonesia

Hong Kong

Concession to Build, Own, Operate Sanitary Landfill:

Colombo, Sri Lanka

Hong Kong

Lahore, Pakistan

Concession to Build, Own, Operate Compost Plant:

Semarang, Indonesia

Porto Novo, Benin

Open Competition for Waste Picking at Disposal:

Most cities

Open Competition for Buying Recyclable at Source:

Most cities

Open Competition for Collection from Large

Sources:

Most cities

Open Competition for Collection or Pre-collection in

Marginal Areas:

Most cities

Source: Sandra Cointreau-Levine,
based on direct field experience

Part IV: Considerations for Private Sector Participation

It is relatively easy to improve solid waste collection and disposal by involving the private sector. But service improvement alone is not the key measure of success. Privatization is successful only when service improvements are financially sustainable and cost-effective. This section discusses some of the considerations for how to optimize privatization. Competition, accountability, and transparency are essential ingredients to successful privatization. To accomplish these objectives, the following actions are recommended:

- Maintain private sector and government balance for optimum contestability.
- Define private sector service zones that are equitable and comparable for optimum competition.
- Seek harmony and co-opetition with private sector partners for win-win contractual and operational relationships.
- Develop techniques and facility sizes that are appropriate and economic.
- Achieve economies-of-scale and optimum spans of management.
- Rationalize collection and transfer haul distances that address economic break-points.
- Develop contractual periods that enable economic depreciation of assets and payment of loans.
- Build government capacity to work as an effective partner in contracting and performance monitoring, as well as a contestable service provider on competitive zones of service.
- Encourage private sector joint ventures that bring in foreign expertise and optimize use of local knowledge and skills.
- Dialogue with labor over restrictive labor practices and redundancy, seeking a phased program of improvements and staff reductions which minimizes adverse impacts to people's livelihood.

Maintain Private Sector and Government Balance.

Service arrangements need to be long enough period to allow full depreciation of investment, large enough to allow economies-of-scale and competitive enough to encourage efficiency. Until the private sector within the developing country has developed, it is strongly recommended that government maintain at least 30% of the overall collection service area during the first 5 years of privatization. After that, for another 5 years to maximize contestability and minimize the potential for collusion, government probably should continue to maintain at least 20% of the overall collection service area.

In Stockholm, Sweden, the city operates 15% of the collection service and contracts out the remainder to 5 different private companies. It finds that an advantage of this strategy is that the city can easily compare its costs with the private sector costs, which optimizes contestability. Another advantage it finds is that it can use its own operation to make trials and research new methods, and thus encourage private sector rationalization of service delivery.¹⁵

¹⁵ Wiquist, W. "Privatization has Many Faces – Swedish Experiences". The Swedish Association of Waste Management. Proceedings of SWANA/ISWA World Congress, Charlotte, North Carolina, October 1998.

In Bogota, Colombia, 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 3 contractors in three zones, with government operating in only about one-third of the city. To minimize the potential for collusion or cartels, 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 could not adequately improve service performance in its zones (reportedly due to labor restrictions), the city converted to an entirely privatized system, which now has 7 zones operated by 4 private franchisees. These companies collect user fees through a unique company in which all of them are stockholders.

Managed competition has been discussed earlier (i.e., in Part II, under Co-opetition). Managed competition has become the most cost-effective service delivery option in the United States. It began about 10 years ago and involves government and the private sector competitively bidding for service against the private sector and both operating in difference comparable zones in a competitive manner. Phoenix, Arizona, was one of the first cities to implement managed competition. Initially, it failed to win service zones during the bidding process; but eventually became a successful bidder and won back many of the city's service zones. Every 7 years in each service zone, Phoenix's solid waste department must compete again with the private sector over the service contract for that zone.

Labor Redundancy.

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. A number of cities in the United States have adopted a policy of no layoffs, since natural attrition creates significant flexibility in a transitional move toward involving the private sector. While employment is guaranteed, people are not assured of keeping the same job position in government. Jakarta, Indonesia slowly phased in private sector participation to meet the shortfall in service as the government workforce gradually reduced naturally, resulting in no employee terminations. Phoenix, Arizona, USA on the other hand, guaranteed employees would keep their same job position, but not necessarily at the same pay level. Where layoffs are unavoidable because of excessive staffing or inflexible restrictive labor practices, severance pay and livelihood training and networking are essential mitigation measures to minimize adverse impacts.

Privatization in Bogota, Colombia did not result in job terminations for government workers until the 5th year, when the city went completely private because it could not obtain improved productivity from government workers. 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.

In Mauritius, solid waste collection contractors received workers transferred from government. However, after less than a year, if the workers did not perform to the contractors' satisfaction,

they could be dismissed. This type of arrangement circumvents normal severance pay requirements of government labor and is not a fair arrangement, especially for senior vested employees who have given many years to government service with the promise of employment security and full pension.

This is similar to the United Kingdom example, where after 1989 all municipal solid waste service agencies were required by national law to commercialize and compete for contracts to serve collection zones. The UK experience has led to overall cost reduction for collection service of about 25%; with the commercialized government service organizations winning tenders in about two-thirds of the collection zones.

In 1998, Quito, Ecuador studied how best to phase in privatization without adversely affecting labor or creating significant costs. The first step was to improve government service efficiency, through improved routing and better crew size allocations. Then the city adopted a strategy of natural attrition, including a freeze on hiring, to gradually reduce government personnel in solid waste management. At the same time, it offered a voluntary retirement, with an attractive lump sum payment incentive to all workers with over 20 years of service and over 55 years of age. Within the private sector contracts, incentives were also offered for government workers to transfer to the private sector. This incentive was targeted at reducing the number of workers that could not take the voluntary retirement option. The overall goal of the strategy was to reduce government staffing without incurring the extremely high severance pay costs of a government layoff.

Appropriate Duration of Agreement.

Contracts or franchises that involve investment in vehicles should have a minimum length of 5 years, and investment in facilities requires a minimum contract length of 10 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. Another option is for government to purchase the equipment and arrange a lease/purchase agreement in parallel with the service agreement, as is underway in World Bank financed project for secondary cities in Ghana.

Contract periods should cover the standard depreciation and thus enable lower costs. For example, solid waste collection contracts in Bogota, Colombia were set for a 5 year period; transfer station concession contracts in Jakarta, Indonesia were a 10 year period, and both transfer station and sanitary landfill concessions in Hong Kong were for 15 years. Shorter periods of obligation are possible for privatization of pre-collection, because the investments are for shorter-lived equipment such as handcarts.

Photo of Jakarta Transfer Station

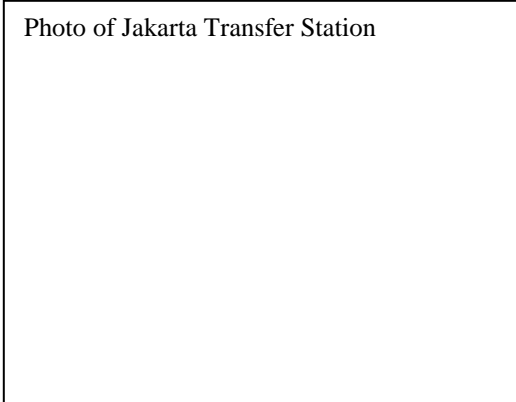
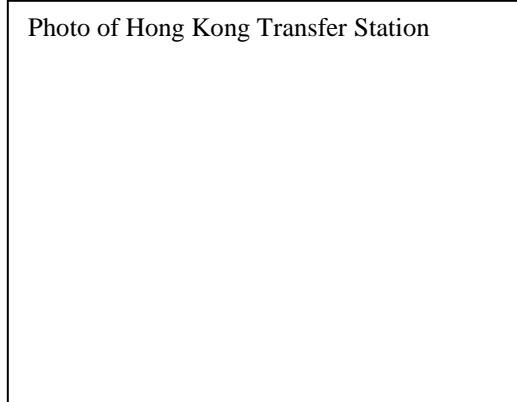


Photo of Hong Kong Transfer Station

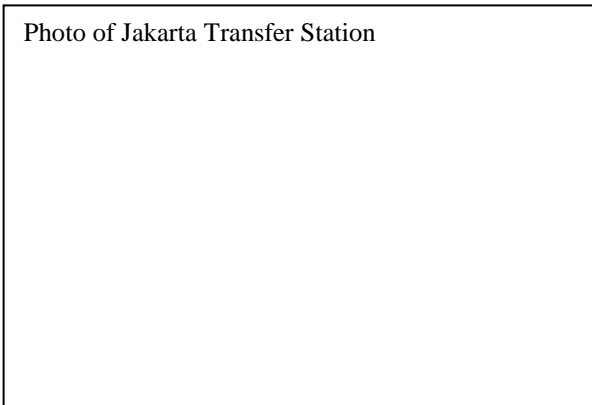


Flow Control.

A significant issue for successful implementation of regional solid waste facilities is flow control. This issue would need to be carefully addressed to minimize risk to private investors. Flow control involves the guarantee of a minimum quantity of waste will be delivered to a facility. Privatization contracts should specify the minimum, and require a “take or pay” commitment from government, wherein government either takes the correct amount of waste to the facility or pays for that specified minimum.

For regional facilities, flow control is a particularly troublesome issue to resolve. For example, flow control problems led to the closure of a regional privatized sanitary landfill in Buenos Aires, Argentina during the 1980's; the closure of a privatized composting plant in Semarang, Indonesia in the 1990's; and loss of revenues at a privatized sanitary landfill in Mauritius in 1998. For regional facilities, it is more difficult to make each municipality adhere to the flow control requirements, even though each is a signatory of the intermunicipal agreement. With new political administrations, municipalities may walk away from their commitments without penalty. Local laws need to be carefully reviewed to find a way to make binding intermunicipal agreements, and there needs to be the political will to enforce the agreements' obligations.

Photo of Jakarta Transfer Station



In the case of regional disposal facilities, the provincial governments and/or central government may need to provide flow control guarantees. Perhaps such guarantees could be backed by adjustments in central government transfers to local governments, thus providing a disincentive for municipalities to abandon their commitments.

Concern over flow control is greatest for disposal facilities. Transfer facilities have an inherent economic incentive for participants to bring their waste, because they save money on transport. However, disposal is simply a cost. Unless there is a strong environmental regulatory framework penalizing municipalities that do not provide safe disposal, many local governments will resort to inadequate disposal during hard economic times, or when there are other political agendas. Any plan to conduct privatization of solid waste disposal for a region would need to assure that the environmental regulatory framework was adequately developed and would be enforced.

Worker Health and Safety.

Data from high-income countries shows that the relative risk for disease and injury in solid waste work is high. In Denmark, solid waste workers are 6 times more likely to have occupational infectious disease than other workers, and 2.6 times more likely to have allergic pulmonary disease. In the USA, solid waste collectors are 10 times more likely to be killed, mostly in vehicular accidents, than other workers. Some of the adverse health impacts include: vibration injury for heavy equipment operators, respiratory infection from bioaerosols during collection vehicle loading, dust related asthma and diminished pulmonary function from waste sorting, lower back and joint injury from heavy lifting, burial and accidents at landfills with unstable slopes, vehicle accidents during collection. The range of adverse health impacts that could happen to solid waste workers is described in a chapter of a medical textbook, entitled International Occupational and Environmental Medicine¹⁶.

With privatization, special care must be taken to ensure that worker health and safety is not being sacrificed to obtain lower costs. The private sector in developing countries is not regulated in terms of occupational health and safety. Furthermore, most privatization efforts in developing countries result in a heavy reliance on daily or contract workers. Such workers receive little or no training, and have no leverage to require safe working conditions. Therefore, contractual agreements need to carefully cover the requirements for worker protection.

Willingness to Pay.

Although solid waste management service is a public good, collection of user charges enables service to be financially sustainable. House-to-house surveys indicate which methods of service are preferred and how sensitive people are to price. Surveys also provide contextual information on the economic level of households and their ability to pay for service. On the other hand, until people actually receive service and experience its benefits, they are not able to accurately predict how much they would be willing to pay for it. For this reason, willingness-to-pay surveys need to be conducted both prior to and after commencement of service. Annex [] provides a sample willingness-to-pay survey.

¹⁶ Jessica A. Hersztein, MD, et. al, Editors, chapter on solid waste management health and injury impacts written by Sandra Cointreau-Levine, International Occupational and Environmental Medicine, Mosby Publishers, May 1998.

People in developing countries tend to be willing to pay for service that they receive directly, such as curbside service to their household. But experience in developing countries indicates that they are not willing to pay for service which comes only to the neighborhood, such as emptying of the communal container, unless they pay for that service as a community. For example, in Accra, Ghana, residents resisted paying a tipping fee at the communal container for each load of waste they discharged into the container. On the other hand, in Sekondi-Takoradi, Ghana, residents agreed to pay their neighborhood association for the association to pay, in turn, for the communal container to be emptied periodically. Similarly, residents of neighborhoods in Conakry, Guinea paid as a neighborhood group for each communal container emptying. Cities in Indonesia have used this cost recovery mechanism for more than a decade; pre-collection is managed by the neighborhood leaders with pushcarts going from door-to-door, collection is conducted by the cities from the neighborhood transfer depot, residents pay their neighborhood leader for both pre-collection and collection, and the leader pays the city for removal of waste from the neighborhood transfer depot.

In some countries, people are more willing to pay for service from the private sector than from government. This is partly because of a traditional bias that taxes should pay for services from government. But, more importantly, it is because of the perception that private sector service is more efficient and reliable than government service. If private sector service is well structured, so that income is affected by service delivery, the resulting efficiency and reliability of service is likely to be high.

Equitable Collection Zone Definition.

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 often inadequate. Therefore, the zones delineated for private and government service need to be as equitable as possible for contestability to be assured. While equitable, each zone will have some unique differences. One mistake often made in developing countries is to have one set price per tonne of waste collected or per kilometer of road to be swept, despite the site-specific differences between zones. Another mistake is to pay the same lump sum monthly fee for each zone, despite the differences between zones. For privatization to be efficient there should be a competitive tender process that recognizes that each zone is unique and allows contractors or franchisees to bid according to the zonal conditions.

For reliable collection service, it is recommended that a minimum zone size for private sector service allow for at least 3 vehicles, so that even if one of the vehicles breaks down, same-day service can be provided -- by operating 2 trucks during a second shift. However, for economies-of-scale, the optimum span of management for supervisor and mechanics to trucks is normally about 5 to 1, suggesting zone sizes for 5 vehicles -- 50,000 to 100,000 people. Zones for privatization in Caracas, Venezuela and Bogota, Colombia were developed to attract international waste management contractors -- usually requiring zone populations of 400,000 to enable carrying the cost of foreign expertise for planning and operations oversight.

To make the zones equitable, each zone should have a comparable level of difficulty to service and a comparable opportunity for generating income -- in other words the problems and the prospects should be equitably shared. Conakry, Guinea and several cities in Ghana have

conducted zoning studies prior to privatization of street cleaning and solid waste collection. The terms of reference used for these studies are provided in Annex [].

Economies-of-Scale.

Each method of collection (whether animal cart, tractor with trailer, or truck) has an optimum quantity of waste which it can collect during its work period. By pilot testing alternative loading techniques and crew sizes, coupled with time and motion analysis, the optimum quantity can be determined. The optimum quantity depends on the number of workers assigned to the equipment, the types of containers used for storing the waste (e.g., piles on the ground, plastic bags, baskets, covered bins), the location of the containers (e.g., curbside, front gate, backyard), the road conditions for access (e.g., paved, unpaved, steep, narrow) and the traffic conditions (e.g., slow or congested, or rapid and clear).

For economies-of-scale in collection, each equipment unit needs to operate at its optimum quantity, and the overall group of equipment units need to operate at the optimum span of management for supervisors and mechanics. For collection trucks, a typical span of management for supervisors and mechanics is 1 per 5 units. On the other hand, for manual pre-collection equipment (e.g., handcarts, burros with baskets), a typical span of management for supervisors is 1 per 10 units; while for mechanized pre-collection equipment (e.g., power tillers with trailers), it would range from 1 per 5 units to 1 per 10 units. Box [] shows the productivity of various equipment options for Port Louis, Mauritius.

For transfer, economies-of-scale require full utilization in one work period of the transfer vehicles employed. The size of the vehicle and the distance to disposal affect the quantity of waste that the vehicle can reasonably handle. To a lesser extent, economies-of-scale for transfer include consideration of on the spacing of transfer stations and the ease with which a supervisor can travel from one to another to conduct monitoring. Box [] shows the productivity of various transfer equipment options for Quito, Ecuador.

Economies-of-scale in disposal of solid waste are based more on a facility constraints than a facility's mobile equipment. There are enormous economies-of-scale for sanitary landfill. The international private sector typically looks for a minimum landfill size of 300 tonnes/day, both for full utilization of landfill equipment and to have an adequate base of income to support the cost of foreign expertise. Since few secondary cities have this quantity of waste, bundling the needs of several small to medium sized cities into one regional facility needs to be considered if private sector investment (such as through a design, build, own, and operate concession agreement) is desired. Box [] shows the cost differences for various sanitary landfill sizes for El Salvador.

Economic Trends in Solid Waste Rationalization

υ **For Collection -- Divide**

Divide the City into Zones which enable Collection Economies-of-Scale, Rationalization of Operations, Equitable Profitability Potential, and Optimized Competition

υ **For Transfer -- Bundle**

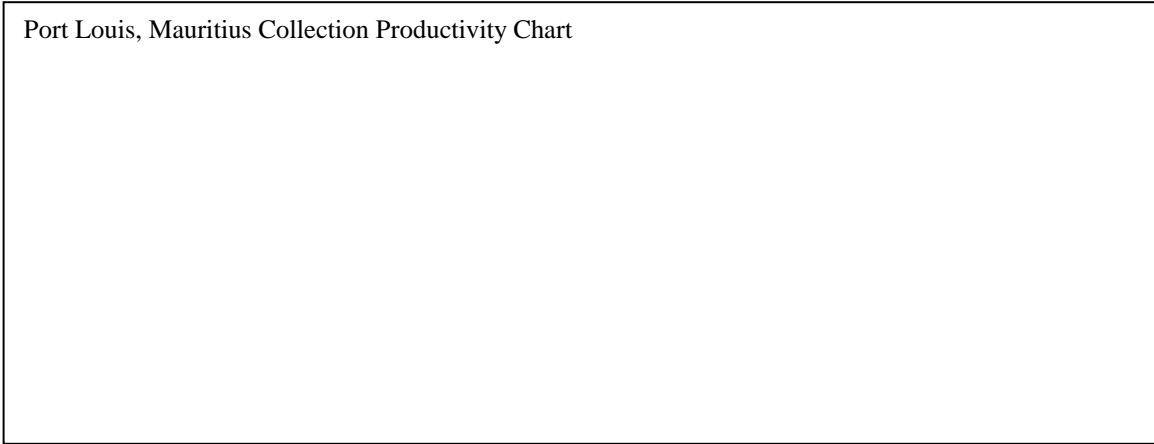
Bundle Cities and Towns into Inter-Municipal Regions which address Transfer Economic Breakpoints and Transfer Station Economies-of-Scale

υ **For Disposal -- Bundle**

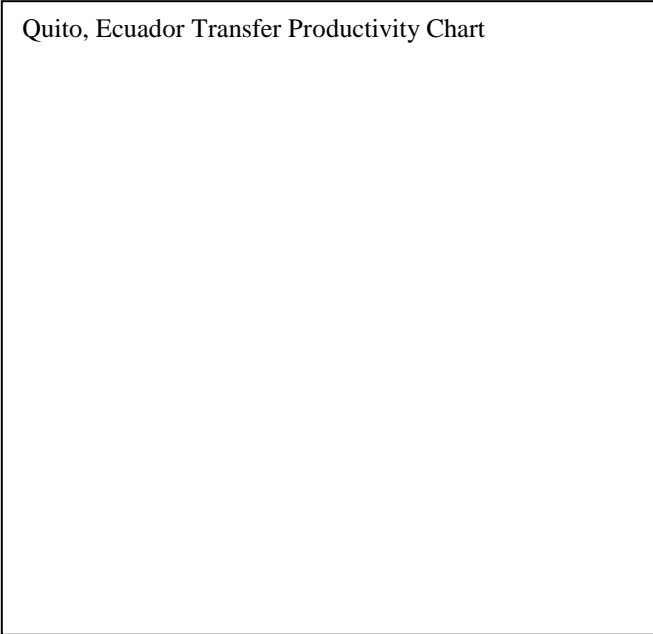
Bundle Cities and Towns into Inter-Municipal Regions which enable Disposal Economies-of-Scale

Box []

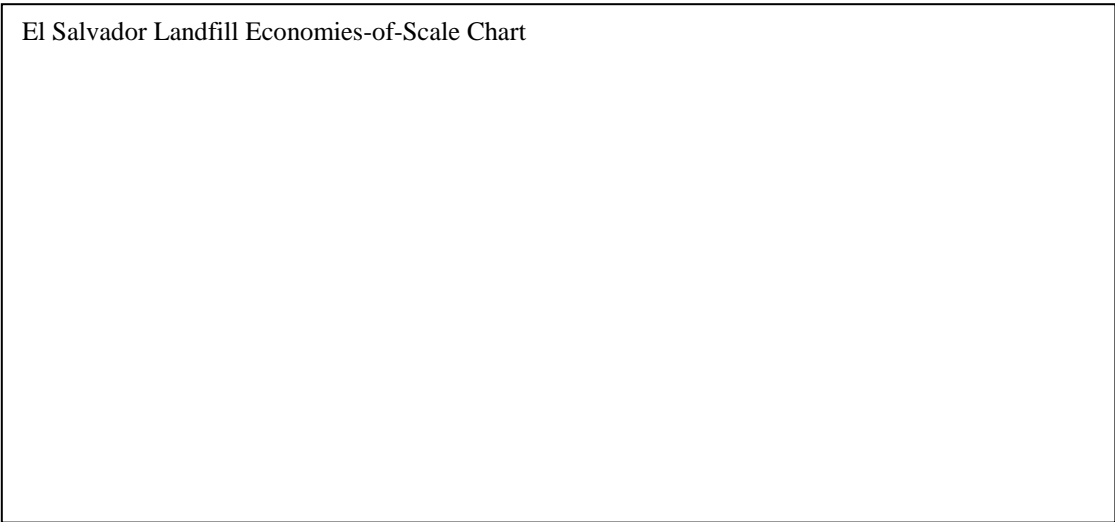
Port Louis, Mauritius Collection Productivity Chart



Quito, Ecuador Transfer Productivity Chart



El Salvador Landfill Economies-of-Scale Chart



Contractual Clauses.

Annex [] provides a detailed listing of issues which need to be addressed in the development of contractual agreements between the private sector and government. Annex [] provides a model collection and sweeping agreement which is usable with either contractors or franchisees. The following general categories of requirements provide a framework of some of the issues covered during preparation of tender and contract documents for privatization of any solid waste management service:

- Types of services to be required under the agreement.
- Specified outputs from the COMPANY in terms of quantity and quality of services.
- Requirements for new equipment and/or allowances for recently refurbished equipment.
- Requirements on ownership of equipment and/or leasing allowances for equipment.
- Designated holidays or non-service days, if any.
- Warranties, insurance, road and other taxes, vehicle registration, and company registration requirements on the part of the COMPANY.
- Guarantee against political instability on the part of the EMPLOYER.
- Financing and bonding requirements.
- Subcontracting or subleasing provisions.
- Foreign currency exchange requirements.
- Cost indexing clauses for fuel, labor, and general consumables.
- Permit requirements.
- Reference to separate leasing arrangements between the EMPLOYER and COMPANY.
- Length of contract.
- Compensation method, place, and timing.
- Inspections and audit requirements.
- Procedures for handling complaints.
- Sanctions for poor performance.
- Allocation of risks and remedial measures.
- Agreement termination, events of default, and step-in rights.
- Force Major clause.
- Indemnity clause.
- Arbitration procedures in the event of unresolvable conflict.

Performance terms in PSP agreements need to be carefully specified, with adequate provision made for vigilance and sanction commensurate with performance failures. Many developing countries specify only "cleaning" the zone -- a performance measure that is essentially unmeasurable. Outputs should address the quantity and frequency of waste to be collected. Where there are major new facilities being implemented, flow control is a key issue to be resolved. Environmental requirements, such as covering each load with a tarp and minimizing exhaust fumes, need to be included. Worker safety protection standards, including preventative vaccines and provision of gloves, respiratory protection, boots, and uniforms, should be specified in the contract.

Clarify Performance Measures.

Performance monitoring establishes a basis for evaluating the efficiency, effectiveness, and cost of service delivery; it defines and measures the “rules of the game”. By comparative performance monitoring of all private sector and government players, it increases competition among service providers, leading to increased efficiency and improved service quality. By quantifying the performance measures to the maximum extent possible, accountability among service providers is increased, service delivery is linked with consumer satisfaction, and actions are linked with consequences.

Performance monitoring involves the following activities by government or its hired agents:

- Review of quantity and quality of service delivery from all service providers -- government and private sector
- Comparison of monitoring results among service providers
- Comparison of monitoring results with baseline (historical) service

The aspects of performance that are monitored include:

- Service frequency and quantity
- Service efficiency and productivity
- Service reliability
- Service quality
- Service cost

Performance terms in privatization agreements need to be carefully specified, with adequate provision made for vigilance and sanction commensurate with performance failures. In Jakarta, Indonesia, contractors were paid on a lump sum basis for cleaning and payment structure from zone to zone were 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. For example, each contractor in Jakarta has uniforms and vehicles of a different bright color, thus facilitating performance monitoring by residents and city officials.

For each activity being monitored, wide ranges of performance measures are possible. Annex [] provides a detailed list of possible performance measures to use in monitoring collection and disposal. Some sample performance indicators for solid waste collection include:

- Number of households and establishments served, length of street swept, and length of drain cleaned per day
- Frequency of collection, street sweeping, and drain cleaning per week
- Tonnes or cubic meters collected daily per solid waste collector, sweeper or drain cleaner
- Tonnes or cubic meters collected daily per vehicle, by vehicle type
- Number of trips (loads) made daily per vehicle, by vehicle type
- Cost/tonne of collection, and cost/km of street sweeping and drain cleaning
- Equipment breakdown frequency and duration, traffic violations, and accident rate per vehicle

The contractual agreement should clearly delineate the performance measures for which the private sector will be held accountable – at least initially. It is difficult to anticipate how well performance measures will serve all parties when first beginning to privatize. Therefore, a mechanisms for annual review and amendment of performance measures is suggested. Those actions that would constitute poor performance also need to be clearly stated, and sanctions specified for each offence. Examples of poor performance are outlined in Box []. Sanctions are typically penalties for each type of offence, with the size of penalty increasing with each repetition of the offence. After a specified number of offences and related sanctions, the contract typically allows the client to cancel the contract and revoke the contractor's license.

Examples of Poor Performance

- Irregular unreliable service
- Incorrect and inadequate record-keeping
- Use of unqualified operational personnel or inadequately maintained equipment
- Noisy, messy, or polluting service delivery
- Inadequate or inappropriate response to viable complaints
- Clandestine dumping, spillage, and littering
- Unsafe work practices and traffic violations
- Unauthorized collection of special wastes, such as hazardous wastes

Box []

The key control node of the solid waste system is the unloading point or disposal site. Checkpoints in the collection service area and along the main route to transfer and disposal are also advisable. This was done at 4 different points in Lahore, Pakistan, for performance monitoring of the private contractor conducting transfer. Two separate agencies of government manned the different locations, one at 3 points and another at 1 point, writing the times when each truck passed by enroute to disposal. For performance monitoring of public versus private services in urban environments, records of all load volumes and weights delivered at the unloading 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 may be created. This has been done in Phoenix, Arizona, where an Auditor's Office was created to do the measuring. In Florida, a non-government organization, Partners in Productivity, develops performance measures for state government. In Great Britain, a national Audit Commission audits both national and local government performance.¹⁷

It is also possible to contract for performance monitoring with a private consulting firm. In Bogota, government maintained over 30% of the city area for its service efforts for nearly 5 years, and the service delivery performance of both government and the private firms were comparatively monitored by an independent consulting company. The independent consulting

¹⁷ Osborne, D., Gaebler, T. *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector*. Penguin Books. 1993.

company operated the weighbridge at the disposal site as part of its contract requirements. Sao Paulo, Brazil had a comparable arrangement with a private firm, and included their operation and reporting from a management information system. Dakar, Senegal assigned separate monitoring of the private contractors to 4 separate entities, to assure accuracy and calibration of data.

All private sector waste collectors and transporters should be charged a tipping fee at their unloading point (i.e., 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 and haulers are clearly established, tipping fees should cover the full costs for transfer, disposal and vigilance against illegal dumping.

Guarantee Against Political Risk.

Risk of political intervention is a major issue blocking effective privatization in many developing countries, particularly concerns about political intervention in selection of contractors and interference in actual operations. For example, certain neighborhoods may be given priority for public cleansing, because of the constituency which reside there. Also, private contractors are concerned about whether they will be paid fully and on time, without extortion for kickback. There are numerous examples of private companies having their contracts canceled once business becomes lucrative, only to have them awarded to others with better political connections. With each changing political administration, the risk of such problems is renewed, until new relationships are developed.

Because of such perceived non-commercial risks, solid waste companies may have more interest in providing collection services through franchise agreements paid directly by customers through direct user charges, than through contracts paid from general revenues. Also, because of perceived political risks, for major new facilities (i.e., sanitary landfills and transfer stations) private firms may express preference for DBOT agreements that have a significant level of government financing.

Ownership could be transferred early during the concession period, after full payment for capital investment. Hong Kong transferred ownership within one year after demonstration of proper operations at its recently implemented sanitary landfills and transfer stations, because this reduced the private sector risk. Also, speedy transfer of ownership gave government more autonomy to curtail a contract that is not being well executed and replace the contractor. However, most developing countries don't have the money to follow the Hong Kong example, unless they receive external financing (e.g., for organizations such as the World Bank or the regional development banks).

One way to minimize political risk is to form public/private partnerships, as has recently been done for a hazardous waste disposal facilities in Thailand, a collection system in Latvia, and a solid waste incinerator in Indonesia. However, such partnerships limit contestability. Governments find it difficult to enforce contractual requirements and impose sanctions within such partnerships.

Another way to minimize political risk is to implement the guarantees against non-commercial risk (e.g., the World Bank guarantees), which protect against all non-commercial types of risks, including foreign exchange conversion, expropriation, refusal to abide by the terms of the contract or the decisions of independent arbitrators. Thus far, the World Bank's guarantee has been applied to few projects in the world, such as a large power project in Pakistan. However, it can be adopted and applied at any time for any type of privatization project, whether the Bank is involved or not in providing project financing.

The best way to minimize political risk is to limit the potential for political intervention by improving the transparency and accountability of the procurement process and making procurements truly competitive. Also, upgrading of the arbitrage system is useful, allowing private firms access to equitable judicial resolution of conflict during a contract. And, finally, multi-year contracts lessen the potential for political intervention. These steps have recently been successfully undertaken by the government of Indonesia, because of its desire to attract private sector financing for its public infrastructure.

Procurement Guides.

Government has the objectives to minimize its efforts, pay as little as possible for good service, and look good to its constituency; the private sector has the objectives to minimize its costs, maximize short-term profits and develop a good relationship with its client. The procurement process needs to understand these objectives and attempt to achieve a win-win arrangement for both government and the private sector. Good companies rise to the head of the pack and win contracts when the procurement process is well structured. The key is for the process to be:

- well advertised to attract the widest net of qualified bidders,
- transparent enough to convince well-established reputable firms that they can compete with younger firms,
- equitable enough for foreign firms to believe they can compete with local firms, and
- slow enough to give all bidders time to prepare a good bid.

Shift in Budget Allocations Needed for Privatization.

For privatization, all currently hidden subsidies to government solid waste departments (such as: debt service, customs duties, insurance, vehicle registration, social benefits, administrative overhead, utilities) need to be covered as a cost of paying the private sector for services rendered. Also, capital budget allocations periodically provided in government budgets need, instead, to be shown as recurrent costs.

When the collection system is labor-intensive, privatization could lead to a reduction in a municipality's recurrent expenditures. However, when the collection system is capital-intensive, privatization would require a significant increase in municipal recurrent expenditures, because the depreciation and debt financing costs would need to be paid to the private sector as part of the contracting costs. This involves recognition by local and central governments that budgetary shifts from capital development transfers and budgetary allocations to recurrent budgets would be required by privatization.

Most recurrent budgets for solid waste management -- which currently show only salaries of

direct operational personnel, fuel, tires, and spare parts -- would need to be significantly larger for privatization to proceed. For example, in a zone planned to be privatized in Quito, Ecuador, in 1998, a switch from government service to private sector service was estimated to increase total recurrent budgetary requirements by about 55,000 Sucres/tonne (12 \$US/tonne) to 196,000 Sucres/tonne (44 \$US/tonne).

Financing.

The first thing the private sector will look into when considering investment in solid waste service delivery is whether government has the financial means to live up to its contractual commitments. For proper finance planning the following breakdown of solid waste collection costs in developing countries provides a planning framework. Capital costs range from 30 to 40 percent, labor costs range from 15 to 40 percent, and 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 ranging from 20 to 30 percent, labor 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.

Government may obtain finance 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; and
- municipal bonds; as well as
- private sector participation.

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 moving for East Asian developing countries. Hong Kong has implemented an entirely new set of transfer and sanitary landfill facilities in the past 6 years with private sector financing through concessional contracts. Indonesia and Malaysia have focused heavily on this over the past 5 years, to use private sector investment 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.

Cost Recovery.

Aside from having the means to finance capital works, the private sector wants assurances that government will be able to meet its regular payment obligations to cover recurrent costs. While taxes are one means, they typically go to the local government's general revenues or sometimes to the central government treasury. The private sector typically prefers to see a direct cost recovery system of user charges in place, ideally with all income going to a segregated account earmarked for the solid waste sector. Finance to cover recurrent costs (such as salaries, spare parts, fuel, tires, and utilities) for solid waste management may be obtained from the following sources:

- local governments general revenues;
- penalties for littering, clandestine dumping and other solid waste infractions;
- license fees from private haulers of solid waste;
- 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.

Direct user charges lead to greater accountability to the consumer and provide revenues that can be reliably earmarked 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. To encourage government employees to help generate revenue, as well as spend money, there is a global shift away from guaranteed budgets and towards self-supporting service units.¹⁸ This involves creation of segregated accounts and direct user charges. In its national strategy in 1988, Indonesia set a policy for municipalities to implement cost recovery through direct user charges, recommending tariffs averaging 1% of household income. Several Indonesian cities have been successful in implementing the strategy, recovering from 35% to 70% of total costs, notably: Bandung, Medan, Surabaya, and Jakarta. In the Philippines, in 1991, Olongapo City became the first city to implement direct user charges to cover solid waste management costs and cost recovery of about 35% of total costs is being achieved.

Accra, Ghana; Ouagadougou, Bukina Faso; Coutounou, Benin; and Bamako, Mali are among the growing number of major cities in Africa to implement citywide cost recovery through direct user charges. The charges in Accra cover about 25% of total system costs and are collected by special government bill collectors and deposited in a segregated account dedicated for solid waste; except in those zones served by a private concessionaire, who collects the fees directly from residents served.

Citizens of Coutounou, Benin bring their user fee to a local fee collection office. Similarly, as part of a GTZ technically assisted project, residents of Cahutepeque, El Salvador bring their user fees to a local collection office -- which might be in a local store or bank. In Onitsha, Nigeria, as part of World Bank financed project, residents were required to bring their fees to a local bank.

Municipalities may attempt to recover solid waste tariffs by charging per square meter of

¹⁸ Osborne, D., Gaebler, T. *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector*. Penguin Books. 1993.

property. Theoretically, this is an ideal method of cost recovery, because it relates charges to property ownership and, thus, with ability to pay. This system works well in countries where the cadastral information is up to date and billing of land owners is relatively easy or automated, such as Singapore and South Korea.

Problems are exacerbated in places where the cadastral information is incomplete, or landowner is not locally available or is out of the country, as has been experienced in municipalities of Morocco and El Salvador. To address these problems, door-to-door delivery of bills for solid waste user charges is effective. This is being done in Chinameca, El Salvador, where each family pays one fixed fee per month (10 colones/family/month) for solid waste service. Similarly, solid waste tariffs in Tema, Ghana are collected door-to-door. Tema uses commissioned bill collectors hired by government.

Municipalities in Ecuador raise their solid waste revenues largely by charging 10 to 12 % over the electricity bill paid by each property owner. Quito, Ecuador raises all of the money it needs from its own cost recovery mechanisms to cover its existing level of recurrent expenditure, and even to finance capital expenditures equivalent to 6% of its total costs. To obtain these revenues, it pays a 4.5% to the municipal electrical company for revenue collection. In Guayaquil, Ecuador, all costs required to pay for the private sector to collect, transfer, and properly landfill solid wastes are covered through the user charge attached to the municipal electrical company. Because Guayaquil has a significant industrial base for revenue generation, a commission of only 1.5% is charged by the electrical company.

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. In 1996 in Bamako, Mali, about 95% of the pre-collection costs of service by donkeycart were covered by direct user charges. Nearly 100% of the upper-income residents paid fully and on time and about 45% of the low-income residents paid. ON the other hand, in 1996 in Hue, Vietnam, only 7% of solid waste recurrent collection costs were covered by direct user charges. Similarly, only 11% of recurrent collection costs were recovered in Nam Dinh, Vietnam.

In the case of Phnom Penh, Cambodia, a private company holds an exclusive monopoly to collect all waste. Fees, paid directly by households and establishments, are collected by the private franchisee. The franchisee pays a franchise fee of 24,000 \$US per year (increasing by 10% every 5 years) to the City for the privilege of having the exclusive monopoly to provide solid waste service. The City prescribes the tariff structure and establishes ceilings for each type of household. Neighborhood leaders help to collect user fees, in return for a 10% commission on the fees collected.

Cost recovery is also possible through sale of recyclables and recovered resources. For example, in Accra, Ghana a composting operation has been conducted through German technical assistance. Solid waste and treated septage sludge were co-composted. The cost of product is \$US 9.2/cubic meter of compost. But, when sold in bulk, the market has been willing to purchase the compost for only \$US3.2/cubic meter. Since marketing of compost in plastic bags, the obtainable price has increased. At \$US 1.1 per 50 kilogram bag, full cost recovery is now being achieved. The savings in land disposal cost is about \$US 1.0/cubic meter of solid waste converted to compost.

In the end, the name of the game is financial sustainability. Financial sustainability needs the following:

- Well planned and tested solid waste systems -- to develop cost effectiveness
- Ethical, legal and regulatory frameworks -- to minimize risks to investors
- Competition, accountability and transparency -- to optimize trust by consumers

Licensing.

For collection of special wastes from special generators (such as hospitals) or general wastes from large generators (such as large industries and ports), 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. 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. Annex [] provides a listing of licensing criteria to consider when privatizing, particularly when private subscription methods of privatization.

Why Have a Licensing System?

- Licensing protects consumers from incompetent private organizations, fraud, unfair pricing, and liability
- Licensing protects the local authority by controlling and enforcing the quality of work from a legal basis
- Licensing levels the playing field and protects reputable private organizations from unfair competition
- Licensing protects workers from unfair labor practices
- Licensing protects the environment from pollution

Box []

Private haulers collecting hazardous wastes and private facilities handling 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, as well as special equipment and handling procedures. Financial capacity is an important licensing criteria for facilities where long-term ability to protect the environment is essential. For sanitary landfills, the United States has published “Financial Assurance Mechanisms for Corporate Owners and Operators” (40 CFR Part 258, final rule published April 10, 1998 in the Federal Register) which outlines in detail the minimum financial requirements that landfill owners and operators must meet, including bond provisions, record keeping, and net worth.

For hazardous wastes to be managed separately and appropriately from general urban solid wastes there needs to be a regulatory framework for hazardous wastes. Such regulation should be conducted at the provincial or central government level. All hazardous waste management costs should be borne on a "polluter pays" basis, because the generators of such wastes are typically considered well able to pay for service.

Recycling activities need to be licensed. Thailand has more than 1,000 recycling centers with licenses. Surabaya, Indonesia implemented a program of registering waste pickers and provided assistance in organizing them into a cooperative that could receive special training and networking assistance with buying agents for recyclables. While any individual in Surabaya is allowed to collect waste from door-to-door, only registered pickers (with photo identification cards) are allowed at transfer and disposal facilities. More than half of the Surabaya's waste pickers had elected to register by 1996.

Licensing should be income generating. At a minimum, the established fees should cover government's costs for audit, administration, and monitoring of licensees. Establishing fees based on estimated future gross revenues are common, coupled with annual auditing of all accounts to annually update the license fee. In Sekondi-Takoradi, Ghana, all business within the city pay an "environment tax" as part of obtaining their annual business license. The receipts are used to help offset the city's sanitary landfill costs.

Licensing involves amending City bylaws to allow licensed private organizations to provide solid waste collection services. The regulatory framework must require all residents and establishments to use the services of only licensed private organizations (except in cases of self-service). The most important sanction for licensed firms that do not work within the regulatory framework is that their licenses can be revoked following a prescribed number of warnings and sanctions. Within the licensing rules, appeal and arbitration procedures need to be defined. Also, for allowing a revoked license to be reissued need to be defined

Capacity Building.

Privatization requires municipal strengthening. Local governments need technical assistance and training to write competent tender documents for privatization of solid waste services, to prepare government estimates of waste quantities and service costs, to handle complaints, and to monitor service delivery performance.

Many countries pay significant monies for solid waste contractors, and yet won't allocate even a small amount to providing staff, transportation, and communication for performance monitoring. In Phnom Penh, only 7 inspectors were engaged to monitor the performance citywide of the city's private franchisee, which held a monopoly for all citywide solid waste collection service. Similarly, in Mauritius, only 2 inspectors were engaged to monitor all countrywide transfer and disposal operations conducted by private contractors.

Information is needed on the technical aspects of solid waste management and procurement procedures. Governments need help in technically determining which type of vehicle is acceptable for collection, how large collection zones should be, how frequently service should be provided, whether source segregation of recyclables is economic, whether transfer stations are warranted, how many disposal sites to implement, and what type of treatment and disposal is

cost-effective. They also need help in assessing what type of privatization method will give good results and result in low costs. For example, should the landfill be implemented through a turnkey contract or concession, or should Government build the facility and give out a service contract to an operator? Should all solid wastes be collected in a given area by a contractor or franchisee, or should residential wastes be handled separately from commercial and industrial wastes from large generators?

Governments seldom prepare good cost estimates before requesting bids for solid waste collection and disposal. They imagine that competition will result in the lowest possible bid prices being offered. However, in developing countries, competition is not well developed and laws governing cartels, collusion and price setting are seldom enforced. Multiple firms may be registered to compete and separately submit bids, but the firms may have the same single owner or the various owners may be part of the same family. In other cases, they may decide among themselves who will win each zone. Sometimes, government officials or their relatives are on the companies' boards of directors. All of these unethical practices limit actual competition in many developing countries. Therefore, government needs prepare cost estimates prior to bidding, taking into consideration each zones unique characteristics (such as ease of access, cooperation of the residents, density of stops, containment of wastes at the source, traffic, distance to disposal, road conditions). Also, government needs to carefully consider the full range of costs which the private sector pays (including debt service on investment, insurance, registration, fair worker wages and benefits, worker uniforms and protective gear, and marketing) and provide for an acceptable profit margin. The Republic of Trinidad and Tobago was one of the pioneering countries in contracting out collection. They have been using private companies for over thirty years. Countrywide, over half of the solid waste is collected by private contractors. Yet, government does not conduct cost estimates for the zones. Each year's bids are simply compared to the previous year's bids for a measure of reasonableness...and it is assumed that the bidding process leads to the lowest possible bid prices being offered.

Training 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 which the private sector needs to bear (including debt service on investment, insurance, registration, fair worker wages and benefits, worker uniforms and protective gear, and marketing) and provide for an acceptable profit margin.

The following issues generally need to be addressed in capacity building for improved solid waste management and participation of the private sector in provision of service:

At the Municipal Level:

- Strengthening of municipal capacity to analyze their existing costs and project the estimated costs of various privatization activities which could improve investment and efficiency in the solid waste sector;
- Creation of new municipal ordinances which address the following:
 - ⇒ require residents to cooperate with any private sector agent of the government assigned or licensed to provide service, including economic groups, non-government organizations, micro-enterprises, and private enterprises;
 - ⇒ require residents to pay for the service they receive in accord with regular fee fixing regulations;

- ⇒ require residents to put out waste only at the hours and days specified, and in the manner specified (i.e., in bags, covered household containers, or communal containers);
- ⇒ require residents to cooperate with policies and programs to minimize waste generation at the source, source segregate special wastes, and separately store and discharge recyclables or special wastes for special collection;
- ⇒ require residents to use only the private subscription services of licensed private haulers for special wastes collection (i.e., recyclables, construction/demolition debris, garden wastes, high risk health care wastes, household hazardous wastes, hazardous industrial and commercial wastes, non-hazardous wastes from large sources);
- Strengthening of capacity to specify technical and performance service requirements, service monitoring indices, and sanctions for improved solid waste services;
- Strengthening of capacity to write the legal aspects of contractual and licensing agreements, advertise pending procurement, prequalify private sector entities interested in providing solid waste services, conduct a transparent and accountable evaluation of bidders, and negotiate the terms of agreement;
- Creation of an enabling environment which allows municipalities to engage services, with minimal bureaucratic obstacles and delays, for a multi-year period which matches the depreciation period of investment;
- Creation of an enabling environment which allows municipalities to arrange flexible work schedules and conduct solid waste service by task management, including creation of incentives for improved worker and vehicle productivity;
- Development of cost recovery mechanisms which are efficient, low cost, transparent, accountable, and non-leaking, as well as segregated accounts of direct user charges and special taxes designed to support the solid waste system, so that revenues are not shifted politically to other sectors;
- Assistance in creation of inter-municipal agreements for improved collection, transfer, recycling, treatment or disposal;
- Development of supervisory and performance monitoring competence, including provisions for communications in the field, transport, record-keeping and data analysis;
- Development of legal mechanisms for speedy and sure enforcement of sanctions for illegal conduct.

At the Central Government Level:

- Creation of policy guidance on privatization and cost recovery, to politically facilitate municipal leaders to undertake change;
- Creation of strong legal deterrents against clandestine dumping of wastes and use of open dumps, coupled with adequate capacity for vigilance and enforcement; and
- Guidance and norms for safe segregation, storage, treatment, and disposal of all categories of wastes.

The private sector also needs capacity building. Dialogue in workshops has been a useful technique in Ghana for building consensus and educating the private sector on the goals of government in privatization. Distribution of information, particularly cost analysis of alternative technologies, has also been useful in enhancing Ghana's private sector capacity. One of the most helpful actions was the creation of a national solid waste management association of private sector haulers in Ghana. Indonesia has also created a national association, this one is open to both government and private sector solid waste managers. Through regular meetings and

seminars, such associations can result in information exchange and support state-of-knowledge lectures, as well as provide a lobby format to upgrade the solid waste regulatory framework in the country.

Maintaining Competition.

Until the private sector within the developing country has developed, it is strongly recommended that government maintain at least 30% of the overall collection service area during the first 5 years of privatization. After that, to maximize contestability and minimize the potential for collusion, government should continue to maintain at least 20% of the overall collection service area. 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 3 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 Bogota's government service did not improve performance in its zones to match private sector performance, even with the phased increasing contestability, the city converted to an entirely privatized system, which now has 7 zones with 4 private franchisees. These companies, through a unique company in which all of them are stockholders, collect user fees. Dakar, after experiencing a public/private joint venture, which was essentially a monopoly, implemented a more competitive privatization arrangement of multiple service contracts.

Central Government Support.

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, the Colombian 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.

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 to 80% of solid waste collection service to between 1 to 9 contractors. Nationwide comparative monitoring of local government versus private sector service was conducted and showed increased efficiency from the contractors.

Indonesia and Tunisia have nationwide private sector participation programs for urban environmental services, which have been developed with US 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 USAID funded consulting team.

Summary

Each year, as privatization is initiated in more and more developing countries, the learning curve is growing. The main lesson learned is to pursue the following three objectives: competition, accountability, and transparency. The list in Box [] provides a summary of some of the key issues to keep in mind when involving the private sector in solid waste services.

Issues to Address in Privatization

- Build local capacity to develop technical specifications and tender competitively.
- Comparatively monitor performance.
- Build local capacity to provide contestable government service.
- Build local capacity to generate revenues and operate as an accountable cost center.
- Quantify outputs to enable comparative performance monitoring.
- Separate agreements for separate activities to optimize expertise.
- Competitive, transparent procurement and multiple firms to obtain efficiency.
- Allow agreements to be long enough to allow full depreciation of investment.
- Allow agreements to be large enough to allow economies-of-scale.
- Ensure contestability, enable the participation of small to medium sized businesses, and allow decentralized monitoring.
- Include price indexing to allow adequate cash flow and continuous profitability.
- Define sanctions that discourage non-performance.
- Specify worker safety and environmental requirements.
- License and control all private sector involvement.
- Create a level playing field through a regulatory framework.
- Provide mechanisms to assure flow control.
- Enlist public cooperation.
- Include public consensus in all key decisions.

Box []

Part V: Activities for Private Sector Participation

Government's Steps to Privatize. Involving the private sector does not mean turning all problems over to the private sector and walking away from them. Government maintains the responsibility to determine what is cost-effective and appropriate for its citizens, before involving the private sector. The private sector competes most effectively when the parameters of service are determined in advance and well articulated.

Privatization requires strong government and a clear regulatory framework. It also requires careful study and planning be conducted in advance, so that the best technical systems are predetermined, as well as their costs. Many governments have rushed into privatization, forming partnerships from sole source proposals. Experience shows that cities pay much higher costs when they proceed in this way.

Technology Assessment Studies. Prior to privatization, studies are needed to determine which technology is most cost-effective, which sizes and distances are economic, how many staff to assign, and how best to obtain public cooperation. Cost analysis of various types of collection systems, transfer facilities, and disposal options needs to be conducted for the waste quantities, waste densities, transport distances, and road/traffic conditions that exist. Choices between options may not be entirely based on economic considerations. Two comparably priced options (i.e., on a cost per tonne basis) may vary significantly in the number of jobs they create, with one being capital-intensive and the other being labor-intensive, or may have significantly different aesthetic and environmental consequences.

Information on waste quantity, density, composition, moisture content, and calorific value from various types of sources and neighborhoods is usually needed to support the technology assessment studies. Also, needed to support the technology assessment studies is time and motion data on existing systems, as well as time and motion studies of piloted systems. Most consultants and master plans give short shrift to collection of this baseline data, and subsequently are unable to adequately develop comparative quantitative analysis of the technology options. Examples of comparative analysis of collection options, breakpoint analysis of transfer, and economies-of-scale analysis of sanitary landfill are shown in Boxes [] to [].

In low-income developing countries, cost reduction measures should focus on the productivity of the vehicle, as well as the productivity of the worker. In low-income countries, equipment costs are often over 50% of the total costs; while labor costs, even after adjustments for social benefits, overtime, and administrative overhead, are typically less than 25% of total costs.¹⁹ On the other hand, in high-income countries, the bulk of the cost for is for personnel.

¹⁹ These estimates are based on total analyzed costs, rather than budget figures. Budget figures tend to include salaries and consumables, but not depreciated equipment or facilities. Labor costs in some collection systems of very poor countries appear high, such as India, as a percentage of total costs, when the systems are manual, e.g, push carts or animal carts. Also, labor costs may appear high in some countries where equipment is subsidized and some of the total costs are hidden, such as China or Viet Nam.

Choice of collection method affects costs. Private sector productivity in Phnom Penh, Cambodia, was significantly affected by the method of collection, based on time and motion data, outlined below.²⁰

- open tipper truck built for construction materials transport, (7 cu.m.) -- 4.7 kg/minute/worker, 14.3 minutes/cu.m. of truck capacity for a crew of 6 workers;
- rear-loading rotopacker type of compaction truck, (14 cu.m.) -- 13.9 kg/minute/worker, 7.2 minutes/cu.m. of truck capacity for a crew of 4 workers.

Also, crew sizes in developing countries should be large enough to optimize vehicle productivity. Study in Quito, Ecuador indicated that a 5-person crew would be less costly than a 4-person crew. Ideally, since each city is unique with regard to traffic, road conditions, worker productivity, type of vehicles available, and public cooperation with collection systems, various crew sizes and collection methods should be pilot tested. Time and motion study and full cost analysis of each collection option is the only way to determine which is most cost-effective.

Cost analysis in Phnom Penh also showed that there was a significant cost to lack of public cooperation. Where the collection crew must shovel waste up from the ground instead of loading it from a plastic bag or dustbin, the cost of collection was about 10% higher. Where it was necessary to provide pre-collection by handcart, because residents would not bring their wastes to a communal collection point, the cost was about 100% higher.

To obtain good strategic plans and useful decision-making baseline data, terms of reference for the desired outputs need to be carefully developed and good consultants/advisors hired. Unfortunately, most studies are undermined by poorly written terms of reference and the caliber of professional promised in the contract is sadly seldom provided. To ensure that planning has a good outcome requires expertise in the government agency managing the planning process, as well as commensurate authority.

Chart of Collection Options



²⁰ Based on field work conducted by the author, Sandra Cointreau-Levine, in 1997.

Chart of Transfer Economic Breakpoint

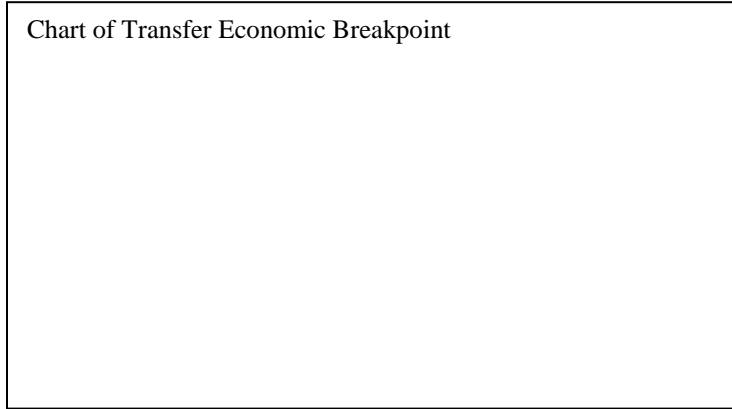
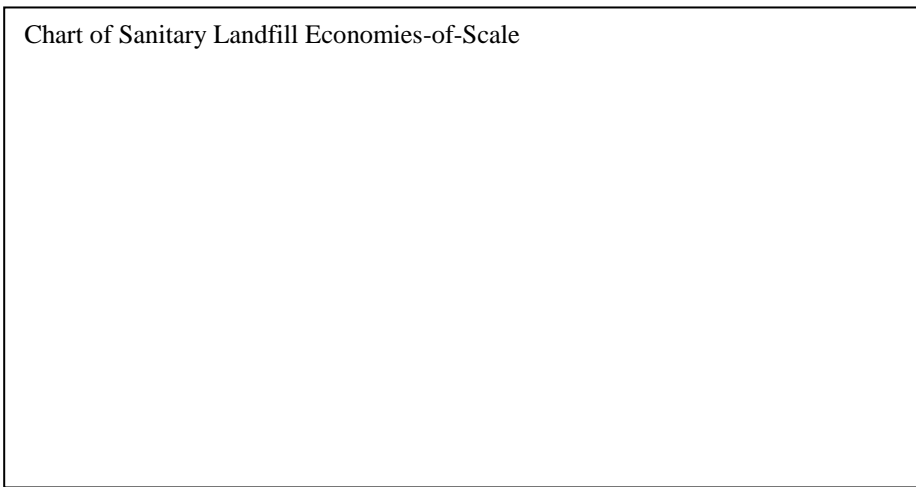


Chart of Sanitary Landfill Economies-of-Scale



Public Consultations. The public is generally united in its view on waste management: pick the trash up, but don't put it down. Everyone wants waste collection service in their neighborhood, no one wants disposal in their neighborhood. NIMBY has become a household phrase – not in my backyard. But, the waste has to go somewhere. There are no cities in the world able to achieve 100% waste recycling. At best, the exemplary cities in the USA and Europe are barely reaching 50% recycling. Waste reduction and resource recovery are still in their infancy. A careful process of public consultation in the entire planning process, from establishing technical options to developing site screening criteria, is essential to lay the foundation for eventual public acceptance of recommended sites and techniques.

To determine public preferences and optimize the public's willingness to pay, public consultations are essential. They should be conducted from the onset of planning, for determination of overall objectives; and then conducted during planning at critical stages, to assess public reaction to the various options, including their costs and environmental impacts. More and more, development agencies are conducting public consultations as part of a "demand driven" planning process for any new urban service project. For new facilities, development agencies require public consultations to be a part of the environmental assessment permit process, as well as the resettlement action planning process.

Photo in Ghana of Public Consultation



Environmental Assessment. Environmental impact assessment needs to be conducted to enable public participation in the decision-making process. Alternative technologies and sites which are studied in a planning process have little meaning to the public unless related to environmental consequences that they can understand – such as jobs, taxes, impact on water supply, loss of species or habitat, appearances, stack emissions, etc. Impact assessment is needed to select the best solutions to problems and design adequate mitigative measures that are cost-effective. The assessment process is conducted from the onset of planning, feeding into the development of plans in a cyclic iterative manner.

Design. When privatization involves only services or mobile equipment, the company hired should be given some latitude in design of their techniques and equipment in conformance with performance specifications. Also, when privatization involves a concession for a major facility, the company hired should be given latitude to design the facility in conformance with performance specifications. However, if government intends to build and own the facility and use the private company only as an operator, design needs to be conducted. For facilities such as sanitary landfills, designs typically require 12 to 18 months to complete.

Permit Process. From the onset of planning any new facility, the critical points of the permitting process need to be considered. The permit process includes agreements from the lead agencies at the following stages: technology selection, pre-selection of the site, field investigations confirming the pre-selected site, preliminary design and environmental impact assessment, and final design and environmental impact statement.

List of Government Steps to Privatization.

Privatization, like most actions to improve urban services, has a number of steps toward successful implementation, as listed below. All of these steps are to be taken by Government, and thus a substantially improved capacity is needed for successful privatization.

Identification:

- Problem definition regarding the adequacy of existing services and constraints to service improvements;
- Needs and demand assessment for services, and perception of the private sector as a service provider versus government;

- Assess resource constraints on the part of potential service recipients, and on the part of the private sector, in terms of skills, experience, assets, access to credit, and manpower;
- Assess affordability of various types of service options, both from the capital and operating finance perspective.
- Establish priorities for actions within the solid waste sector and relative to other urban services.
- Determine when and how best to involve the public in consensus building toward an acceptable and desired solution.
- Develop privatization strategy, determining which services are to be privatized, which method of privatization to use, the size and duration of privatization agreements to be developed, and the schedule.

Preparation:

- Conduct detailed and comprehensive pre-privatization cost analysis of services to be privatized, including depreciation, debt service, personnel, administration, social costs, billing, consumables, repair, maintenance, utilities, rental value of facilities, registration, insurance, and tax, as well as costs which will not “go away” after privatization.
- Communicate with personnel to be potentially affected, including information on service quality or quantity changes anticipated, redundancy issues and proposed remedial measures, cost and cost recovery changes.
- Staff and strengthen the office that will procure, administer, monitor and control private sector service delivery, as well as require public cooperation with the privatized services. Include management, legal, financial, and technical staff.
- Analyze costs and impact differences of technical options and selection of appropriate cost-effective technology.
- Economic analysis of optimal breakpoints between direct haul in collection trucks and transfer haul in large trucks.
- Determine economies-of-scale for optimum collection zone sizes, transfer stations, and disposal facilities.
- Preselection of potential sites for facilities, and determination of whether some sites require special privatization arrangements (such as private sector ownership of parcel within larger land holdings that they might wish to control).
- Rationalize routing of collection and transfer vehicles in government zones of service, in anticipation of providing managed competition with the private sector in its zones of service.
- Collection zone definition to achieve equitable and comparable service conditions.
- Public participation in demand assessment of options, acceptability of proposed sites and facility concepts and environmental consequences.
- Resettlement action planning and compensation to land users at prospective facility sites.
- Environmental analysis of options and sites.
- Develop contractual conditions for privatization of services.
- Develop technical and performance specifications for procurement tenders.
- Determine finance and privatization options.
- Evaluate willingness and ability to pay and relate willingness-to-pay to alternative methods and levels of service.
- Develop plan of action, schedule of implementation, and critical path.

Appraisal:

- Creation of a tariff structure and cost recovery based on projected costs, willingness to pay and ability to pay, including a proposed tariff structure and phased scheduling of fee increases.
- Development of supportive regulatory framework requiring public cooperation with the private sector, licensing of private sector participants, and direct user payment for services.
- Establish an enforcement system which is quick and responsive, including special wardens and municipal courts, as needed to effectively secure public cooperation with the solid waste system.
- Creation of financial arrangements to ensure sustainability, including adequate and equitable central government transfers and shifts in local government budgets from capital to recurrent accounts to support contractors being paid for amortization of assets.
- Agreements over flow control to assure the private sector adequate business levels to achieve sustainable incomes.
- Creation of private sector access to reasonably priced credit lines.
- Risk management to minimize unnecessary cost padding by the private sector, including guarantees against non-commercial risk, contractual specifications and arbitration clauses regarding canceling of the contract or payment problems, cost-escalation indices, foreign exchange agreements, and repatriation of funds.
- Capacity building regarding inspection and enforcement of the regulatory framework, and performance monitoring; and possibly develop terms of reference and short-list of qualified consulting engineers to be requested for proposals to monitor refuse collection performance.
- Facilitation with land acquisition, human resettlement, rights of way, traffic management, and environmental permit.
- Develop public announcement campaign regarding the need to change the city's solid waste management system, including changes in service delivery levels, requirements for waste generators cooperation, and cost recovery.
- Public announcement of the need for residents to cooperate with the solid waste collection system and to cover costs through a fee structure.
- Establish a segregated account for receipt of all license fees, user charges, tipping fees, and sanctions related to solid waste management.
- Establish qualified and honest procurement evaluation team. If prequalification is deemed necessary, this same evaluation team should conduct the prequalification exercise. Consider placing an honest broker on the team, such as an expert foreign advisor known for his/her strong ethical reputation.
- Prequalification is desired in cases where bid preparation involves major time and cost allocations on the part of prospective bidders for site studies and designs, as when tendering for transfer or disposal facility concessions to be designed, built and operated. When prequalification is needed, develop prequalification criteria for prospective bidders, including company's solid waste experience, fleet management and maintenance experience, financial soundness, operations labor management experience, knowledge of local conditions, and resumes of key personnel. At this stage of the process, technical proposals and bids are not included as criteria. Advertise for prequalification in local newspapers and through letters to all embassies, as well as through international competitive tender listings. Conduct prequalification in a quantitative and transparent manner according to the prequalification criteria developed. See Annex IV for sample prequalification advertisement.
- Develop evaluation criteria to choose among bidders, including bid requirements for insurance, proof of fair labor management and wage compensation, insurance documentation, tax returns

and proof of tax payments, bid price, equipment offered, performance bond, and proposed work plan. If firms have not already been prequalified, include criteria about experience, financial soundness, and resumes of key personnel, as outlined above for prequalification criteria. See Annex V for sample evaluation criteria. Advertise tender documents in local newspapers and through letters to all embassies or, if prequalification has been done distribute tender documents to prequalified firms. Conduct transparent and accountable evaluation process of bids received. See Annex V for sample evaluation criteria.

- Selection and negotiation/agreement with the private sector for service delivery. A two-envelope system of bidding is preferred. The first stage of selection involves review of the first envelop from each bidder which provides technical proposals, qualifications, meeting of tender informational requirements (bonds, insurance, tax returns, etc). From among the qualified bidders screened from the first stage, the second envelopes from each bidder are opened to see the offered bid prices. Typically the lowest cost bid is selected for negotiation, unless the bid is significantly below the government's estimate, in which case the lowest bid can be disqualified and the next lowest selected for negotiation. If two or more of the low bids are nearly equivalent from a price perspective, competitive negotiations may ensue among these bidders and government, involving simultaneous negotiations with two or more bidders.

Implementation:

- Implement necessary civil works for weighbridge(s) and/or checkpoints for performance monitoring.
- Supervise procurement of equipment and construction of works by private sector.
- Supervise start-up operations by private sector.
- Conduct performance monitoring of operations by private sector.
- Process completion reports, inspections and payments in a professional and timely manner.

**PERFORMANCE MONITORING MEASURES
For
SOLID WASTE COLLECTION OPERATIONS**

Performance Measures	What is Measured	How is it Measured	Where is it Measured	How often is it Measured	By Whom is it Measured	Basis for Sanction
Cleanliness of Service Areas	Existence of Litter Existence of Clandestine Waste Piles Waste in Drains Improperly Placed Waste Bins Regularity and Frequency of Collection Service Cleanliness around Communal Containers Weekly Washing of Communal Containers Completeness of Collection Service -- number of collection points unserved False Loading of Vehicle with Water, Stone, etc. to Increase Payments	Zone Inspection Reports Customer Register	Service Zones	Daily	Assemblies Districts ²¹	Yes
Safe Disposal of Collected Wastes	Waste Quantity Delivered at Official Site Clandestine Dumping	City-Wide Inspections Records at Disposal Site Complaints by Witnesses of Clandestine Dumping	City-Wide Disposal Sites	Daily	Assemblies Districts	Yes
Customer Satisfaction	Perception about Cleanliness of Zone Willingness to Pay Willingness to Participate with Collection Requirements	Surveys of Customer Satisfaction Surveys of Willingness to Pay	Service Zones	Semi-Annually	Assemblies Districts	No
Customer Dissatisfaction	Complaints about Improperly Placed Waste Bins, Damage of Waste Bins, Uncollected Wastes, Rude Behavior by Collectors, Appearance of Collection Vehicle and Collection Crew	Zone Inspection Reports Records of Complaints Records of Complaint Follow-up Records on Service Frequency Targets	Service Zones	Weekly	Assemblies Districts	Yes

²¹ Each Local Government, whether it be a city, municipality, metropolitan area, or council, has its own terminology for its sub-areas. Assemblies and districts are among the terms most often used for such sub-areas.

Worker Productivity	Number of Workers in Service Waste Quantity/Worker/Shift Absenteeism	Zone Inspection Reports Records at Disposal Sites Vehicle Log Books	Service Zones Disposal Sites	Weekly	Assemblies	No
Vehicle Productivity	Number of Vehicles in Service Waste Quantity/Vehicle/Shift Waste Quantity/Vehicle/Day Vehicle Downtime	Records at Disposal Sites Vehicle Log Books Zone Inspection Reports Load Inspections at Landfill	Service Zones Disposal Sites	Weekly	Assemblies	No
Recycling Achievements	Types of Secondary Materials Recycled Quantity of Secondary Materials Recycled	Zone Inspection Reports Records from Sales of Recyclables	Service Zones Records from Service Provider	Monthly	Assemblies	No
Environmental Controls	Exhaust Emission Control of Vehicles Sump Tank Control of Leakage from Wastes in Vehicles Control of Litter from Vehicles Washing of Vehicles	Vehicle Emission Inspection Reports Zone Inspection Reports Complaints about Vehicle Emissions and Litter	Service Zones Records from Service Provider	Weekly	Assemblies Districts	Yes
Occupational Health and Safety Controls	Use of Gloves Use of Respiratory Masks Use of Uniforms Tools on Vehicle to Load Loose Waste Annual Medical Checks Provision of Vaccinations Control over Size and Weight of Lifted Loads Vehicle Lights are Operational (Night Lights, Brake Lights, and Back-up Lights) Number of Accidents Adequate Accident Liability Coverage	Zone Inspection Reports Survey of Workers Medical Records Accident Records Insurance Policies	Service Zones Records from Service Provider	Weekly	Assemblies	Yes

Fair Labor Practices	Minimum Wages or Above Paid Payment for Overtime Medical Coverage Vacation and Holiday Allowances Adequacy of Work Breaks Proper Hiring and Justifiable Termination Procedures	Zone Inspection Reports	Service Zones Records from Service Provider	Monthly	Assemblies	Yes
Hazardous Waste Segregation	Refusal to Collect Hazardous Waste Provision of Special Collection for Household Hazardous Waste	Zone Inspection Reports Inspection of Loads at Disposal Sites	Service Zones Disposal Sites Records from Service Provider	Monthly	Assemblies Districts	Yes
Fuel Consumption	Fuel Records on Consumption -- per kilometer and per tonne Maintenance Records on Engine Calibration Route Rationalization	Vehicle Log Books Workshop Vehicle Records Zone Inspection Reports Route Plans	Service Zones Records from Service Provider	Monthly	Assemblies	No
Reliability	Downtime of Vehicles Number of Accidents Worker Strikes Worker Absenteeism, Illness and Accidents	Vehicle Log Books Workshop Vehicle Records Medical Records	Service Zones Records from Service Provider	Monthly	Assemblies	No
Communication	Notification of Service Problems Continuous Radio Accessibility Use of Designated Routes so Vehicles can be Located	Correspondence Files Zone Inspection Reports Radio Functioning between all trucks and central offices Route Plans	Letters from Service Provider	Monthly	Assemblies	No
Finance	Payment of Government Property, Income, VAT, and Corporate Taxes, etc., as required Regular Payment of Fair Wages and Benefits to Workers	Financial Records Independent Auditor Reports	Records from Service Provider	Yearly	Assemblies	Yes

**PERFORMANCE MONITORING MEASURES
For
SOLID WASTE LANDFILL OPERATIONS**

Performance Measures	What is Measured	How is it Measured	Where is it Measured	How often is it Measured	By Whom is it Measured	Basis for Sanction
Quantity of Waste Received for Landfill	Waste Quantity/Shift Waste Quantity/Day	Landfill Inspection Reports Landfill Records Vehicle Log Books Zone Inspection Reports	Landfill	Daily	Assemblies Districts	No
Design-based Landfill Base Construction	Compaction of Base Soils at Optimum Moisture Slope of Base Soils Placement and Sealing of Impermeable Liners Placement and Slope of Leachate Collection	Survey Instruments observed to be used during construction Construction Inspection Reports	Landfill	During Construction	Assemblies	Yes
Design-based Landfill Cell Construction	Daily delineation of working face boundaries Survey Coordinates and Elevations of Daily Cell Construction, including Slope of Face Continuous On-Site Availability of Design Drawings and O&M Manual Closure of Cell Area when Final Design Elevation is Reached Respect of Maximum Side Slopes Required Respect of Minimum Base Slopes Required	Survey Instruments observed to be used daily Mark up of Daily Executed Cell Construction on Design Maps Topographic Survey map of Completed Cell Area when Final Design Elevation is Reached	Landfill	Daily	Assemblies	Yes
Adequacy of Internal Access Roads	Roads Free of Waste Roads Traversable in all Weather Adequate Drainage to keep Roads Free of Flooding	Vehicle Log Books (Downtime of Collection Vehicles at Landfill) Landfill Inspection Reports	Landfill	Daily	Assemblies	Yes

Cleanliness of Access Routes to Landfill	Litter Clandestine Waste Piles Waste in Drains Improperly Placed Waste Bins	Zone Inspection Reports	Service Zones	Daily	Assemblies Districts	Yes
Residents' and Private Haulers' Satisfaction with Landfill	Perception about Environmental Acceptability of Landfill Operation Willingness to Pay Willingness to Participate with Service Requirements	Surveys of Customer Satisfaction Surveys of Willingness to Pay	Area around Landfill and All Haulers	Semi-Annually	Assemblies Districts	No
Residents' Dissatisfaction with Landfill	Complaints about Landfill Noise, Dust, Odor, Traffic, Appearance and Increase in Vectors	Inspection Reports Records of Complaints Records of Complaint Follow-up	Area around Landfill	Monthly	Districts	Yes
Private Haulers' Dissatisfaction with Landfill	Complaints about Landfill Noise, Dust, Odor, Traffic, Appearance Complaints about Delays of Collection Vehicles at Landfill, Damage to Vehicles and Tires, Inappropriate Tipping Fee Charges, Operation of Weighbridge, Accessibility of Working Face	Inspection Reports Records of Complaints Records of Complaint Follow-up	All Haulers	Monthly	Assemblies	Yes
Worker Productivity	Number of Workers in Service Waste Quantity/Worker/Shift Absenteeism	Landfill Inspection Reports Records at Landfill	Landfill	Weekly	Assemblies	No
Vehicle Productivity	Number of Equipment Units in Service Waste Quantity/Equipment Unit /Shift Waste Quantity/Equipment Unit/Day Equipment Downtime	Landfill Inspection Reports Records at Landfill	Landfill	Weekly	Assemblies	No
Recycling Achievements	Types of Secondary Materials Recycled Quantity of Secondary Materials Recycled	Landfill Inspection Reports Records from Sales of Recyclables	Landfill	Monthly	Assemblies	No

<p>Environmental Controls</p>	<p>Exhaust Emission Control of Equipment Windblown Litter Dust Noise Minimized Working Face Compaction of Daily Refuse Use of Adequate Daily Cover at the end of Each Work Shift Washing of Equipment Flies, Rodents, Birds Leachate Treatment and Discharges Landfill Gas Control Surface Water Drainage Control Presence of Unauthorized People or Animals Presence of Hazardous Wastes Receipt of all Collected Waste Loads Provision and Maintenance of an Attractive Vegetative Buffer around Refuse Cell Construction Areas</p>	<p>Equipment Emission Inspection Reports Landfill and Area Inspection Reports Complaints about Emissions, Noise, Dust and Litter Fly Count, Rodent Count, Bird Count Pesticide Application Records Size of Daily Refuse Cell Monitoring of Leachate Treatment Plant Discharges Groundwater and Surface Water Monitoring Monitoring of Landfill Gases Records of Incoming Waste Loads</p>	<p>Landfill and Surround-ing Area</p>	<p>Weekly</p>	<p>Assemblies Districts</p>	<p>Yes</p>
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<p>Occupational Health and Safety Controls</p>	<p>Use of Gloves and Boots Use of Respiratory Masks Functioning Air Conditioning on all Equipment Units Adequacy of Roll-Bars Replacement of Filters on Air Conditioners Use of Uniforms Annual Medical Checks Provision of Vaccinations Control over Size and Weight of Lifted Loads Number of Accidents Health and Safety Training of all Landfill Personnel Practice on Emergency and Evacuation Procedures Continuous Presence and Functionality of Fire Protection and other Emergency Equipment Continuous On-Site Presence of Health & Safety Manual Posting of Health & Safety Telephone Numbers Adequate Accident Liability Coverage Operational Night Lights Backup Lights and Chimes on all Equipment</p>	<p>Landfill Inspection Reports Survey of Workers Medical Records Accident Records Inspection of Equipment Units Insurance Policies</p>	<p>Landfill Records from Service Provider</p>	<p>Weekly</p>	<p>Assemblies</p>	<p>Yes</p>
<p>Fair Labor Practices</p>	<p>Minimum Wages or Above Paid Payment for Overtime Medical Coverage Vacation and Holiday Allowances Adequacy of Work Breaks Proper Hiring and Justifiable Termination Procedures</p>	<p>Landfill Inspection Reports Survey of Workers</p>	<p>Landfill Records from Service Provider</p>	<p>Monthly</p>	<p>Assemblies</p>	<p>Yes</p>
<p>Hazardous Waste Segregation</p>	<p>Refusal to Accept Industrial/Commercial Hazardous Waste Provision of Special Collection/Storage Area for Household Hazardous Waste</p>	<p>Landfill Inspection Reports Inspection of Loads at Disposal Sites</p>	<p>Landfill Disposal Sites Records from Service Provider</p>	<p>Monthly</p>	<p>Assemblies</p>	<p>Yes</p>

Fuel Consumption	Fuel Records on Consumption -- per hour and per tonne Maintenance Records on Engine Calibration	Equipment Log Books Equipment Maintenance Reports	Landfill Records from Service Provider	Monthly	Assemblies	No
Reliability	Downtime of Equipment Number of Accidents Number of Slides, Erosion Events Worker Strikes Worker Illness and Accidents	Equipment Log Books Landfill Inspection Reports	Landfill Records from Service Provider	Monthly	Assemblies	No
Communication	Notification of Service Problems Continuous Accessibility by Radio	Correspondence Chron Files Landfill Inspection Reports Radio Functioning between landfill and WMD	Letters from Service Provider	Monthly	Assemblies	No
Finance	Payment of Government Property, Income, VAT, and Corporate Taxes, etc., as required Regular Payment of Fair Wages and Benefits to Workers	Financial Records Independent Auditor Reports	Records from Service Provider	Yearly	Assemblies	Yes

**LICENSING CRITERIA
For
SOLID WASTE COLLECTION OPERATIONS**

Licensing Criteria	What Needs to be Considered?
Company equipment	<ul style="list-style-type: none"> • Strength of Chassis For Density of Load (especially for Construction/Demolition Debris) • Appropriateness of Design for Work to be Done (leakproof, safe loading, fully containerized, especially for Medical Wastes) • Capacity of Equipment (adequate for economic service and distance of haul to unload) • Number of Operable Equipment Units (spare capacity needed) • Age and Condition of Equipment Units (units under 7 years old, unless significant spare capacity is available)
Financial capacity of company	<ul style="list-style-type: none"> • Fixed Assets of [] Assessed Value (adequate to indicate ability to obtain financing to cover investment needs of service) • Liquid Assets of [] Assess Value (adequate to cover cash flow needs of at least 3 months of service, and replace stolen or broken equipment, as needed) • Cash Flow over Past [] Years (adequate to demonstrate needed level of operational experience) • Payment of Corporate and Property Taxes over Past [] Years (to indicate reputable business practices)
Insurance and performance bonds	<ul style="list-style-type: none"> • Collision and Liability Insurance on Equipment Units (full comprehensive insurance to replace equipment, if needed, and to cover liabilities without service interruption) • Willingness and Ability to Post a Performance Bond or Provide a Line of Credit Guaranteeing Performance (required, to enable government to seek service solution, in event of failure) • Medical Insurance for Personnel (minimum requirements stipulated in license criteria, to level playing field)
Staff qualifications	<ul style="list-style-type: none"> • Ability of Key Staff to Read and Write (ability to read health and safety plans, respond to emergencies, follow operating manuals, interact with public) • Training for the Work to be Performed (specialized training for key staff on health and safety procedures, operating procedures, preventative maintenance of equipment, interaction with the public, general sanitation awareness) • Special Training to Handle Special Wastes, specially Hazardous Wastes (health and safety training for handling of special wastes, including emergency and evacuation procedures)
Owner's and organization's record of fair and honest business dealings	<ul style="list-style-type: none"> • Police Record of Arrests and/or Convictions • Previous Record of Operational Experience • Tax Filings over the Past [] Years • Audits of Business Accounts over the Past [] Years
Operation and maintenance of equipment	<ul style="list-style-type: none"> • Record of Equipment Availability and Maintenance (truck history records) • Operational Record of Service Delivery (customer satisfaction and complaint records)
Environmental controls on equipment	<ul style="list-style-type: none"> • Records on Regular Equipment Inspections (air emission inspections,

and pollution mitigation measures	fuel calibration testing)
Worker safety and health protection	<ul style="list-style-type: none">• Health and Safety Training for the Work to be Performed• Record of Disease Vaccines and Preventative Medication to all Staff who have Contact with Wastes• Medical Examination Records for all Staff• Presence of a Current and Adequate Health and Safety Plan (readily available to key staff, with emergency directions and telephone numbers posted)• Reasonableness of Work Productivity Norms, Working Procedures, and Hours of Operation (to level the playing field)
Collection methods and disposal locations	<ul style="list-style-type: none">• Adequacy of Plan Submitted for How to Conduct the Work to be Performed (should show ability to plan, conduct economic analysis, and an understanding of the potential difficulties in conducting the job)
Tariff structures and billing procedures	<ul style="list-style-type: none">• Adequacy of Plan for Generation of Revenues (realistic view of the difficulties in collecting revenues)• Office Facilities and Billing Procedures for Cost Recovery• Accountability and Transparency of Accounts
Record keeping on services provided and customers	<ul style="list-style-type: none">• Management Information System (willingness and ability to work cooperatively and openly with the government conducting oversight of service delivery)

Note: Activities for which Private Haulers would be licensed include: construction/demolition debris collection, health care wastes collection, hazardous industrial wastes collection, collection of general wastes from large industrial/commercial generators, residential service to marginal zones, collection of waste tires, collection of oversized yard wastes.

SAMPLE PREQUALIFICATION NOTICE FOR THE PRIVATE COMPANIES

Prequalification is open to firms and formed joint ventures meeting minimum qualifications listed in the prequalification documents. Joint ventures with experienced foreign firms are commonly allowed.

Prequalification is done in two steps. Each prequalified entity must first meet minimum criteria to be viable to apply for prequalification. Since only a pre-determined number of firms will be prequalified, the second step is to determine those with the highest numerical ranking. The criteria described in the prequalification documents would include, but are not limited to, the following.

Minimum criteria essential to prequalify:

1. Demonstrated experience in the management of labor and equipment operations and the maintenance of a fleet of equipment comparable to the type required for the project and involving an annual turnover of at least \$..... equivalent, over each of the last years.
2. Demonstrated experience in related civil works and equipment operations comparable to the type required for the project and involving an annual turnover of at least \$..... equivalent, over each of the last years.
3. Access to, or ownership of liquid assets, unencumbered real assets, lines of credit and other financial means sufficient to meet the cash flow of at least months of the proposed work, or at least \$ equivalent over each of the last years.
4. Experience in at least projects requiring timely delivery of public services over a continuous period of at least years and involving operational labor and a fleet of equipment.
5. Audited balance sheets for the last years, which demonstrate financial soundness and long term profitability.
6. Proof of absence of arrests, litigation or arbitration history.

Ranking criteria to be used numerically ranking for the prequalification:

1. Number, qualification, and experience of key personnel, relevant to range of professional skills and levels of competence required for the project.
2. Number, size, condition, and appropriateness of equipment and vehicles of the type required for the project.
3. Adequacy of office, repair, staging and maintenance facilities.
4. Experience in waste management services of the type required for the project.
5. Experience in managing contracts for public services.

SAMPLE SELECTION CRITERIA FOR THE PRIVATE COMPANIES

Selection criteria, which could be used for an evaluation exercise for solid waste sector tenders, are listed below. If a prequalification exercise has been conducted, some of these criteria would already have been addressed and would not need to be repeated at this stage. Prequalification is recommended when the bidding process requires considerable effort and expense on the part of the bidders, so government is desirous of minimizing the number of firms undergoing this effort and expense. For large design, build and operate concession projects, where a small number of bidders have been prequalified, the winning bidder may be expected to compensate the losing bidders by a predetermined fixed lump sum for their bid preparation efforts. The cost of this is built into the tender bid (or offered tipping fee).

1. Appropriateness and adequacy of technical proposal for how the services would be provided, including number and type of vehicles/equipment units which are already available for use and units which would be procured for purposes of the proposed work, personnel who are already available for work and personnel who would be hired for purposes of the proposed work, layout and design of existing facilities and any required facilities which would be constructed for purposes of the proposed work, proposed service routing, frequency, quantity and methods.
2. Evidence that the firm has been a going concern for at least five years.
3. Owner's experience in providing comparable sweeping, drain cleaning, materials transport, civil works, and operational services.
4. Owner's experience in providing the same type of solid waste collection, transport and/or disposal/treatment services.
5. Resumes of key managers and staff with regard to training and experience in solid waste management planning, design, implementation, and operation activities.
6. Owner's experience in managing a business and a large staff field workers.
7. Owner's experience in maintaining, repairing, and operating a fleet of vehicles.
8. Owner's experience in dealing with labor and/or labor unions, and proof of regularly paying fair wages.
9. Reputation for being honest and reliable.
10. Ownership of operable equipment which would be appropriate for use in the requested services.
11. Registration of the firm with government and designated boards or councils of relevance to the work to be done.
12. Working relationship of the firm with previous clients. Evidence of responsible and competent past work.
13. Resumes of personnel who will be responsible for planning routes, maintaining and repairing vehicles, accounting, operations management, and task organization.
14. Financial statements of the proposing company certified by a nationally recognized firm of independent certified public accountants, including financial credit record and outstanding debt of owner and company over the past 3 years.
15. Assets valued at an equivalent of at least \$US [] in equivalent local currency.
16. Proof of annual payment of owner's personal and corporate income and property taxes over the past 5 years.
17. Membership in related professional organizations and participation within seminars trade shows and training workshops in solid waste management over the past 3 years.

18. Relevance and quality of examples of work experiences as described in reference letters from previous clients of the firm.
19. Current and proposed workloads of the firm, which might affect its ability to deliver the services, required under the schedule required.
20. The degree to which the firm demonstrates, through its technical and financial proposal, an understanding of the work requirements.
21. Evidence that the firm is capable of commencing performance as required.

**SAMPLE QUESTIONNAIRE
ON EXISTING SOLID WASTE MANAGEMENT SERVICES:
PUBLIC AND PRIVATE**

Note: While primarily designed for interviews with solid waste managers in cities, this questionnaire can also be used to interview neighborhood associations or individual establishments which have engaged a private firm to provide solid waste services, as well as private firms involved in service provision.

Respondent:

Name of City:

Name(s) and Positions of Respondent(s):

Date:

General:

1. Population and Area (in square kilometers) of City:
2. What percentage of total population lives in the following categories of land use within your City:
 - ⇒ Dense, old, medina or walled city
 - ⇒ Low-income spontaneous residential
 - ⇒ Laid-out residential
 - ⇒ Central city commercial
 - ⇒ Low density commercial/residential
 - ⇒ Industrial
 - ⇒ Other, please describe
3. Describe in your own words the most important problems and needs your City is facing in solid waste management.

Solid Waste System:

4. What percentage of the total citywide quantity of solid waste generated is collected at least once a week?
Of the total collected, roughly estimate the percentage, which is collected by each of the following methods:
 - ⇒ Door-to-door by pushcart
 - ⇒ Door-to-door by animal with baskets
 - ⇒ Door-to-door by animal with carts
 - ⇒ Door-to-door by mini pickup truck

- ⇒ Door-to-door by farm tractor and trailer
- ⇒ Door-to-door by full-sized non-compaction truck
- ⇒ Door-to-door by full-sized compaction truck
- ⇒ Communal collection point cleared by animal cart, farm tractor, or full-sized collection truck
- ⇒ Communal skip-type container lifted by full-sized truck
- ⇒ Communal roll-on/roll-off container lifted by full-sized truck
- ⇒ Block system (bell rung at curbside) by full-sized truck
- ⇒ Other system, please describe

5. Roughly estimate the number of the following types of vehicles in your fleet which are operable at least 70% of the time and are less than 7 years old?

	Number of Operable Vehicles with Remaining Economic Life
Mini Pickup Truck	
Farm Tractor and Trailer	
Full-sized Non-Compaction Side-Loading Truck	
Full-sized Open Tipping Truck	
Full-sized Compactor Truck	
Skip Container and Lift Truck	
Roll-on Container and Arm-Roll Hoist Truck	
Others, Please describe:	

6. What is the average size (in cubic meters) of the following trucks, which have been noted above as operable and less than 7 years old?

	Average Capacity (in cubic meters) of Operable Vehicles with Life
Mini Pickup Truck	
Farm Tractor and Trailer	
Full-sized Non-Compaction Side-Loading Truck	
Full-sized Open Tipping Truck	
Full-sized Compactor Truck	
Skip Container and Lift Truck	
Roll-on Container and Arm-Roll Hoist Truck	
Others, Please describe:	

Solid Waste Facilities:

7. "Disposal Sites" may be open dumps, controlled landfills (with periodic soil cover), sanitary landfills (with daily soil cover, leachate management and gas ventilation systems), or composting plants. Describe the method of disposal for the solid wastes collected and estimate how many disposal sites exist. What is the average distance (in kilometers one way) from the City center to a disposal site? How long is the trip (in minutes one-way) from the City center to a disposal site, at the time when collection service is provided?

9. "Collection Points" (or transfer depots) receive only "small arrivals" of solid waste (i.e., less than 1 cubic meter) from pushcarts and animals with baskets. From collection points, the wastes are loaded into collection vehicles that take the waste to either a "Transfer Station" or a final disposal site. Indicate the number of collection points in the City:
 - ⇒ Served by Bullock Carts
 - ⇒ Served by Open trucks (Dust Bins ____, heaps __)
 - ⇒ Served by Skip Containers and Lift Trucks
 - ⇒ Served by Roll-on Containers and Hoist Trucks
 - ⇒ Other, please describe

10. "Transfer Stations" predominantly receive "medium sized arrivals" of solid waste (i.e., more than 1 cubic meter and less than 10 cubic meters) from animal carts and collection vehicles to enable loading into large transfer vehicles (usually more than 15 cubic meters) which take the waste to a final disposal site. Indicate the number of transfer stations in the City:
 - ⇒ Open ground site with clearing by Wheeled Loaders
 - ⇒ Ramp and unloading platform with clearing by Wheeled Loaders
 - ⇒ Ramp and unloading platform served by Roll-on
 - ⇒ Containers and Hoist Trucks
 - ⇒ Other, please describe

Solid Waste Human Resources:

11. How many people work in the solid waste service? Note which, if any, of these categories are represented by unions.
 - ⇒ Administrative and professional staff
 - ⇒ Operations supervisors
 - ⇒ Collection vehicle drivers
 - ⇒ Collection workers
 - ⇒ Sweepers
 - ⇒ Workshop staff (portion for solid waste vehicles only)
 - ⇒ Sanitary/Health Inspectors

12. Of the people working in the solid waste service, what is the percentage that is:

- ⇒ Permanent government employees (i.e., on salary with social security benefits)
- ⇒ Daily or casual employees (i.e., paid daily, no job security)
- ⇒ Contract employees (i.e., job security only for short contract period)

13. Of the people working in the solid waste service which are permanent government employees, roughly estimate what percentage will reach retirement eligibility within the next 5 years?

Financial:

14. What is the amount of the total City recurrent budget for all services? What is the amount of the City's solid waste management budget, that is for sweeping, small drain cleaning, solid waste collection, solid waste disposal and maintenance of the solid waste equipment?
15. What percentage of the City's total recurrent budget is covered by property based conservancy tax? What percentage comes from Central Government transfers?
16. What percentage of the City's total recurrent budget is covered by direct user charges for solid waste services? How are the charges collected (such as: separately door-to-door bill collectors, through water charges, through electrical charges, by direct bank deposit)?
17. Do you have a City by-law requiring households and establishments to pay a solid waste user charge?
18. If you have a solid waste user charge, what is the method for updating the charges periodically, such as annually?

Private Provision of Services:

17. Please check the following types of private sector provision of service which exist in the City?
- ⇒ Pre-collection of residential solid waste - by private subscription
 - ⇒ Collection of construction/demolition debris - by private subscription
 - ⇒ Collection of industrial wastes from large factories - by private subscription
 - ⇒ Collection of commercial wastes from large hotels, markets or stores - by private subscription
 - ⇒ Collection of medical wastes from hospitals or clinics - by private subscription
 - ⇒ Collection of general municipal wastes from entire neighborhoods - by contract , only carriage from collection point to disposal site.
 - ⇒ Collection of general municipal wastes from entire neighborhoods - by franchise
 - ⇒ Sweeping or cleaning of streets or open areas - by contract for labor pool
 - ⇒ Repair of City solid waste equipment - by contract on an as needed basis with small workshops
 - ⇒ Repair of City solid waste equipment - by contract on a long-term basis
 - ⇒ Conversion of waste to compost - by concession

- ⇒ Operation of a City transfer station and long distance hauling system - by contract or concession
 - ⇒ Operation of a City disposal site - by 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
 - ⇒ Other, please describe.
18. Has the City had previous experience with private provision of solid waste, which has been discontinued? If so, please explain
19. Do you have a City by-law requiring households and establishments to cooperate with any private sector agents appointed by the City to give solid waste service, that is appointed through license, contract, franchise, or concession agreement.

FOR EACH TYPE OF PSP IDENTIFIED ABOVE, RESPOND TO THE FOLLOWING:

20. When did you begin planning and initiate steps toward implementation? ___ And when did the private firm actually begin to deliver service?
21. For each of the examples of PSP, please explain the process by which private firms or organizations are awarded the contract, franchise, or agreement. For example, are the awards based on selection of the best firms from a qualified short list? Or, do the awards follow a competitive bidding process? Or, are the awards based on review of unsolicited proposals?
22. What is the length (in months or years) of the PSP arrangements which you have? If PSP arrangements are made for only one year or less, please explain why.
23. Are PSP arrangements automatically renewed at the end of the contract, license or franchise period if performance has been satisfactory? Or do the firms have to compete anew for a new PSP arrangement?
24. Do your PSP arrangements have cost escalation indices, which connect to the rate of inflation, exchange rate of the Rupee, or the change in consumer price indices?
25. For the PSP arrangements, which you have in your city, please describe the level at which decisions/selections for contracting, etc., are made? At the City level? At the Provincial level? At the Central Government level? Is the level at which decisions/selections for PSP arrangement are made based on the monetary size of the agreement, on the length of the agreement period, or the involvement of capital investment?
26. Do you arrange for PSP agreements to have a short duration or a small service area in order to keep the monetary size below a specific level?
27. For each of the examples of PSP, describe the character of the community in which you first implemented this PSP system? Please describe the community in terms of land use, density, road access, income level, location (i.e., suburban laid out development areas of

- high income, central commercial/residential areas of high priority use, marginal densely populated low income neighborhoods).
28. In communities which are served by private contractors, does the type and level of service vary at all from city service? If so, please explain
 29. Has the city done any comparative studies on the differences in performance between the city service and the PSP service? Has it monitored differences in productivity per worker, productivity per vehicle, quality of service, or cost of service?
 30. On what basis do you pay your private firms which are under PSP arrangements (by the amount of waste estimated for the area, the amount of waste delivered to a disposal site, the number of loads collected, the size of the service area)? Does the payment from the city to the various private firms vary according to difficulty of providing service in a given area, length of travel time to disposal, size of loads at each generation point?
 31. What inspection, supervision, and/or performance monitoring do you provide in the areas served by PSP systems?
 32. Do you have any penalty or sanction clauses built into your PSP arrangements? What course of action do you have if a private firm does not perform satisfactorily? What kind of external technical or financial assistance did the city receive from central or provincial government, or from bilateral or multi-lateral agencies in initiating PSP?
 33. Did the city provide any land, buildings, equipment or human resources to support the private firms' activities initially?
 34. Did the city provide any support to the private firms' efforts to obtain capital financing? Did the city provide any guarantees, or did the city arrange a multi-year contract to enable Bank financing?
 35. Did the city provide community education, general public education, and public participation workshops initially to support the transition to a PSP system?
 36. Within your city, is there a tariff structure that you have for user fees from residents? If so, is it based on waste quantity, consumer income level, or property size?
 37. Is there a tariff structure that is different for residents served by PSP systems?
 38. How are user fees, if any, collected from residents? For example, are the fees collected directly by the private firms providing the services, or indirectly through neighborhood leaders or NGO's, the water or electricity billing system, by the city staff, or by private commissioned bill collectors?
 39. Are there any problems or issues that you would like to share with us with regard to PSP systems and your experience with them? (e.g., control, reliability, cost, political intervention, performance)

40. Are there any lessons that you have learned which you would like to share with us with regard to PSP systems and your experience with them? (e.g., performance specifications, bonds, cost)
41. Have you experienced any benefits from involving the private sector in solid waste services? If so, please explain what benefits you have perceived? (e.g., freedom to hire and fire employees, flexibility in hours of work, freedom from bureaucratic procedures and delays, technical skills, access to credit)
42. Based on your experience, would you recommend that other cities implement PSP systems similar to yours?
43. If you have not involved the private sector in solid waste management, please explain your concerns and reluctance to do so? (e.g., greater likelihood that contracts are audited for performance, political intervention in performance, control, cost, reliability, labor unions, social issues)

TERMS OF REFERENCE
ZONING STUDY FOR PRIVATIZATION OF COLLECTION
[,.]

Introduction:

The work to be conducted under this study involves the development of zones for refuse collection in the urban area of [,]. Some of the zones will be served by the private sector and government will serve others. For purpose of optimum contestability, it is strongly recommended that zones served by government cover at least 30% of the population of the urban area. Refuse to be collected includes residential, commercial, industrial, institutional, market, and garden wastes of a non-hazardous nature. Collection includes street sweeping, cleaning of small open drains, pre-collection by cart, collection of vehicle, and transport to the officially designated discharge location.

Study Area:

[,] is a city of about [] residents and generates about [] tonnes/year of mixed municipal refuse.

Objectives:

The objective of the zone definition exercise is to subdivide the city into equitable zones for delivery of solid waste collection services. Some zones will be served by the private sector and others by government. The zones need to be equitable to enable comparative performance monitoring for purposes of optimizing contestability among the private sector parties and with government.

Each zone should be relatively comparable in terms of service difficulty, applicable methods of service, service cost, and risk. Issues to examine in the zoning exercise include, but are not limited to: education and willingness of residents to cooperate with the collection system; ability of residents to afford dustbins or bags to store their refuse; space for storage of dustbins and placement of communal containers; density of population, climate, and other conditions affecting required frequency of service; access road conditions for collection equipment; and distance from the zone to the discharge point.

The privatization of solid waste collection will be implemented gradually over a period of 5 to 10 years, with the government retaining at least 30% of citywide collection service. Therefore, the process of zoning shall be conducted in such a manner to enable updating. To this end, it is recommended that the various issues for zoning be dealt with through a series of map overlays.

Scope of Work:

Task 1. Develop a Base Map. Develop of base map of the city for the zoning exercise. To the extent possible, use existing maps available from government land use and public works agencies as input. Mylar, on another transparent media, will be used for development of the base map. From the base map, a series of similarly transparent copies will be printed. The copies will be used to allow development of a series of transparent maps, each with different information of value to the zoning exercise, which can be overlain to develop the boundaries of the zones.

Task 2. Type of Land Use. Compile information from the city's land use planning office for portraying on a city map the distribution of existing land use in accordance with local designations such as: residential development of low, medium and high income; recently laid-out residential development versus old congested, spontaneous urban, and semi-rural character; commercial

development; institutional (government office) development; industrial development; open spaces; and markets.

Task 3. *Population Density.* Compile information for portraying on a city map the distribution of population by actual number and by density.

Task 4. *Road Condition.* Compile information for portraying on a city map the location of all roads that can bear heavy truck traffic, as required for solid waste collection service. Indicate roads that are primary and paved, those that are secondary and paved, and those that are secondary and unpaved. Indicate road widths. Indicate roads wherein the design standard meets international criteria for roads and bridges (including small bridges over culverts or canals) for support of a gross vehicle weight of 35 tonnes, or greater (depending on the national highway design standard), as only these would be viable for use by vehicles serving a transfer station.

Task 5. *Traffic Condition.* Compile information for portraying on a city map the location of primary paved roads where traffic congestion significantly affects travel speeds. Indicate those primary paved roads that experience more than 2 hours daily of travel speeds which are under 30 km/hour. Also, compile information for portraying on the same map the location of secondary unpaved roads that are flooded periodically leading to limited access during rainy seasons, or have other traffic constraints.

Task 6. *Large Sources.* Compile information for portraying on a city map the location of all large waste generators where more than 1 cubic meter per day needs to be collected. Include, as appropriate, large markets, hotels, hospitals, schools, restaurants, and office buildings.

Task 7. *Community Organization.* Compile information for portraying on a city map the location of all communities or neighborhoods which are known to be relatively well organized and where the residents have displayed a willingness to cooperate with community activities. These communities will be ones wherein there is some informal structure for communication, education, and decision-making, and implementation of change. Indicate those communities wherein the residents are already participating in a voluntary effort of improved refuse collection.

Task 8. *Accessibility.* Compile information for portraying on a city map the location of all neighborhoods that are known to be inaccessible by truck for door-to-door solid waste collection service.

Task 9. *Existing Service.* Compile information for portraying on a city map the location of all areas currently receiving solid waste collection and cleansing service. Indicate those areas which are receiving door-to-door service, those receiving communal container service, and those receiving "bell" service (wherein a scheduled truck arrives, rings its bell, and residents bring their waste to the truck). Indicate the frequency of existing service, such as daily, twice weekly, once weekly.

Task 10. *Waste Generation.* Compile waste generation information for the various types of land use available in the city and the known distribution of population to map the distribution of waste being produced. Map the distribution of waste quantities by community in terms of tonnes per day per community.

Task 11. *Map the Privatization Zones.* Overlay the above city map transparencies and define the zones to address issues of equitability, reliability, and economies-of-scale. Because the initial procurement of privatization will be the most difficult for securing competition, it is especially important that these zones be comparable. Obtaining citizen cooperation with the privatized service will be most difficult for these initial zones, therefore other factors affecting difficulty of service

provision need to be balanced so that the initial privatization activities have a reasonable chance of succeeding.

For reliability, a zone should be serviceable by no less than 3 equipment units of a single type, so that the zone can be served in a second half shift in case one of the vehicles is down for maintenance or repair.

For economies-of-scale, a zone would most optimally serviced by no less than 5 equipment units, because of the span of management for a field supervision as well as the for maintenance and repair. The productivity of a truck depends on the distance of direct haul distance one-way to the point of discharge (i.e., either a transfer station or a disposal site). The charts developed on costs/tonne and productivity/year for various collection vehicles in [] are shown on the following pages. In zones which are amenable to service by the rear end loading compaction truck loading from dustbins, the productivity per vehicle is less than it would be for zones which are amenable to service by skip trucks loading communal containers. Depending on the equipment units considered most economic for the neighborhoods being studied, five trucks that can each handle from [] to [] tonnes/year are recommended, which means zones with populations ranging from [] to [] residents.

For economies-of-scale where joint ventures with international firms are desired, several of the above zones would be combined, to enable the joint venture to adequately utilize the technical expertise of the foreign partner. To this end, a zone for international firm participation would typically generate at least 50,000 tonnes/year and include at least 300,000 residents.

Based on the above, it is recommended that the [] be subdivided into equitable zones of [] to [] residents, depending on appropriate technology and travel distance to discharge. The private sector will be invited to submit bids for service of individual zones, or, if the potential involvement of international firms is desired, any combination of [] to [] zones in order to reach the desired 300,000 residents. In this manner, it is intended that the tender will encourage the formation of joint ventures with international firms for bidding on the multi-zone combination.

To the extent possible, each zone (which may within one single boundary or may be a combination of areas) will have its apex equidistant (in terms of travel time) from the discharge location. Each zone will be comparable and equitable, to the extent possible, in terms of: service accessibility, road and traffic conditions, distribution of service delivery possibilities (door-to-door, communal or bell), ease of obtaining citizen cooperation with storage and discharge needs of the collection system, ease of obtaining citizen cooperation with cost recovery, and quantity of waste from large waste generators.

Deliverables:

Provide 5 copies of each set of transparent and replicable maps delineating baseline information compiled and zones. All originals and copies shall be on high quality Mylar material.

Schedule:

The definition of collection/cleansing service zones is to be within 4 months from the starting date of the signed contract.

Team:

The team shall include at least one urban planner experienced in land use planning and with at least 10 years of related experience in land use planning; and at least one solid waste specialist with at least 10 years of related experience in rationalizing solid waste collection systems.

TERMS OF REFERENCE

INSTITUTIONAL, FINANCIAL AND PRIVATIZATION STUDY IN

[],[]

INTRODUCTION

This proposed study covers all developed areas of [],[]. The study area has about [] residents, of which [%] live in built-up (semi-urban) settings and generate from [] to [] tonnes/year of municipal solid waste (i.e., mixed refuse from residential, commercial, institutional, and industrial establishments). Currently, about [%] percent of the solid wastes from residents in the built-up areas are collected by their municipal governments. All collected waste is taken to open dumps that exist in each of the main municipalities.

Revenues to cover the recurrent (operation and maintenance) costs of solid waste management are currently generated as follows: [%] from general tax revenues generated by the local government; [%] from subsidies and transfers from provincial or central government; [%] from direct user charges to households and establishments receiving collection service; [%] from sanctions for littering, clandestine dumping and other public cleansing violations; [%] from tipping fees at the existing disposal site; [%] from license fees paid by private haulers and franchisees; and [%] from concessionaires permitted to extract recyclables or recover resources from the solid waste.

Capital investment costs for solid waste management in the past 10 years have been covered as follows: [%] from grants or loans from provincial or central government; [%] from grants or loans from multilateral and bilateral development agencies; [%] from commercial loans; [%] from floating local government bonds; [%] from private sector participation.

OBJECTIVE OF THE STUDY

The main objective of the study is to examine financial and institutional dimensions of solid waste management in the built-up areas; to develop institutional, commercialization, and financial arrangements to improve solid waste management for []; and to evaluate the feasibility and advisability of involving the private sector. The Consultants will be expected to recommend appropriate cost recovery mechanisms, tariff structures and cost recovery targets. They will also be expected to recommend the optimal private sector participation strategy and prepare model bidding documents necessary to solicit private sector participation (PSP) for various solid waste activities.

More specifically, the Study will:

- determine the appropriate institutional, commercialization or corporatization strategy to improve solid waste management for [], including appropriate roles and responsibilities of participating entities, organizational structure and staffing;
- conduct a financial analysis of the sweeping, collection, transport and disposal systems taking into account operating and maintenance costs in the target jurisdictions; plus review and confirmation of the proposed capital costs which have been developed by others for new transfer, disposal, and treatment facilities;
- survey various users of the solid waste system regarding their service preferences and their ability and willingness to pay for various solid waste management services (i.e., various types of users include residential dwellings, commercial establishments, ports,

tourist establishments and various solid waste management services include pre-collection, collection, recycling, transfer, disposal, composting;

- analyze the feasibility of full cost recovery or partial cost recovery alternatives thereto and prepare financial plans, pricing or rate structures, and rate collection mechanisms to accompany proposed institutional arrangements;
- determine appropriate private sector involvement methods which would improve efficiency, cost, and capital investment in collection, transfer, composting, recycling, health care waste disposal, and general waste disposal; and
- examine the legal framework governing relationships among the local, provincial and central levels of government, as well as potential private sector partners.

SCOPE OF THE STUDY

The study shall entail the following specific tasks:

Task 1: Institutional, Commercialization or Corporatization Strategy and Structure

The Consultant shall examine a range of alternative institutional arrangements (including commercialization and corporatization options), which shall include municipal solid waste departments, provincial solid waste authorities, inter-municipal public enterprises for selected activities of solid waste management, provincial solid waste public/private partnerships. The Consultant shall propose a strategy by which efficient delivery of solid waste collection, recycling, transfer, and disposal services can be optimized. The recommendations shall specifically address any problems which might exist in the existing solid waste management system, including: possible problems of labor redundancy, labor productivity, strikes, lack of management flexibility to hire qualified staff, lack of management flexibility to terminate employment of non-performing personnel, lack of revenue generation capacity, lack of enforcement capacity, poor maintenance and low fleet availability, poor cash flow for recurrent expenditures, lack of capital, low status of the organization and its management, and corruption.

Each activity in the waste management chain should be examined and the Consultant should express an opinion on whether the solid waste system should be managed as a whole or in parts (e.g., whether collection should be handled by local jurisdictions and disposal should be handled by regional or provincial jurisdictions). The Consultant should also examine the pros and cons of integrating solid waste management with water supply, water resource, sewerage and wastewater treatment management.

The proposed strategy should be accompanied by recommended organizational structure(s) with institutional relationships and responsibilities clearly defined. Corresponding management systems and operating procedures shall be formulated. Illustrative staffing plans should be prepared including the type and level of skills required and identifying any labor shortages or excesses within the system. A capacity development program for managers and technical staff shall be prepared if deemed advisable, identifying general training needs in terms of topic, mode, duration and source.

Task 2: Financial Analysis and Tariff Study

The Consultant shall conduct a comprehensive financial analysis of the solid waste collection (including pre-collection, recycling and transfer) and disposal (including composting and other means of treatment/resource recovery) systems. This shall include a validation of capital requirements for the new transfer, disposal, and treatment facilities and incremental pre-collection, recycling, collection and transfer vehicles and equipment as projected by previous technical work. It shall also project operating and maintenance (O&M) costs over the first five (5) years of the operation of the proposed new facilities and equipment. The land to be devoted to new facilities shall be appraised and valued.

The analysis must consider various government and private sector arrangements for the construction and/or operation of the proposed new facilities and/or the pre-collection, collection and transfer system and determine the financial viability and technical advantages of alternative arrangements. The Consultant shall consider whether contestable/competitive solid waste collection service in various zones of the target jurisdictions would be viable through multi-year service contracts and/or franchises with private companies. The Consultant shall also consider implementation of the new facilities through concessions for build, operate and own/transfer (BOO or BOT), or design, build, operate and own/transfer (DBOO or DBOT). If the project conducts design and construction through its own contractors, the Consultant shall consider operation of the proposed new facilities through service contracts. The Consultant shall determine the optimal capital structure(s) required to implement the proposed new facilities together with the relative equity contributions of each participant.

The relative willingness and capacity of residents and corporations in the target jurisdictions to pay for solid waste management services shall be determined. A sample service demand and willingness to pay survey form (developed by Sandra Cointreau-Levine, Consultant) is provided in Annex A for potential use. The feasibility of undertaking waste recycling as a source of revenue generation should be explored, together with on-site recycling and composting activities which minimize waste generation as a voluntary alternative to full payment for service. The Consultant shall develop a proposed schedule of fines and penalties for violation of solid waste management bylaws, rules, guidelines, and regulations. Mechanisms for the collection of all fees shall be included in the study and the collection of fees through other integrated utilities (i.e. water and sewerage, and power distribution and generation) shall be explored. Consideration of implementing a segregated account for all solid waste revenues must be explored.

Based on the considerations above, and other factors deemed relevant by the Consultant, a tariff policy shall be recommended. Various cost recovery schemes may be proposed together with the corresponding rate structures for user charges, tipping fees and solid waste fees to be collected from residents, commercial and industrial establishments. The Consultant will recommend alternative funding sources/financing mechanisms for the target jurisdictions to cover potential shortfalls and/or provide temporary subsidies. Such financing may include but not limited to loans, grants, bonds and limited stock offerings. To the extent that a need for subsidies is identified, the Consultant shall determine the financial capacity of the target jurisdictions in this regard.

Task 3: Private Sector Participation

The Consultant shall examine a range of private sector participation options available for collection, recycling, transfer, composting, and disposal of wastes, including special wastes such as high-risk health care wastes, boat wastes, and construction/demolition debris. The options of service contracting, management contracting, franchise service, licensed private haulers, and concessions shall be included. Annex B provides a discussion of some privatization experiences for the Consultant to consider.

The study should take into account the delivery capacity currently existing in each local jurisdiction and examine the comparative advantage of public versus private sector operators in collection, recycling, transfer, disposal, and the role of oversight and enforcement. The economies-of-scale for appropriate sizing of facilities and collection zones shall be considered so that privatization strategies outlined by the Consultant are cost-effective.

Task 4: Legal Structure and Implementation

The Consultant shall identify the relevant laws, rules and regulations governing joint public participation or, alternatively, public-private participation in the establishment of the entities proposed to implement regional solid waste disposal for the target jurisdictions. Issues of jurisdiction must also be examined in light of the participation of multiple public sector bodies in any shared regional facilities. The study shall identify the detailed process for registration and approval of proposed legal structures by appropriate authorities.

The Consultant shall also determine the legal options and mechanisms for implementing and enforcing the proposed tariff policy. As needed, the Consultant shall recommend changes in existing bye-laws, requiring residents, visitors, and establishments to comply with the cost recovery mechanisms and private sector agents developed by government for improved solid waste management. This shall include the legal arrangements for licensing private haulers of general and special wastes, and requirements that residents utilize the services of only licensed haulers or risk sanction.

Where private sector participation is deemed advisable, the Consultant shall formulate the necessary bidding procedures within the framework of laws and regulations governing such type of contract, franchise or concession agreements. The basic provisions and format for bid and tender documents should be developed in consultation with Legal Departments of the target jurisdictions, recognizing that performance and design specifications will be outlined separately by technical specialists. The Consultant shall closely examine relevant recent privatization experiences in other countries for potentially replicable templates. The Consultant shall propose an appropriate financial package against which bids will be evaluated.

EXPECTED OUTPUTS

The Consultant shall produce the following:

- A report examining institutional (including commercialization or corporatization) strategies for various solid waste management activities with recommendations on the optimal approach and proposed organizational structure and staffing.

- A report providing comprehensive financial analysis of solid waste management services for [] accompanied by detailed recommendations concerning tariffs, cost recovery, subsidy policies and their timing and roll-out. A financing plan reflective of the recommended institutional structures should be included.
- A report examining the legal/regulatory framework of the recommended institutional framework together with a prescription for the appropriate legal course of action.
- A report on private sector participation with recommendations on which activities should involve the private sector, and how. Develop the basic format and provisions of model bidding documents and procurement procedures, excluding performance and technical design specifications being developed by others.
- An overall implementation plan which identifies the steps, decisions and actions needed to implement the various recommendations of the study, including terms of reference for any required technical assistance to build local institutional, financial and private sector participation capacity.

5. SCHEDULE

The Consultant shall provide monthly progress reports summarizing efforts underway to address the above scope of work, outlining problems and constraints encountered, and presenting issues for client decision-making, as needed.

Five copies of the initial draft report covering all work efforts described above shall be submitted 6 months after the notice to proceed with the above scope of work. Five copies of the final draft report responding to comments shall be submitted 7.5 months after the notice to proceed with the above scope of work, assuming the client shall provide comments within 2 weeks after receiving the initial draft report.

6. TEAM

The team shall include at least one financial analysis with over 15 years of related experience, one private sector participation specialist, familiar with the solid waste sector and with over 15 years of related experience, and one solid waste management specialist with over 15 years of related technical and economic analysis experience.

ANNEX A

DEMAND ASSESSMENT AND WILLINGNESS TO PAY SURVEY

FOR INDICATIVE PURPOSES ONLY²²

SOLID WASTE COLLECTION AND DISPOSAL SERVICES

Background

Multilateral and bilateral development agencies are increasingly emphasizing private sector provision of urban services, cost recovery from service recipients, demand driven service provision, and community participation in its project planning. To assess demand, willingness to pay, and affordability, there is a need to communicate with potential service recipients on the topics of service options, costs, and payment scenarios. Since private sector provision of urban services is a new approach, demonstration of demand and willingness to pay may help to convince the private sector that investment risks are acceptable. For areas where no demand exists and there is no willingness to pay for service, decisions will be required on whether to provide service through subsidy, develop self-reliant systems (such as household recycling and composting) or do nothing.

Attached is a draft survey for use in communicating with residents in a solid waste service (or potential service) area regarding their preferences and willingness to pay. Prior to developing and conducting a final version of this survey, there needs to be feasibility study to determine which service options are viable and estimate the full amortization, operating, and maintenance costs of each. Costs need to be developed on a cost per tonne and cost per capita per year basis. Because the cost recovery system should recuperate the costs for disposal as well as collection, disposal options need to be studied for viability and cost.

There are costs that may not be covered by the cost recovery system and for which the government would have to pay. Government payments commonly would cover the costs of the following services: (a) sweeping of public streets, (b) cleaning of public parks, (c) collection service to public hospitals, police and military barracks, government office buildings, and public schools. During the initial stages of developing a direct cost recovery system, government payments might also cover service to the low-income residents. The cost of these services needs to be estimated and government's willingness and commitment to pay established, especially if private provision of service is desired. Costs must be presented with the survey in clear terms for residents to be able to reasonably respond to questions.

In order to conduct the survey, there needs to be selection of representative neighborhoods that would give a complete view of the range of conditions prevalent in the study area. Typically the following types of neighborhoods are surveyed: (a) high income residential, (b) middle income residential, (c) low income residential, (d) mixed commercial and residential, and (e) market areas. In addition, the representatives of the following types of establishments should be surveyed because they offer potentially high revenues which could cross-subsidize low revenue

²² Full-scale willingness-to-pay surveys are expensive, require careful selection of statistically viable sample sets, and testing of responses so that the eventual results provide a firm basis for tariff structuring. The survey instrument provided here is for a more modest effort, and is not adequate to guarantee that cost recovery targets can be assured to investors or lenders.

service areas: (a) hotels, (b) office buildings, (c) department stores, (d) industrial estates, (e) airports and ports, and (f) embassies and ambassador residencies.

The data from the survey would enable rationalization of the competing objectives of minimum service coverage to areas with low demand, adequately frequent and convenient service coverage to areas of high demand, and optimum cost recovery. The data would help identify areas that might be good candidates for pilot testing of initial privatization and/or cost recovery efforts.

After experience with the service improvements, repeat of the survey would enable determination of whether service recipients change their service expectations, demands, and willingness to pay after experiencing improved service. Periodic surveys are recommended to monitor demand changes.

Instructions

Household/Establishment Identification. The household and establishment identification needs to be specific enough so that the same house can be found and monitored in subsequent surveys one to several years later.

Respondent. The person interviewed shall be the head of household (or establishment) or someone who is clearly involved in decision-making about household (or establishment) expenditures and commitments.

Survey Purpose. The reason for the survey needs to be clearly and comprehensively described. If the survey potentially will be followed by a pilot test, project, or service change, this needs to be clearly described.

Service Options. Each option of service needs to be described. Preferably, there should be drawings or photos that show how the service will appear, including the type of household container and the size and type of collection equipment. For each option of service, the frequency needs to be stated. If the service involves participation (such as early morning placement of dustbins on the curbside or carrying the waste to a communal container), the schedule, placement requirements, and walking distances need to be described. The method of disposal following collection should also be described, as part of the cost should be allocated to enabling environmentally safe disposal. Respondents' questions and/or doubts should be requested and recorded for future reference.

Service Price. Before conducting the survey, the costs for each option must be carefully estimated. The price of each option of service needs to be described to respondents during the survey. Determine the cost of service and estimate the price, assuming some reasonable level of collection of payments. For example, assume full service is provided to all recipients within an area (because exclusion of households or establishments that do not pay is difficult) and assume that 80% of service recipients pay for service.

Service Preferences. The options of service provider need to be described. Either the local government or a private company can provide the service. Determine whether service recipients have a preference and solicit their concerns and doubts about the options.

Fee Collection Preferences. The options for fee collection need to be described. The fee can be collected by government, the private service company, commissioned fee collectors, or an existing authority (such as water or electric authority). The fee can be collected from door-to-door, by mail, at Banks or at government offices. Determine whether service recipients have a preference and solicit their concerns and doubts about the options.

Additional Information. Record information that might be useful to further determine demand and willingness to pay. If the household (or establishment) has unusual circumstances, burdens or constraints (a sick or disabled family member, recent loss of employment or markets) which might influence their responses record them separately. If the household (or establishment) has unique income circumstances (display of affluence beyond income, informal sector income, income from foreign-based relatives) which might not be readily apparent from their responses, record them separately.

Sample Size. For each type of community or area to be surveyed, a sample of between 100 to 200 respondents is desired. For example, if an area has 1000 houses and 100 respondents are desired, every 10th house along the routes in the area would be interviewed. The starting house should be picked randomly.

Analysis of Results. Sort the survey data by variables that might effect responses. For example, sort the service preference and willingness to pay responses by variables such as literacy, ethnic background, urban/rural background, income, and/or prior experience with service to see which factors affect responses.

Pre-Test. It is extremely important that the survey instrument be tested and refined. Particular attention during the testing needs to be paid to sections C and F, as these general questions might fatigue the respondent and not provide meaningful data which can be used to correlate results. Also, attention needs to be paid to whether the description of service options is easily understood. Drawings to show the options and the respondents role in the system are recommended. An example drawing is provided on the following page.

DEMAND ASSESSMENT AND WILLINGNESS TO PAY SURVEY

SOLID WASTE COLLECTION AND DISPOSAL SERVICES

Date of Interview: _____

Name of Interviewer: _____

A. Identification:

I would like to ask you some questions that would assist the local government in determining how to improve solid waste collection service to your neighborhood. These questions usually take about ____ minutes. We are interviewing every _____ household or establishment in your neighborhood, so your input is considered very valuable to this survey. Let me first ask you a few questions to identify this house (or establishment) and you.

Area:

Household (or establishment) Identification: _____

Name of Respondent: _____

Position of Respondent:

Head of Household (or establishment)

Spouse of Head of Household (or establishment)

Other, Describe _____

B. Major Concerns:

(For this question, present the list in different orders on a random basis to each respondent)

I would like to show you a list of possible problems that might be faced by your household (or establishment):

1. Access to drinking water
2. Quality of drinking water
3. Disposal of human wastewater
4. Disposal of human excreta
5. Drainage of stormwater
6. Flooding
7. Accessibility by motor vehicle
8. Availability of public transport
9. Reliable electricity supply
10. Solid waste collection service -- Go to Question 3
11. Litter and illegal solid waste piles -- Go to Question 4
12. Solid waste transfer points -- Go to Question 5
13. Solid waste disposal sites -- Go to Question 6

1. Of these possible problems, which do you consider the most serious problem for your household (or establishment)?

Most serious problem

Don't know

2. And which do you consider the second most serious problem?

Second most serious problem

Don't know

3. If you did not list Number 10, how serious do you consider this problem?

- Very serious
- Somewhat serious
- Not serious
- Don't know

4. If you did not list Number 11, how serious do you consider this problem?

- Very serious
- Somewhat serious
- Not serious
- Don't know

5. If you did not list Number 12, how serious do you consider this problem?

- Very serious
- Somewhat serious
- Not serious
- Don't know

6. If you did not list Number 13, how serious do you consider this problem?

- Very serious
- Somewhat serious
- Not serious
- Don't know

C. Existing Situation Regarding Solid Waste:

I would like to ask you some questions regarding the collection or removal of solid waste from your household (or establishment).

1. Does your household (or establishment) have a permanent metal or plastic container for storing solid waste?

- Yes, have metal or plastic container
- Have basket or carton container
- No container
- Don't know

2. Does your household (or establishment) receive collection service of any type?

- Yes -- Go to Question 3
- No
- Don't know

3. How many times per week is your container usually taken outside to be emptied?

- Daily
- Three times a week
- Twice a week
- Once a week
- Less frequently
- Don't know

4. Who usually takes the container with its waste contents out to be emptied?

- Head of household (or establishment)
- Spouse of head of household (or establishment)
- Any male adult
- Any female adult
- Any child between the age of 12 and 18
- Any child between the age of 6 and 12
- Don't know

5. Where is your container taken to be emptied?

- Place container curbside for collection
- Empty into larger container at the same building
- Empty into communal container in the neighborhood
- Empty onto an open pile of waste in the neighborhood
- Take it to final disposal site directly
- Don't know

6. Approximately how far or how many minutes walking time one-way is it to empty your container?

- _____ meters one-way
- _____ minutes walking one-way
- Don't know

7. If your container is taken to a larger container at the same building or a communal container in the neighborhood, how often is that container emptied?

- Daily
- Three times a week
- Twice a week
- Once a week
- Less than once a week
- Less than once in 2 weeks
- Less than once in 3 weeks
- Less than once a month
- Don't know

8. If your container is taken to an open pile of waste in the neighborhood, how often is that pile removed?

- Daily
- Three times a week
- Twice a week
- Once a week
- Less than once a week
- Less than once in 2 weeks
- Less than once in 3 weeks
- Less than once a month
- Don't know

9. For how many years has this type of waste collection service been provided to your household (or establishment)?

- Less than one year
- One to two years
- Two to five years
- More than five years
- Don't know

10. Who collects the waste from the curbside, communal container, or pile?

- Local government
- Local public authority
- Neighborhood group
- Private company
- Don't know

11. Has the same organization been collecting the waste for the past five years, or has there been a change in who has been collecting your waste?

- Yes
 - No
 - Don't know
 - If no, please explain _____
-

12. How do you rate the service that you are receiving for collection of solid waste from your household (or establishment)?

- Very satisfied
- Reasonably satisfied
- Not satisfied at all -- Go to Question 13
- Don't know

13. If you are not satisfied with service, would you state your primary reason?

- Reliability of service
 - Frequency of service
 - Location of service or communal container
 - Lack of clean appearance, odors, flies or fires at communal container
 - Lack of courtesy of service workers
 - Lack of clean appearance of neighborhood
 - Other, please explain _____
-

14. Do you know where the collected waste is taken for ultimate disposal when it leaves your neighborhood?

- Yes -- Go to Question 15
- Don't know

15. Are you concerned about whether the ultimate disposal is environmentally safe and acceptable?

- Yes

No
Don't know

D. Description of Proposed Service Options:

Upgrading the solid waste system in your neighborhood is being studied. To understand your preferences, I would like to discuss the options with you. For each of these options, the cost is different. Households and establishments in your neighborhood will be expected to pay a fee for this improved service. The type of service provided will depend on the fee which you and your neighbors can afford and are willing to pay, as well as your preferences.

1. Would you like to ask any questions about the plans to upgrade the solid waste system?

Yes -- If yes, interviewer record questions and answer them.

No

E. Demand Assessment:

Service options for solid waste collection involve different levels of involvement and cost from service recipients such as you. The vehicles used for collection could be either trucks or tractors, depending on which would be optimal for the road conditions in your neighborhood. The service options are described as follows:

1. Low Cost System. A large communal container (probably of 5 to 8 cubic meters size) would be placed in your neighborhood at a central location and each household and establishment would be expected to carry its container of refuse to empty it into the container. The container would have an attendant to sweep the area and keep it tidy. A vehicle would take the container to be emptied when it is nearly full, to avoid any spillage.
2. Low Cost System. A vehicle would come to the neighborhood on a scheduled basis and park for a few minutes at each block to collect solid waste. When the vehicle parks, it would ring a bell or play a musical jingle to summons residents to bring their containers out to be emptied. All waste in the neighborhood would be kept inside until the vehicle comes.
3. Medium Cost System. As with the first service option, a large communal container would be placed in your neighborhood. However, instead of you and your neighbors being required to carry their waste to the communal container, door-to-door collection would be arranged for an added fee. The door-to-door collection would be done using a push cart or donkey, depending on which would work better in your neighborhood.
4. Higher Cost System. A vehicle would come to the neighborhood on a scheduled basis and provide door-to-door service. At each door, containers of waste, which have been left at the curbside, would be emptied into the body of the vehicle. The emptied containers would be placed neatly at the curb for residents to bring back into their household (or establishment). Residents would be required to adhere to the schedule and bring their waste to the curb in proper containers before the vehicle arrives.

1. Which of the service options just described do you prefer?

Service Option 1 - Go to Question 2

Service Option 2 - Go to Question 7

Service Option 3 - Go to Question 10

Service Option 4 - Go to Question 13

Don't know

2. If you prefer Service Option 1, how far would you be willing to walk to the large communal container?

50 meters

100 meters

150 meters

200 meters

More

Don't know

3. If you prefer Service Option 1, would you be willing to have the communal container within 20 meters of your household (or establishment)?

Yes

No -- Go to Question 4

Don't know -- Go to Question 4

4. If your answer is no or you are not sure, would you please describe your concerns about the container location?

Reason _____

5. The cost of Service Option 1 is _____ per person per month. For your household (or establishment), which has _____ people, this amounts to _____ per month.

Would you be willing to pay a fee to cover this cost?

Yes -- Go to Question 21

No -- Go to Question 6

Don't know -- Go to Question 6

6. What is the maximum fee per month that your household (or establishment) would be prepared to pay for Service Option 1?

_____ per month -- Go to Question 17

Won't pay any price -- Go to Question 16

Don't know -- Go to Question 16

7. If you prefer Service Option 2, are there certain times of day when you would find it most convenient to meet the vehicle when it comes to your block to collect waste?

Early morning before 9AM

Anytime in the morning

Anytime in the afternoon

Early evening after 5 PM

Anytime during daylight

8. The cost of Service Option 2 is _____ per person per month for service on your block _____ times per week. For your household (or establishment), which has _____ people, this amounts to _____ per month.

Would you be willing to pay a fee to cover this cost?

Yes -- Go to Question 21

No -- Go to Question 9

Don't know -- Go to Question 9

9. What is the maximum fee per month that your household (or establishment) would be prepared to pay for Service Option 2?

_____ per month -- Go to Question 17

Won't pay any price -- Go to Question 16

Don't know -- Go to Question 16

10. If you prefer Service Option 3, would you be willing to have the communal container within 20 meters of your household (or establishment)?

Yes

No

Don't know

11. The cost of Service Option 3 is _____ per person per month for service _____ times per week? For your household (or establishment), which has _____ people, this amounts to _____ per month.

Would you be willing to pay a fee to cover this cost?

Yes -- Go to Question 21

No -- Go to Question 12

Don't know -- Go to Question 12

12. What is the maximum fee per month that your household (or establishment) would be prepared to pay for Service Option 3?

_____ per month -- Go to Question 17

Won't pay any price -- Go to Question 16

Don't know -- Go to Question 16

13. If you prefer Service Option 4, what type of containers do you think that you and your neighbors should use to place their waste at the curbside?

Metal dustbins

Plastic dustbins

Plastic or nylon bags

14. The cost of Service Option 4 is _____ per person per month for service at the curbside in front of your household (or establishment) _____ times per week. For your household (or establishment), which has _____ people, this amounts to _____ per month.

Would you be willing to pay a fee to cover this cost?

Yes -- Go to Question 21

No -- Go to Question 15

Don't know -- Go to Question 15

15. What is the maximum fee per month that your household (or establishment) would be prepared to pay for Service Option 4?

-
- _____ per month -- Go to Question 17
Won't pay any price -- Go to Question 16
Don't know -- Go to Question 16
16. What is the reason that you are unsure or don't want to pay for service?
Reason _____
_____ Go to Question
- 17
17. If you stated that you are unsure or don't want to pay for service from government, or you are not willing to pay the government enough to cover the full cost of service, would you be willing to pay for the full cost of service if a private company was providing the service and collecting the fee directly from you?
Yes
No -- Go to Question 18
Don't know
18. If you are not willing to pay for the full cost of service from government or a private company, what is your reason?
Can't afford to pay for the full cost -- Go to 20
Don't trust that the service will be reliable -- Go to 19
Don't consider the service important enough to pay for -- Go to 19
Believe that general taxes should cover the cost of this service -- Go to 19
Other _____
_____ -- Go to 19
19. If you are not willing to pay for service and government can not afford to subsidize it for you, would you be willing to have one of the self reliant systems described below?
Separation of recyclable materials and on-site composting of kitchen wastes
Separation of recyclable materials and on-site burial of kitchen wastes
No
Don't know
20. If you are not able to afford to pay for the full cost of the service described, would you a lower level of service or more effort on your part?
More walking distance to empty or place container
Less frequent emptying of container or collection of waste
Participation in community volunteer efforts to help with collection
Participation in community volunteer efforts to regularly clean up uncollected waste
Don't know
21. If you have said that you are willing to pay for service, whom would you prefer to provide your service?
Government service
Private company service
Don't care
Don't know

22. If you have said that you are willing to pay for service, whom would you prefer to pay the fee to?

- Government fee collector
- Private company fee collector
- Neighborhood leader
- Don't care
- Don't know

F. Other Information:

We will soon be ending this interview. Before we do end it, I would like to ask some questions about you and your family (or members of your establishment).

1. What is your age?
2. What is your level of education (number of years of school)?
3. What is the level of education of the most educated member of your household (or establishment)?
4. How many people live in your household (or work in your establishment) on a regular basis?
5. If a household, how many of these are children under 15 years of age?
6. If a household, how many people in your household contribute to the household income?
7. If a household, what does the principle income earner do?
 - Self-employed as laborer
 - Self-employed as trader
 - Self-employed as consultant or professional
 - Employee of a private company
 - Employee of government
 - Retired
 - Other
 - Don't know
8. If an establishment, what is the principle commercial activity?
 - Trading in goods
 - Trading in produce, meat, poultry or fish
 - Professional services
 - Inn or Hotel
 - Restaurant
 - Bank
 - Other _____

Thank you for your contribution to this survey. We hope to use these results to determine how best to provide affordable and desirable service to the people of your community. If there is need to seek you advice further, may we contact you again?

Yes

No

Don't know

CHECKLIST OF ISSUES TO BE COVERED IN DIFFERENT TYPES OF MSWM CONTRACTS

By Prasad Gopalan

This Section provides guidelines to developing contractual arrangements for different types of contracts for collection, recycling, transfer and disposal of municipal solid wastes.

The intended uses of this Section are:

1. To guide the preparation of documents that are precursors to actual contractual documents.
2. To guide the preparation of contractual documents.
3. As a reference during final negotiations to select a contractor.
4. To guide the development of regulatory guidelines and documentation.

This Section considers contracting out the following municipal solid waste services:

- ⇒ Collection
- ⇒ Transfer
- ⇒ Disposal

This Section provides guidelines to preparing the following types of basic contractual arrangements for each of the municipal solid waste services identified above:

Collection -- Service contract, Franchise arrangements, Concession.

Transfer Station -- Service/Management contract, Concession, Build-Operate-Transfer (BOT) contract

Disposal -- Service/Management contract, Concession, Build-Operate-Transfer (BOT) contract

The layout of this Section comprises three parts. The first part addresses the different issues that need to be addressed under each type of contractual arrangement, the second part addresses the risks that need to be shared and attenuated, and the final part provides typical contractual clauses that need to be included in each type of contractual arrangement.

This Section assumes that the municipality has analyzed the need for private sector arrangements for providing MSW services and has broad-based support for the program from all the relevant stakeholders. This Section also assumes that the basic legal and regulatory statutes of the country allow the entry of private sector operators in this sector. Finally, the Section assumes that the economic and financial transactions pertaining to cost recovery for services delivered are also feasible, implementable and have broad acceptance by stakeholders.

Checklist of Minimum Issues to be Covered in the Contract and Regulatory Documents

For each of the contractual arrangements for the MSW services identified, this Section addresses the following key issues:

1. Parties to the Agreements.
2. Objective and Scope of technical services under the contractual arrangement.
3. Objective and Scope of financial requirements under the contractual agreement.
4. Duration of Agreement and scope for renegotiations, early termination, annulment, or abrogation of contract.
5. Rights and obligations of the Contractor.
6. Rights and obligations of the Grantor.
7. National, State and Local regulatory requirements and consents/permits.
8. Identification and management of key risks.
9. Performance measurement, monitoring, and payment.
10. Ownership and use of assets.
11. Dispute resolution and arbitration.

COLLECTION CONTRACT

1. Parties to the Agreement

The parties to an agreement comprise the grantor of the contract (the public sector agency/agencies) and the contractor (the private sector counterpart). This section describes the issues related to the parties to the contractual agreement.

a. Grantor

The grantor of the contract could be the national or the state government, a government ministry or a government-controlled agency, a municipality or a group of municipalities, a department of a municipality, or an independent regulatory body. With delivery of solid waste services being a local responsibility in most cases, the case of national governments entering into contracts is highly unlikely, except in the case of small countries or countries with a low degree of decentralization of powers. If national or local regulations confer overlapping or joint jurisdiction of MSW services to several agencies, then more than a single body may need to be party to the contractual agreement. The regulatory body (bodies) should be party to the contract if the local legal environment require it in order to be able to enforce regulations on the contractor. The key issue is to identify that agency (agencies) which is vested with the power to grant contracts to the private sector to carry out the MSW service(s) in question.

If the contract require transfer, leasing, or use of assets of multiple agencies/governmental units by the contractor, then it may be relevant to include all the appropriate parties as co-grantors of the contract.

b. Authority and Legal Standing of Grantor

The grantor of the contract should have the legal powers to execute contracts with the private sector. Representations of the grantor during contract execution should also be clearly identified in the agreement. For example, an apex agency can undertake representation of several parties, or an independent auditor may represent the grantor to audit the financial statements of the contractor to ascertain their reporting accuracy. In addition, the chain of authority and legal responsibilities should be clearly defined if and when the original granting agency that is party to the contract is dissolved or if its powers to execute MSW contracts are abrogated or if it becomes bankrupt. Also, the role of a guarantor for the grantor, if required, should be investigated.

In addition, such a contract must be legally binding in order to allow the allocation of powers and responsibilities to the parties to the contract, to form the basis for future dispute resolutions, arbitration, and negotiations, and to be able to offer security to obtain financing for the venture.

The powers and duties of independent regulators that may affect the contractual arrangement must be recognized and understood by all parties. Since the legal conditions may vary widely from country to country, it is highly recommended that local legal counsel be consulted well in advance to structuring a contract.

c. Contractor

The type of company that is party to the contract should be clearly identified (e.g., a joint-venture, a local company, a partnership, limited partnership, micro- or a small-scale enterprise, community-based organizations, trusts). Registration requirements for contractor should also be clearly delineated so that the contractor and the grantor are clear about the relevant legal statutes. Also, any restrictions on foreign ownership and representation on the management or the board should also be reflected in the sponsor company formation. The type of company involved in the contract dictates the legal standing of the entity and may, therefore, be subject to specific legal requirements. The legal standing of the private contractor also affects its tax position, its ability to declare bankruptcy, its operation (management) and control (board), as well as its liabilities.

If a special purpose company is formed by several entities, but the key sponsor with the relevant experience in the sector is not party to the contract, then the executor of the agreement should be satisfactory to the grantor. In these instances, additional surety such as letters of credit, guarantees, subordinated loans from the key actor, comfort letters, and undertakings, may be solicited to support the contractor. In addition, the ownership arrangements between the different entities that form the contractor should be clearly identified and conflict resolution mechanisms between the shareholders delineated to the satisfaction of the grantor. Moreover, the relationship between the contractor and all other parties supporting the contractor must be clear; supporting parties include the lenders, shareholders, key personnel, construction companies, design consultants, operating companies, insurers, guarantors, and export credit agencies.

d. Regulatory Provisions

With assignment of monopoly powers to the contractor, either as rights to operate or rights to a concession, over a long period of time, the grantor and other public agencies take on the key role of regulating the contractor in the public's interest. These regulatory issues form the backdrop to a contractual arrangement and should be addressed in the contract. They include:

- Scope for competition in the solid waste sector at specific stages of contractual engagements (i.e., RFQ, RFP, and Bidding).
- Identity of agencies that will have regulatory powers on specific issues pertaining to the delivery of services under the solid waste contract, e.g., agency responsible for tariff setting/agreements and hearing re-rating requests, agency responsible for monitoring the contract, the pollution control agency, the ministry of environment, ministry of labor, ministry of finance, department of transportation, etc.
- Funding of regulatory activities -- whether the contractor or the grantor should pay for all permits, regulatory inspections, hearings, and other services delivered by the regulator(s) over the duration of the contract.
- Limits to regulatory discretion should be addressed. Where overlapping responsibilities occur, the contract should clearly delineate the primacy of regulatory authority so as to minimize confusion and conflicts. When conflicts in regulatory provisions occur, provisions for interpretation and arbitration should be included in the contract to avoid disputes.
- The integration of various regulatory responsibilities should be addressed as a precursor to contracting out solid waste services. (e.g., integration of regulations pertaining to economics, public health, environment, occupational safety, etc.).

- Regulating the contractor will need to balance the need for cost-effective service, scope for efficiency improvements in operations, the need for investments in the sector, and the scope for the contractor to make a reasonable rate of return so as to make the proposition attractive to private sector entry.

2. OBJECT AND SCOPE OF AGREEMENT

The collection contract could be structured as a service contract wherein the contractor provides the collection services in the concerned area(s) for a periodic fee to be paid by the grantor of the contract. Another option for structuring the agreement could be to frame the contract as a franchise wherein the contractor gets monopoly rights over a period of time to deliver collection services in a specific zone over a duration and charges the customers directly for the service. In return for granting the monopoly rights to the franchise, the grantor receives a royalty or franchise fee. Aside from the modes of payment and the responsibilities for obtaining consents and approvals, the two types of contracts are almost identical in the manner in which services are delivered. The following sections address the details of a collection service contract in general and point out specific issues pertaining to a franchise as and when they become relevant.

a. Scope of Collection Service Contract

1. Description of service zone, service requirements in collection zone, and the delineation of service requirements between contractor and other players (households, NGOs, etc.). Limits on service requirements.
2. Scope for exclusivity in the zonal area of operation for the duration of the contract. Scope for operation in more than one zone of service.
3. Scope for amendments to the contract to reflect dynamic service requirements in the zone of service including scope for increasing the level of collection.

b. Obligations of Collection Service Contractor

The general and supplementary conditions of the contract, together with the technical specifications, will specify the obligations of the contractor under the contractual arrangement. For a collection contract, the specifications should address the following issues:

- Quality and type of service:
 - ⇒ Coverage (including a street map of sufficient detail of the zone of service including the zoning map, distribution of the types of establishments in the zone, road details, traffic patterns, and population densities).
 - ⇒ Frequency and type (bell, direct collection from bins, etc.) of collection service as well as the route of collection vehicles.
 - ⇒ Cleanliness of collection zone.
 - ⇒ Types of wastes to be collected, including provisions for handling (if needed) construction and demolition debris, hazardous, infectious, and other special wastes.
 - ⇒ Carry out or interface with other downstream solid waste operations, including transfer, transport and disposal.
- Provision of materials, superintendence, labor, equipment and other utilities and facilities for carrying out contractor's services entailed under the contract. Use of publicly- or privately owned assets by contractor. Valuation and transfer of assets at the beginning and at the end of contract period.

- Recycling activities.
- Types and minimum number of collection equipment to be used and condition of equipment.
- Compliance with relevant local, state and national laws, ordinances, codes and regulations.
- Interfacing with existing pre-collection and recycling activities.
- Responsibility for public education campaigns on solid waste collection issues and customer compliance.
- Personnel requirements, including the use of sub-contractors.
- Maintenance of appropriate health and safety standards during operations.
- Emergency operations.
- Issues pertaining to wages, performance bonding requirements, payment bonding requirements (in case of use of subcontractors or in case of franchise payments to municipality), insurances, taxes and tolls, permits, rights-of way acquisition, and indemnification requirements.
- Reporting requirements and inspection.
- Payment to contractor for routine and emergency services, payment to grantor of franchise fee (if applicable), payment to grantor or a third party for disposal. Modes of payment for service contract (grantor payment) or franchise (direct user fees).
- Financing requirements and controls.

In relation to the aforementioned activities, the grantor of the contract may retain rights for some of the following activities:

- Inspection of quality of work performed by the contractor.
- Inspection of conditions of personnel, plant (e.g., workshops and garages), equipment, and machinery.
- Approval/Denial of the use of sub-contractors.
- Obtaining and paying for permits and rights-of-way for contractor's work.
- Public education and promotion of public participation. Ensuring timely payment for services through legal powers vested with the grantor for extending services. Ensuring participation in service program by preventing illegal/unauthorized dumping.
- Establish service levels based on willingness to pay criteria.
- Approval of limits on and modifications to insurance, bonds, letters of credit, as well as minimum wage requirements.
- Carry out or specify contractor's interface with downstream waste management activities including transfer, transport, and disposal.
- Authorize the use of grantor's equipment, plant, and personnel by contractor.
- Financing capital equipment.
- Subsidy payments to contractor for services rendered.
- Payment for services delivered (for service contracts).

As with any public-private partnership, a balance should be struck between the need for the grantor to monitor and enforce the contract in the public interest and the incentive for the contractor to operate the collection service efficiently without excessive costs associated with undue interference from grantor.

3. SPECIFIC ISSUES IN A COLLECTION CONTRACT

This section expands upon some of the important aspects of the obligations of the contractor and the grantor in a collection contract that were identified in the earlier section. The types of collection contracts addressed herein are service contracts or franchises for exclusive service zones.

a. Payment Issues

In a collection contract, the responsibility for assessing and collecting the fee for extending service to the customers could rest with either the grantor of the contract (typically the municipality) or the contractor.

In the first case (service contract mode), the grantor/municipality levies and collects the appropriate fee for service delivery based on the willingness and the ability of the customers to pay for the services. The grantor then pays the contractor on a monthly (or on any other periodic) basis a fee based on the contractor's estimate of waste quantities delivered to disposal or to transfer stations. The grantor then collects the fee from the generators by billing them either directly at monthly (or any other periodic) basis or through the statutory powers vested with the grantor.

In the second case (franchise mode), the contractor is given the authority to collect fees directly from the generators based on negotiated fee agreements between the generators and the contractor at the beginning of the contract. In this case, the grantor may also offer targeted subsidies based on certain criteria (for example, when the contractor's audited costs for delivering service obligations exceed revenues or when certain customers are unable to pay for the services). In the case of a franchise, the contractor will also be required to pay a fraction of its monthly (or any other periodic) receipts as a franchise fee to the grantor to defray the costs for monitoring the franchisee.

In both cases, the grantor can use its legal powers through liens or penalties to ensure payment compliance by the generator who is able, but does not pay for the services. The timing of the billing process and procedures for handling delinquencies should also be clearly outlined in the contract as well as in the rules and regulations of the grantor. Ideally, in both cases, the willingness and ability of the generators to pay for the collection service should be analyzed prior to establishing the fee structure in order to make the system sustainable.

In addition to the above, the following pricing issues deserve attention:

- The procedure for assessing the differentiated base user fee level (for franchises), or collection fee per unit weight of waste (for service contracts), and the structure of such fees

for collection services should be clearly defined. The fee for hauling wastes from specified collection points on the haul route should be clearly itemized in the agreement. In addition, the assessment of fees for hauling waste directly to disposal and to transfer stations should be separately addressed.

- The process and timing for adjusting prices depending upon local economic (prices/inflation) conditions, changing cost structures due to changing micro and macroeconomic conditions (e.g., cost of financing, price of fuel, labor, etc.), and improvements in the operating efficiencies, should form a part of the tariff structure agreement.
- It may be beneficial to assess differential fees for generators depending upon the quantity of waste generated, demand and ability to pay for the service in order to meet the overall operating cost recovery targets. However, in this case, the procedure should carefully consider any legal restrictions on service price discrimination.
- The procedure for setting tariffs for new generators.
- Agreements on pricing for emergency or special operations.
- Long-term agreements on tipping fees (in case of direct disposal by collection contractor) and corresponding payment requirements.
- Compensation for costs (pass-through of costs to consumers) incurred by the contractor due to unanticipated changes in the operating conditions, such as changes in by-laws or ordinances, transport distances, demand changes, etc., should be addressed in the contract. Conditions that will trigger such requests should be identified in the contract as far as practicable.
- Incorporation of revenues from recycling activities in the tariff structure.
- Conditions when the contractor is unable to recover its operating costs through the direct levy of user charges should be addressed in the contract.
- Depreciation of assets and taxes should be clearly reflected in the tariff structure.
- Provisions for handling delays in payments, including penalty assessments.
- Payment conditions when contract extensions are offered or when contracts are abrogated or terminated before expiry.
- The procedure for revising the tariffs (or payment requests, should the contractor be soliciting payments from the grantor) should be clearly outlined in the contract.
- Provisions for auditing the contractor's costs and capital base should be included for verification purposes. Mutually agreeable payment request procedures should be addressed in the contract along with payment request certification requirements.
- Handling changes in the foreign exchange rates for specific cost components should be clearly outlined in the tariff agreement.
- Costs pertaining to licenses, patents, permits, etc. should form a part of the tariff structure should they be part of the contractor's responsibility.

b. Customer Education and Customer Relations

The contract should contain provisions for either the contractor or the grantor to educate the generators (as well as pre-collectors, if the situation so dictates) to place their waste in an appropriate fashion (bags, bundles, or in communal bins) in an acceptable place at a scheduled time. In addition, the contract should also address the need for circulation of information bulletins to generators about allowable wastes for disposal, definition of hazardous wastes, recycling procedures, source separation of wastes, and waste reduction techniques. The educational package should also contain information on legal action and assessment of penalties against generator/customer non-compliance with the prescribed codes. The contract should also

contain provisions for reporting and preventing clandestine and unauthorized dumping of wastes by generators. The contract should address education of generators vis a vis the billing and collection practices, contractual standards of service, and channels of complaints against non-performance of contractor. In addition to service-related education, awareness raising responsibilities pertaining to public health and cleanliness should also be addressed in the contract.

The contract should address the need for either the grantor or the contractor to solicit and receive public complaints, suggestions, and general input on the collection operations. The contract should also specify proper redressal procedures for handling complaints and customer suggestions.

c. Renegotiations of Contract

Contract renegotiations can take place due to the onset of several conditions. Typically, renegotiations takes place when changes arise in conditions material to the contract that either affect the service quality, coverage, or tariff levels which have not been explicitly handled in the contract. The important issues that are relevant to contract renegotiations are outlined below:

- During major extensions of the scope of service under the contract, the grantor may renegotiate the original contract with the contractor or open up the extension of service to fresh tenders. Provision for the renegotiations exercise or the need for interface with a new contractor should be addressed in the original contract.
- The procedure for renegotiations, frequencies of renegotiations, and the limits on such negotiations over the duration of the contract should be clearly specified as far as practicable.
- Towards the end of a contract period, the scope for a negotiated extension may be entertained by the grantor should it be satisfied with the service. However, if the contract is retendered, the playing field for potential bidders should be kept as even as possible by having as much disclosure from previous operations as possible to all bidders.

d. Duration of Contract

- The contracts should be of sufficient duration to make them “bankable” -- i.e., allow repayment of loans from the revenues of the contract. This increases the incentives for private participation
- There should be provisions within the contracts for the grantor to vary the duration of the contract and the mechanism to do so clearly identified in the contract. In particular, scope for extending the contract should be included at the grantor’s discretion and such scope for the grantor to amend conditions of the initial contract should be delineated. In addition, extension of the duration of the contract due to some unforeseen circumstances should also delineate, as far as practicable, the events that would trigger such extensions. Such events could include force majeure events as well as other operational delays beyond the control of the contractor or the grantor.
- In the case of delays in permitting, procurement, bid award, or commencement of service after contract award, the contract should contain adequate provision to address these delays should they impinge on the overall contract duration. Should either parties to the contract be responsible for delays, liquidated damage assessment and payment issues must be addressed.
- Whenever applicable, a detailed contract schedule, with clearly identified milestones, should form a part of the overall agreement. Also, should the schedule depend upon the occurrence

of certain events (such as acquisition of special consents, permits, ancillary utility, etc.), then these events should be clearly identified.

- Scope for early termination of the contract, along with the conditions that will trigger such action, should be clearly identified. The steps leading up to an early termination should also be clearly delineated.

e. Key Risks and Management of Key Risks

Very few short and simple contracts can fully assess and allocate risks completely. Since service and franchise contracts are complex and long-term, it is virtually impossible to include and address allocation of all risks under the contractual agreement. However, the risks to both parties can be reduced through careful drafting of the contracts as well as through appropriate regulatory provisions. The remaining risks would need to be allocated as far as possible to the contractual party that is best able to manage these risks.

In a collection contract, the risks that need to be analyzed and allocated appropriately include operating risks, revenue risks, regulatory risks, and political risks. The issues pertaining to each of these risks are elucidated below:

e.1 Operating Risks -- Issues for Consideration

- Ensuring adequate liability coverage for prime contractor (to cover claims against the contractor during the operational phase) as well as approved sub-contractors or approved assignees for the entire duration of the contract.
- Addressing sanctions and penalties for non-compliance with health and safety, traffic, environmental, and other standards and regulations.
- Handling improvements in productivity (or lack thereof), assessment of productivity improvements, and inclusion of productivity-based price setting.
- Handling bankruptcy and non-performance of the contractor, as well as the non-performance of the grantor. Handling non-performance due events beyond the control of contractor or grantor.
- Benchmarking for comparative competition amongst service providers on common performance measures -- in order to better monitor operations.
- Guarantees by grantor (or other counterparts) of availability and costs of services, plant and equipment to be furnished by grantor under the terms of the contract (e.g., trucks, power, fuel, etc.).
- Guarantees by grantor for interfacing downstream operations with collection contractor. Agreements and guarantees on tipping fees for transport waste to transfer stations or directly to disposal site. Agreements and guarantees for handling waste transported to transfer station(s).
- Handling complaints.
- Continuation of service and taking over contractor operations in case of default of contractor.

e.2 Revenue and Financial Risks -- Issues for Consideration

- Distinguishing between capital and operating and maintenance expenditure. Proper recording of such costs.
- Integrity of cash flows from user fees or taxes.

- Reasonableness of tariffs and quality of service. What is reasonable? Who decides what is reasonable?
- Government support for contractor revenues
 - ⇒ Revenue guarantees.
 - ⇒ Handling subsidy payments.
 - ⇒ Short-term equity or debt infusion for handling short-term operating cash flow problems.
 - ⇒ Privileged tax status of contractor and accelerated depreciation allowances.
 - ⇒ Importation of equipment at favorable duty levels; accelerated depreciation allowances.
 - ⇒ Assurances on the availability of foreign exchange and long-term interest rate levels (or pass-through tariff structure to levy charges on customers).
 - ⇒ Minimum rates of return or minimum tariff revenues.
 - ⇒ Waste zone monopoly assurances for service.
 - ⇒ Coverage for delinquent user payments (in case of levy of direct user charges by contractor).
 - ⇒ Grants, loans, letters/lines of credit.
- Legal and regulatory changes required for government to extend any of aforementioned support to contractor.
- Guarantees for creditors that government will comply with assurances.
- Should supplementary revenues (over and above the tariff revenues) be required for debt service, what guarantees are available from government to make additional revenue available to contractor.
- Inter-creditor agreements on the priority of access of tariff revenues to creditors. Revenue distribution arrangements to pay for debt service, foreign exchange, operations and maintenance of equipment, tariff stabilization, and capital/operating reserve fund. Establishment of debt service reserve fund, if required.
- Minimum debt service coverage ratios and ability to maintain these requirements through scope for modifying the tariff agreements.
- Level of sanctions and liquidated damages in the event of inability to carry out obligations by contractor, e.g., violation of environmental laws, health and safety standards, disruptions in service, lack of quality of service, lack of cooperation with pre-collection and recycling agencies, inability to meet reporting requirements.
- Penalty clauses for contractor including terms of payment, interest payments for lateness, conditions for regulator to waive or extend payment of penalty (e.g., bankruptcy).
- Design of subsidy payments -- including monitoring of subsidy payments by grantor, establishment of separate subsidy account managed by an independent agent, disbursement of subsidy upon proof of service.
- Grantor or contractor financing of collection bins through loans to customers. Payment for bins through adjustment to tariffs.
- Payment of franchise fee to grantor/government.

e.3 Regulatory Risks -- Issues for Consideration

- The role and powers of the regulatory agency.
- Limits of powers and discretion of the regulatory agency.
- Procedures of appeals/arbitration against regulatory oversight.
- Compensation for accommodating changes in regulations.

- Coordination between economic, environmental, public health, and other relevant regulators, in setting rational standards.

e.4 Political Risks -- Issues for Consideration

- Stability of the political regime of the country/state/local authority.
- Availability of political risk guarantees from export credit agencies.
- Availability of private guarantees for political risk coverage.

f. Performance Measurement and Monitoring

Collection contracts typically specify the scope of services, the outputs and the quality of such outputs required from the contractor in delivering the service, the broad regulations within which the contractor needs to function, and the rule for assessing the price for the service delivered. Once these conditions are specified, the contractor is allowed to use its technical and financial ingenuity to operate most effectively and service customers.

Specifying and monitoring performance targets specified in the contract relies greatly on the information available from contractors and the capacity of the regulator to monitor the contract. These activities allow the grantor of the contract to enforce accountability and promote cost-effective service delivery. The important informational requirements and ancillary issues that affect performance monitoring and measurement, and thus the cost-effectiveness of the service include the following:

- Financial data, including independent verification and certification requirements. Verification and authorization of use and payment requirements/conditions of independent financial auditor. Public disclosure requirements, if any.
- Asset quantity and quality data, including independent auditing requirements. Verification, and authorization of use, and payment requirements/conditions of independent technical auditor. Public disclosure requirements, if any.
- Subcontractor data, including subcontractor procurement information and use of competitive bidding for procurement of services from subcontractors. Payment information for services procured from subcontractors.
- In case of assignment of contract to third party, all relevant documentation of assignee.
- Operations data to enable comparative assessment of collection performance, e.g., productivity of workers, vehicle downtimes, complaints and quality of redressal of complaints, costs, etc.
- Itemized and audited cost information/certification for collection tariff justification (and payment, if necessary by Owner). Use of independent auditor by Owner to check cost information that enters the tariff structure.
- End of contract reporting requirements for contract closeout or extension or renegotiations.
- Technical information for reporting on collection contracts include:
 - ⇒ Weight of solid waste reaching disposal and/or transfer stations.
 - ⇒ Level of Service -- Types of waste collected, areas serviced, number and types of customers in watershed, frequency of collection, number and types of waste storage units used (communal containers, individual bins, etc.), and types and number of collection vehicles and labor employed.
 - ⇒ Quality of waste collection, including complaints and redressal of complaints.

- ⇒ Labor and equipment productivity. Maintenance records and condition of equipment.
- ⇒ Emergency and/or special services performed.
- ⇒ Efforts taken towards public information dissemination and customer education.
- Financial information for reporting on collection contracts include:
 - ⇒ Cost accounting for individual collection tasks and activities, including projection of costs (and variances from projections, when applicable).
 - ⇒ User charges collected or payment requests for reimbursement for services rendered (per tariff agreement, or with statement of variance from tariff agreement) as well as for subsidizing shortfalls in cost recovery by contractor (per contractual subsidy agreement).
 - ⇒ Financial computations for the calculation of tariffs/user fees, including projections.
 - ⇒ Should incentives form a part of the contract, then documentation for incentive payment request. Franchise fee payment computations, should it form a part of the contract.
 - ⇒ Income and cash flow statements -- both current and past trends.
 - ⇒ Financial statements and projections of contractor's, subcontractor's, or assignee's financial status at an appropriate frequency and under an acceptable format to Owner.
 - ⇒ Payment delinquencies as well as the characteristics of past delinquencies and penalties, including identification of individual delinquent accounts for action by Owner.

g. Consents

Consents regarding on capital mobilization, labor (foreign labor as well as requirements on use of existing workforce by contractor and wage rates), and type of equipment used for collection need to be addressed in the contract. Environmental consents, waste disposal consents, transportation consents, and importation consents (for import of equipment) and other legal consents that may cover collection activities need to be obtained.

The onus for applying for and obtaining these consents could rest with either the Contractor or the Owner. These roles and responsibilities of the Owner and the Contractor should be clearly identified in the contract. Should the Contractor be responsible for obtaining the consents, the level of Owner's assistance should be clearly identified.

Risk of delays in obtaining these consents should be clearly addressed in the contract along with recommendations on managing such a risk. In addition, the duration of effect of such consents should be for sufficient duration so that the risk of adverse modifications of these consents during the course of the contract is minimized. Should the contents not cover the entire contract period, the responsibility for re-obtaining the consents need to be addressed.

g. Dispute Resolution

The mechanism of dispute resolution needs to be addressed in the contract -- whether it be through arbitration, court proceedings, expert panel for resolving the disputes, etc. The duty to resolve disputes should rest with both the entities that are party to the contract. Enforceability of judgement on Owner or Contractor should be clearly addressed in the contract. Legal provisions within the jurisdiction of dispute resolution should enable enforcement of awards or penalties against either contentious parties to the dispute. The law and the applicable legal framework governing the dispute resolution procedure needs to be identified in the contract. Responsibility for undertaking work during the dispute period needs to be clearly delineated under the contract conditions.

LANDFILLS -- BOT CONTRACT/CONCESSION

A traditional BOT contract or concession involves a qualified firm or a qualified consortium of firms designing, constructing, owning and operating a disposal facility (a landfill) for a certain period of time after which the ownership of the assets are transferred to the public authority (grantor of the contract). A BOT contract is usually envisioned when there is a need for new facilities and there exists a need for external financing to meet this investment.

In a concession arrangement, the contractor is allowed to operate disposal facilities that are owned by the grantor of the contract for a specified period of time. The contractor/concessionaire is responsible for financing the operation, maintenance, and expansion of the disposal facilities over the duration of the concession. After the specified period, the responsibility for operating the assets is transferred back to the grantor of the contract.

1. Parties to the Agreement

The parties to an agreement comprise the grantor of the contract (the public sector agency/agencies) and the contractor (the private sector counterpart). This section describes the issues behind who should be parties to the contractual agreement.

a. Grantor

The grantor of the contract could be the national or the state government, a government ministry or a government-controlled agency, a municipality or a group of municipalities, a department of a municipality, or an independent regulatory body. With delivery of solid waste services being a local responsibility in most cases, the case of national governments entering into contracts is highly unlikely, except in the case of small countries or countries with a low degree of decentralization of powers. If national or local regulations confer overlapping or joint jurisdiction of MSW services to several agencies, then more than a single body may need to be party to the contractual agreement. The regulatory body (bodies) should be party to the contract if the local legal environment require it in order to be able to enforce regulations on the contractor. The key issue is to identify that agency (agencies) which has the **power** to grant contracts to the private sector to carry out the MSW service(s) in question.

If the contract require transfer, leasing, or use of assets of multiple agencies to the contractor, then it may be relevant to include all the appropriate parties as co-grantors of the contract.

b. Authority and Legal Standing of Grantor

The grantor of the contract should have the legal powers to execute contracts with the private sector. Representations of the grantor during contract execution should also be clearly identified in the agreement. For example, an independent auditor may represent the grantor to audit the financial statements of the contractor to ascertain their reporting accuracy. Moreover, the chain of authority and legal responsibilities should be clearly defined if and when the original granting agency that is party to the contract is dissolved or if its powers to execute MSW contracts are abrogated or become bankrupt. Also, the role of a guarantor for the grantor, if required, should be investigated.

In addition, such a contract must be legally binding in order to allow the allocation of duties and responsibilities to the parties to the contract, to form the basis for future dispute resolutions, arbitration, and negotiations, and to be able to offer security to obtain financing for the venture.

The powers and duties of independent regulators that may affect the contractual arrangement must be recognized and understood by all parties. Since the legal conditions may vary widely from country to country, it is highly recommended that local legal counsel be consulted well in advance to structuring a contract.

c. Contractor

The type of company that is party to the contract should be clearly identified (e.g., a joint-venture, a local company, a partnership, limited partnership, micro- or a small-scale enterprise, community-based organizations, trusts). Registration requirements for contractor should also be clearly delineated so that the contractor and the grantor are clear about the relevant legal statutes. Also, any restrictions on foreign ownership and representation on the management or the board should also be reflected in the sponsor company formation. The type of company involved in the contract dictates the legal standing of the entity and may, therefore, be subject to specific legal requirements. The legal standing of the private contractor also affects its tax position, its ability to declare bankruptcy, its operation (management) and control (board), as well as its liability.

If a special purpose company is formed by several entities, but the key sponsor with the relevant experience in the sector is not party to the contract, then the executor of the agreement should be satisfactory to the grantor. In these instances, additional surety such as letters of credit, guarantees, subordinated loans from the key actor, comfort letters, and undertakings, may be solicited to support the contractor. In addition, the ownership arrangements between the different entities that form the contractor's company should be clearly identified and conflict resolution mechanisms between the shareholders delineated to the satisfaction of the grantor. Moreover, the relationship between the contractor and all other parties supporting the contractor must be clear; the other parties include the lenders, shareholders, key personnel, construction companies, design consultants, operating companies, insurers, guarantors, and export credit agencies.

d. Regulatory Provisions

With the contract specifying monopoly service delivery for the disposal services over a long period of time, there is a need for regulating the contractor in the public's interest. In addition, the potential environmental impacts from landfill operations require the institution and enforcement of environmental standards and regulations. Such regulatory provisions form the backdrop to a BOT contract for landfills. In addition, the following key regulatory issues should also be addressed to enable successful private sector entry into disposal operations:

- Scope for, and promotion of, competition in the solid waste sector.
- Allocating responsibility for cost over-runs and adjudicating the apportionment of such over-runs during construction should be addressed in the contract.
- Identity of agencies that will have regulatory powers on specific issues pertaining to the delivery of services under the solid waste contract, e.g., agency responsible for tipping fee

setting and hearing re-rating requests, the pollution control agency, the ministry/department of environment, ministry of labor, ministry of finance, department of transportation, etc.

- Funding of regulatory activities -- whether the contractor or the grantor should pay for all permits, regulatory inspections, and other services delivered by the regulator over the duration of the contract.
- Limits to regulatory discretion should be addressed. Where overlapping responsibilities occur, the contract should clearly delineate the primacy of regulatory authority so as to minimize confusion. When potential conflicts in regulatory provisions occur, provisions for interpretation and arbitration should be included in the contract to avoid disputes.
- The integration of various regulatory responsibilities should also be addressed as a precursor to contracting out solid waste services. (e.g., integration of regulations pertaining to economics, public health, environment, occupational safety, etc.).
- Regulating the contractor will need to balance the need for efficiency improvements in operations, the need for investments in the sector, and the need to offer a reasonable rate of return to the contractor so as to make entry attractive. Should operating costs at some point in the future be higher than the compensation received from the grantor, how will the problem be resolved?

2. OBJECT AND SCOPE OF THE BOT CONTRACT

a. Scope of BOT Contract

- Scope for exclusivity of operation over the duration of the contract. Scope for BOT operator to undertake other activities, i.e., can the BOT operator also participate in the collection and transport of waste, or propose to carry out resource recovery operations such as composting of received wastes? If so, under what conditions?
- Scope of BOT operator, if so desired by grantor, to maintain service at existing facilities during construction. Should existing facilities be developed and upgraded by BOT contractor, then the requirements for initial improvements, if Owner so desires, should be identified.
- Scope for amendments to the contract to reflect dynamic service requirements in the zone of service including scope for increasing or decreasing the volumes of disposal, allowing independent importation of wastes, and accommodating variations in the quality of wastes entering the disposal area.
- Imposition of conditions or restrictions on BOT concessionaire by Owner to improve ancillary conditions and infrastructure, e.g., access roads to the landfill site, rehabilitation of scavengers at the landfill, mitigating impact on existing wells for groundwater abstraction, etc.
- Interfacing with other (on-going) waste management operations, including collection/transport, recycling, and resource recovery processes.
- Requirements for closure and aftercare for landfill by BOT contractor -- especially control and mitigation of long-term landfill leachate and gas migration (and allocation of liability for improper control).
- Design of disposal facility as an integral part of contract.
- Requirements for phasing of services -- improve existing operations, design (if required under contract), permitting, construction, operation, maintenance, closure, and aftercare.
- Availability of land for contractor, financial arrangements for transfer of land to contractor, and the adequacy of the quality of land for disposal operations.

- Allocation of responsibility for raising the finances for capital, as well as operations and maintenance expenditure.

b. Obligations of the BOT contractor

The general and supplementary conditions of the contract, together with the technical specifications, will specify the obligations of the contractor. Although the obligations of a contractor should be tailored to fit local conditions, the following issues provide a framework for structuring these obligations:

b.1 Technical Specifications, Quality and Type of Service

- Acceptable wastes that will be handled, anticipated quantity of waste to be handled and projected changes in composition and quantities.
- Importation of acceptable waste from outside intended service zone.
- Provision of mechanism to ascertain and record weights of disposal equipment/waste material entering the site.
- Pre-design services including site and access road surveys, assessment of hydrogeologic and geotechnical subsurface conditions, and environmental impact assessments.
- Obligations of the contractor to meet applicable design quality standards and procurement of all statutory and non-statutory permits and approvals prior to construction. Design services should include appropriate plans for the following:
 - ⇒ Liner and drainage systems and leakage detection system.
 - ⇒ Staging areas for recycling and waste reception and handling.
 - ⇒ Closure.
 - ⇒ Landfill gas management system, including potential reuse of gas for power or heat generation.
 - ⇒ Stormwater management system.
 - ⇒ Settlement and stability analyses.
 - ⇒ Leachate collection and treatment/recycling systems.
 - ⇒ Office buildings to house landfill operations staff.
- Construction cost estimate preparation as part of design services.
- Use of qualified, approved independent consultants to certify and approve the design and cost estimates.
- Operations and maintenance manual should be prepared by contractor and be approved by all applicable statutory and non-statutory authorities. The O&M manual for the landfill should address the following issues in addition to those prescribed by applicable local laws and regulations:
 - ⇒ Site security.
 - ⇒ Personnel issues, including staffing and training requirements. Need approval of sub-contractors from Owner.
 - ⇒ Equipment requirements.
 - ⇒ Maintenance of equipment and other assets.
 - ⇒ Wet weather operations.
 - ⇒ Disposal sequence.
 - ⇒ Intermediate cover.
 - ⇒ Drainage layer, final cover, grading, and topsoil requirements.

- ⇒ Environmental monitoring.
- ⇒ Emergency action plans.
- ⇒ Leachate handling operations.
- ⇒ Haul roads, access and exit ramps, traffic routing and monitoring, accident reports,.
- ⇒ Waste screening and handling acceptable wastes.
- ⇒ Landfilling special wastes
- ⇒ Daily construction of lifts, daily cover, alternate cover.
- ⇒ Stormwater, erosion and surface runoff control.
- ⇒ Communications equipment
- ⇒ Litter, dust, vectors odor and noise control.
- ⇒ Occupational health and safety requirements.
- ⇒ Recycling activities -- accommodation of waste pickers/recyclers.
- ⇒ Density requirements and measurements.
- ⇒ Fire prevention and control.
- ⇒ Gas well construction and venting requirements as well as requirements for power generation (or heat generation) operations.
- ⇒ Operations and maintenance record-keeping requirements.
- ⇒ Instrumentation.
- ⇒ Closure and post-closure activities and requirements.
- ⇒ Site meetings.
- ⇒ Procedures for unloading waste vehicles.
- Pre-construction activities include the attendance of contractor at relevant public hearings that the Owner may hold vis a vis landfill siting, design, and operation activities.
- Construction of landfill per approved design. Use of approved and generally acceptable standards of plant, equipment and construction methods.
- Use of independent consultants to inspect and verify the conformance of construction to the approved design. Certification of proper completion of the works per specifications by independent consultants.
- Provision of materials, labor, superintendence, equipment and other utilities and facilities for carrying out the services to meet permitted requirements.
- Recycling activities at the landfill -- provision of separate sorting and recycling staging areas, accommodating existing scavengers by retraining them for integration into the operations at the landfill.
- Conformance of all activities (design, construction, operation, closure and aftercare) to relevant local, state, and national laws, ordinances, codes and regulations.
- Ownership of assets and use of assets by contractor.
- Issues pertaining to minimum wages and re-recruitment from Owner's workforce.
- Issues pertaining to performance and payment bonds, patents, guarantees and warranties, insurances, taxes, duties, permits, rights-of-way acquisitions, and indemnification of Owner in case of errors and omissions in design, construction and operation of disposal facility.

In conjunction with the allocation of duties under the contract, the grantor may retain rights to carry out (some of) the following activities:

- Approve, or allow independent consultant's approval of, design and construction methods proposed by the contractor with or without modifications.
- Making available adequate land of suitable quality to construct a landfill for the intended planning horizon.

- Inspection of quality of work performed by the contractor.
- Inspection of conditions of personnel, plant (eg. workshop), equipment, and machinery.
- Conduct or permit independent, periodic inspection and monitoring of surface and groundwater quality.
- Approval/Denial of the use of sub-contractors/independent consultants.
- Obtaining permits and rights-of-way for contractor's work.
- Public relations.
- Approval of limits on and modifications to insurance, bonds, letters of credit, guarantees, indemnification requirements, and minimum wage requirements.
- Assuming portion of potential long-term liability from the landfill operations. Assuming portion of closure and after-care costs.
- Carry out or specify contractor's interface with upstream waste management activities.
- Authorize the use of grantor's equipment, plant, and personnel by contractor.
- Financing capital investments; ownership of assets (in case of operation services contract). Regulation of recurring capital investments and improvements.

As with any public-private partnership, a balance should be struck between the need for the grantor to monitor and enforce the contract in the public interest and the incentive for the contractor to operate the collection service efficiently without excessive costs associated with undue interference from grantor.

3. SPECIFIC ISSUES IN A LANDFILL BOT CONTRACT

a. Responsibility and Requirements for Capital Investments

Under a BOT contract, the responsibilities for the financing of capital and operating costs for the disposal facility should be clearly outlined. The key issues pertaining to the financial aspects of the contract are elucidated below:

- Assignment of responsibilities for, and modes of, financing capital and operating investments over the life of the contract (contractor financing, retained earnings from tipping fees, availability public authority financing through grants, etc.). Obligations pertaining to capital investments at the disposal facility over the life of the contract.
- Allocation of responsibilities regarding planning, coordinating, supervising, and implementing capital investment programs.
- Fair handling of depreciation of capital assets in order to ensure proper compensation to contractor (should the financing responsibilities rest on the contractor) over the duration of the concession.
- Requirements pertaining to competitive procurement for goods and services by the contractor under the concession (such as minimum size of such contracts, conditions under which sole-sourcing is allowable, etc.).
- Mechanism of disbursement of funds by Owner should the Owner finance and pay for capital investments over the life of the concession (extension of advances, payment upon receipt of independently approved monthly invoices reflecting progress in the field, etc.).
- Mechanism to fund closure costs, long-term monitoring and aftercare expenses (e.g., via special escrow accounts established by contractor/grantor).

HOW TO HANDLE HOST COMMUNITY FEES IF SO DESIRED BY PUBLIC CONSULTATION FOR LANDFILL LOCATION IN THEIR NEIGHBORHOOD?

b. Equity participation in the Contract

Equity investments from project sponsors are needed to attract debt financing for the concession arrangement. The issues pertaining to financing for the proposed BOT contract include the following:

- Criteria for debt to equity levels and minimum level of equity investment for creditors to lend to the project sponsor. Assumption, if any, of existing debt from on-going operations.
- Timing of cash flows from both debt and equity contributions to meet capital and operating expenses. Timing of revenues from disposal fees to pay debt holders and the return on shareholder's equity (should a minimum return be specified in the contract).
- Bond holder covenants pertaining to shareholders agreement on preventing liquidation of shares for a specified period of time (to mitigate the risk of bankruptcy, say during the non-revenue generating portion of the concession contract such as the construction period). Alternatively, guarantees against such events may be extended.
- Allocation of seniority for having cash flow rights and control rights amongst the various equity holders.

c. Obligations of the Public Authority/Grantor of the Contract

In addition to the services identified in the preceding section, the public authority's obligation under the contract may include the following:

- Supply of waste material of minimum quantity and specified quality (perhaps based on source definitions) over the duration of the contract. Making requisite arrangements with disposal activities (or waste collection/hauling contractor, should there be one) for delivering waste to prescribed location in the contract.
- Preliminary characterization of the waste material to be received at the disposal facility and arrangements for accommodating drastic changes in the quality of waste.
- Arrangements for mutually acceptable monitoring procedures for checking the quality of wastes.
- Mechanisms for payment and guaranteeing the revenues of the BOT contractor via tipping fees and minimum disposal quantities (put-or-pay contract).
- Ownership of the waste and assuming portion of short-term and long-term liability arising from past and future disposal operations.
- Assisting the contractor in obtaining connections to ancillary infrastructure.

d. Payment Issues

Payment for a BOT contract for disposal of solid waste can be arranged in various ways. Payment for design and construction phases of the contract may be based on certified progress on work under the contract. The critical factor that determines the success of this mode is the presence of a credible, independent consultant to certify and approve the payment requests/change orders from the contractor.

Another, more common, arrangement for payment in BOT contracts is for capital investments to be rolled up into the operating payment schedule as a fixed fee component (of a two-part tariff) once the landfill starts operation.

Payment issues pertaining to the long-term operation phase of the contract require special attention due to the projections involved in the estimation of costs and levels of service into the future. The mechanism of such payment through tipping fees could be as follows:

- If collection is handled by a private contractor, then the collection contractor passes on the tipping costs (plus a small administrative fee) through to the grantor of the contract (typically the public conservancy authority) via their collection contract payment agreement.
- If the public authority (grantor) carries out collection, then the payment for tipping costs is made directly by the public authority (grantor) based on the tipping fee structure.

Additional issues pertaining to payments and tariff setting include:

- Procedure for structuring the tipping fee should be clear and transparent. Reflection of capitalized costs and operating (variable) costs in the fee schedule. Is the tipping fee structure based on an allowable return on useful and usable capital works? If so, who defines useful and usable capital? Also, properly audited cost statements need to form the basis of establishing the fee schedule.
- Procedure, timing, and frequency of adjusting tipping fees should be identified in the contract -- e.g., tipping fee changes due to inflation/deflation, changes in cost of service elements (fuel, labor, utilities, supplies, etc.), changes in operating efficiency gains, changes in debt service levels and taxes, etc. Moreover, the proportions of these costs that will be reflected in the adjustment formulae need to be included. Availability of local indices for inflating costs.
- Events that would trigger rebasing the tipping fees should be clearly identified
- Special rates for large and/or small generators who dispose directly at the landfill (at separately negotiated rates and re-basing criteria).
- Should importation be allowed consideration of payment of royalty fee to grantor or host-community fee for accepting such wastes at the landfill.
- Assessment of tipping fees for special wastes including liquid wastes, bulky wastes, construction debris, etc.
- Handling of depreciation expenses and taxes in determining the tipping fee structure.
- Inclusion of new capital additions during the course of the contract to the tipping fee structure. Pass-through criteria for costs to the tipping fee structure.
- Guarantees on minimum tonnage of waste delivered to the site by the grantor since the quantity of waste received at the landfill impacts the operating revenues of the contractor.
- Adjustments, and frequency of such adjustments, to the tipping fee based on the impact of foreign exchange rate fluctuations on specific cost components; specification of indices of foreign exchange to be used.
- Payment of penalties should be clearly and separately addressed should the contractor fail to meet performance obligations.
- Procedures for appealing to the appropriate regulatory body for tipping fee adjustments should be clearly set out in the contract.

e. Customer Education and Public Relations

The key to proper landfill operations is the ability of the contractor to educate the customer (i.e. the waste hauler/collection contractor) on proper waste transport and handling techniques once they reach the disposal site. In addition, educating the collection personnel on the definitions of acceptable waste at the landfill is key to minimizing the impact on operations at the landfill. The task of educating the collection personnel on acceptable wastes may be carried out either by the contractor or the grantor or both.

As part of the customer relations efforts, the BOT contractor should publish tipping fee rate structure and the period over which they are applicable. This allows transparency in the assessment of fees and builds credibility on the part of the contractor. The modes of payment/collection (monthly, weekly, etc.) of the tipping fee should also be clear in order to enhance the revenue collection efforts by the contractor.

The BOT contractor should also continuously assist the grantor in promoting safe and effective disposal of solid waste as well as in enhancing public acceptance of proposed waste disposal methods via publication of informational bulletins on issues like the operational safety of the landfill, its cost-effectiveness, its environmental benefits, etc.

f. Renegotiations of Contract

- Contract renegotiations can take place due to the onset of several conditions. Typically, renegotiations takes place when changes arise in conditions material to the contract that either affect the service quality or tariff levels which have not been explicitly handled in the contract.
- During major extensions of the scope of service under the contract, the grantor may renegotiate the original contract with the contractor or open up the extension of service to fresh tenders. Provision for the renegotiations exercise or the need for interface with a new contractor should be addressed in the contract.
- The procedure for renegotiations, frequencies of renegotiations, and the limits on such negotiations over the duration of the contract should be clearly specified.
- Towards the end of a contract period, the grantor may entertain the scope for a negotiated extension should it be satisfied with the service. However, if the contract is retendered, the playing field for potential bidders should be kept as even as possible by having as much disclosure from previous operations made available to all bidders.

g. Duration of the BOT contract

The duration of the BOT contract is key in making one attractive for competitive tendering of the service. The key issues associated with contract duration that need to be addressed are as follows:

- Is the duration sufficient to make the project bankable; i.e. is the tipping fee structure adequately designed in order to make the contractor meet loan repayment and debt service requirements and return on equity criteria (when the contractor takes on the financing risk).
- Options to vary duration of contract and making corresponding changes to original contract conditions. Are there conditions that trigger the duration review? What are the conditions

that allow such variations? (e.g., force majeure events, delays due to Owner, operational problems beyond the contractor's control, etc.).

- Are the durations of design and construction included in the overall contract duration? If so, how will construction and design delays be handled?
- Are adequate contract conditions included to address issues at contract expiry? Issues include the valuation and transfer of assets to the owner, re-tendering of contract, questions on allocation of liability for environmental damages that may surface in the future due to past or current operations, etc.
- Option of transferring assets after construction and initial operation back to the public authority and then the public authority enters into a long-term concession (operations) agreement with an operations contractor (B/T/O mode of contracting).

h. Key Risks and Management of Key Risks

Very few short and simple contracts can fully assess and allocate risks completely. Since solid waste contracts are complex and long-term, it is virtually impossible to include and address allocation of all risks under the contractual agreement. However, the risks to both parties can be reduced through careful drafting of the contracts as well as through regulatory provisions. The remaining risks would need to be allocated as far as possible to the contractual party that is best able to manage these risks.

In a BOT contract for a landfill, the risks involved include construction risks, operating risks, revenue risks, regulatory risks, and political risks. The issues pertaining to each of these risks are elucidated below:

h.1. Construction Risks-- Issues for consideration

Construction of a landfill is a complex task and requires detailed planning and scheduling. Moreover, the construction of a landfill is not a one-step process. Rather, it is a continuous procedure that involves phased construction over the life of the site. Conditions during construction may run counter to initial design specifications for construction. Under these conditions, the risks that arise should be appropriately managed. This section highlights the various issues that are pertinent to risk allocation and mitigation during the construction phase of the BOT project:

- Accountability for delays in construction and cost over-runs. Ability to structure a fixed price turnkey construction contract to place construction risks on contractor including cost-overruns and delays. Responsibility to finance cost over-runs and terms of availability of such funds.
- Suitability of construction contract specifications in adequately addressing the scope of construction, including the schedule and milestones for construction activities. Allowance on variations to specifications and change orders.
- Responsibilities for permitting and planning approvals.
- Warranties and guarantees for construction works as well as equipment.
- Responsibilities for land acquisition and the suitability of the land for constructing a cost-effective disposal facility. Timing issues pertaining to acquisition and allotment of land for site investigation and construction. Securing appropriate land use permits/agreements and variances.

- Ability and rights of grantor, creditors, and regulatory agencies to monitor the construction. Use of approved independent consultants to certify construction methods and inspect procedures in the field.
- Testing and approval of equipment, construction work, etc.
- Responsibilities for, and durations of, pre-construction activities and their impact on construction schedule -- geotechnical and hydrogeologic surveys, site surveys, environmental impact assessments, public notification and consultation, etc.
- Responsibilities for providing or accessing ancillary utilities for the proposed landfill (during and post-construction) -- power, water supply, sanitary facilities, etc.
- Conditions for use of sub-contractors and assignment of all or portions of the financing and construction work to the subcontractor.
- Assistance from public authorities (and government) in offering financial support for construction. Conditions for such financial support and conditions for disbursement of funds should be clear. e.g., maintenance of a separate fund account, management of fund by an independent agency/trust, disbursement in advance or against certified periodic invoices, etc.
- Assumption of performance and completion liability for work undertaken by contractor, sub-contractors, equipment suppliers, etc. Requirements of performance bonds for securing performance under the contract and liquidated damages coverage for delays in construction.
- Issues pertaining to payment bonds for claims by subcontractors. Incentive clauses for early completion of construction.
- Establishment of a separate construction reserve fund by BOT contractor for independent access in case of repair and maintenance of facilities.
- Issues pertaining to new construction and mechanism for financing this construction during the operation phase of the landfill. Grantor support, if any, for new construction.
- Extent of competitive bidding required for procurement of equipment, supplies and sub-contractor services.
- Clauses pertaining to insurance coverage, hold harmless agreements, minimum wage schedules, labor use and equal opportunity, and other legal mandates during the construction period.

h.2. Operating Risks -- Issues for Consideration

- Ensuring adequate liability coverage for prime contractor as well as approved sub-contractors or approved assignees.
- Addressing sanctions and penalties for non-compliance with health and safety, traffic, environmental, and other standards and regulations.
- Handling bankruptcy and non-performance of the contractor, as well as the non-performance of the grantor (e.g., will the grantor's staff be trained on landfill operations so that they can take over operations when there is sustained non-performance of contractor?).
- Handling non-performance due events beyond the control of contractor or grantor.
- Benchmarking for comparative competition amongst landfill operations on common performance measures.
- Guarantees by grantor of availability and costs of services, plant and equipment to be furnished by grantor under the terms of the contract (e.g., power, fuel, etc.).
- Guarantees by grantor for interfacing upstream operations with disposal contractor. Agreements and guarantees on tipping quantities and fee structure.
- Requirement for a dedicated operating fund.

- Responsibility for expansion of the landfill during the duration of the contract.
- Force-majeure risks -- allocation of these risks between the parties best able to assimilate and manage these risks through negotiations. If agreements on allocation are not possible, responsibility for coverage by insurance should be addressed.
- Addressing the closure and after-care requirements of the landfill, including management of long-term (beyond the life of the BOT contract) leachate and gas migration from the waste.

h.3 Revenue and Financial Risks -- Issues for Consideration

- Distinguishing between capital and operating and maintenance expenditure -- this forms a key first step in assessment of costs and tipping fee structures. Capital investments include new investments that are made during the duration of the operations contract such as those associated with the staged expansion of the landfill.
- Determining used and usable capital base of the contractor (upon which to levy rates of return for tipping fee setting). Determination of tipping fee for imported wastes.
- Integrity of cash flows from tipping fees.
- Reasonableness of tariffs and quality of service.
- Government support for contractor revenues
 - ⇒ Minimum revenue or minimum rates of return guarantees.
 - ⇒ Handling subsidy payments.
 - ⇒ Short-term equity or debt infusion for handling short-term operating cash flow problems.
 - ⇒ Privileged tax status of contractor and accelerated depreciation allowances.
 - ⇒ Importation of equipment at favorable duty levels.
 - ⇒ Assurances on the availability of foreign exchange and long-term interest rate levels (or pass-through fee structure to pass higher costs on to upstream customers).
 - ⇒ Waste zone monopoly assurances for service.
 - ⇒ Coverage for delinquent payments of users of the landfill.
 - ⇒ Grants, loans, letters/lines of credit.
- Legal and regulatory changes required for government to extend any of aforementioned support to contractor.
- Guarantees for project creditors that government will comply with assurances.
- Should supplementary revenues (over and above the tipping fee revenues) be required for debt service, guarantees from government that are available to make additional revenue available to contractor.
- Inter-creditor agreements on the priority of access of tariff revenues to creditors. Revenue distribution arrangements to pay for debt service, foreign exchange, operations and maintenance of equipment, tariff stabilization, and capital/operating reserve fund. Establishment of debt service reserve fund, if required.
- Covenants regarding minimum debt service coverage ratios and ability to maintain these requirements through scope for modifying the tariff agreements.
- Level of sanctions and liquidated damages in the event of inability to carry out obligations by contractor, e.g., violation of environmental laws, health and safety standards, disruptions in service, lack of quality of service, inability to meet reporting requirements, etc.
- Penalty clauses for contractor including terms of payment, interest payments for lateness, as well as the conditions for regulator to waive or extend payment of penalty (e.g., during situations of contractor's financial distress or bankruptcy).

- Design of subsidy payments -- including monitoring of subsidy payments by grantor, establishment of separate subsidy account managed by an independent agent, disbursement of subsidy upon proof of service.
- Payment of franchise fee or royalty to grantor/government.
- Establishment of escrow accounts for contingency, closure, after-care expenses of landfill.

h.4. Regulatory Risks -- Issues for Consideration

- The role and powers of the regulatory agency.
- Limits of powers and discretion of the regulatory agency.
- Procedures of appeals/arbitration against regulatory oversight.
- Compensation for accommodating changes in regulations.
- Coordination between economic, environmental, public health, and other relevant regulators, in setting rational standards.

h.5. Political Risks -- Issues for Consideration

- Stability of the political regime of the country/state/local authority.
- Availability of political risk guarantees from export credit agencies.
- Availability of private guarantees for political risk coverage.

i. Performance measurement and monitoring

BOT contracts for disposal operations typically specify the scope of services, the outputs and the quality of such outputs required from the contractor in delivering the service, the broad regulations within which the contractor needs to function, and the rule for assessing the price for the service delivered. Once these conditions are specified, the contractor is allowed to use its technical and financial ingenuity to operate most effectively and service customers.

Specifying and monitoring performance targets specified in the contract relies greatly on the information available from contractors and the capacity of the regulator to monitor the contract. These activities allow the grantor of the contract to enforce accountability and promote cost-effective service delivery. The important informational requirements and ancillary issues that affect performance monitoring and measurement, and thus the cost-effectiveness of the service include the following:

- Financial data, including independent verification and certification requirements. Verification and authorization of use and payment requirements/conditions of independent financial auditor. Public disclosure requirements, if any.
- Asset quantity and quality data, including independent auditing requirements. Verification, and authorization of use, and payment requirements/conditions of independent consultant. Public disclosure requirements, if any.
- Subcontractor data, including subcontractor procurement information and use of competitive bidding for procurement of services from subcontractors. Payment information for services procured from subcontractors.
- In case of assignment of contract to third party, all relevant documentation of assignee.

- Itemized and audited cost information/certification for collection tariff justification (and payment, if necessary by Owner). Use of independent auditor by Owner to check cost information that enters the tariff structure.
- End of contract reporting requirements for contract closeout or extension or renegotiations.
- Technical information for reporting on BOT contracts for disposal include:
 - ⇒ Weight of solid waste reaching disposal and/or transfer stations.
 - ⇒ Level of Service -- Types of waste disposed, number and types of customers (waste haulers) served, method of disposal (trench or area-fill), quantity and type of intermediate cover used, types and number of equipment and labor employed, final cover, closure and post-closure services.
 - ⇒ Quality of waste disposal operations, including complaints and redressal of complaints, environmental/pollution incidents, quality and quantity of landfill leachate as well as leachate and gas management procedures and observations.
 - ⇒ Labor and equipment productivity. Maintenance records and condition of equipment.
 - ⇒ Emergency and/or special services performed. Construction works to be undertaken for expanding the landfill over the duration of BOT contract.
 - ⇒ Resource recovery program results.
 - ⇒ Efforts taken towards public information dissemination and education.
- Financial information for reporting on BOT contracts for disposal include:
 - ⇒ Cost accounting for individual disposal tasks and activities, including projection of costs (and variances from projections, when applicable).
 - ⇒ Tipping fee billings and identification of shortfalls in cost recovery by contractor (per contractual subsidy agreement).
 - ⇒ Financial computations for the calculation of tipping fees, including projections.
 - ⇒ Royalty payments and computations, should it form a part of the contract (for waste accepted from outside service area).
 - ⇒ Income and cash flow statements -- both current and past trends.
 - ⇒ Financial statements and projections of contractor's, subcontractor's, or assignee's financial status at an appropriate frequency and under an acceptable format to Owner.
 - ⇒ Payment delinquencies as well as the characteristics of past delinquencies and penalties, including identification of individual delinquent accounts for action by grantor.
 - ⇒ Capital investments needed over the life of the contract for expanding the landfill to accommodate the waste received.

j. Transfer of Assets to/from the BOT Contractor

Under a BOT contract, existing assets (such as an existing land and dumpsite, disposal equipment, etc.) may be transferred for further development and expansion by the BOT contractor. Moreover, upon expiry of the contract, the assets will need to be transferred back to the grantor of the contract to reflect the conditions of the BOT contract. The conditions for such asset transfers to and from the contractor at the beginning and the end of the BOT contract should be clearly addressed in the contractual documents. The following issues need close attention when addressing the transfer of assets:

- At the beginning of the contract, the ownership of (i.e., the legal title for) the assets should be clearly addressed in order to make the asset transfers effective. Such assets include the grantor's property, plant and equipment that are currently employed for disposal purposes.

- The quantity and quality of the assets should be clearly set out in the contract. Conditions of the assets should be assessed objectively and independently prior to issuing the contract to reflect their true values. Should the due diligence conducted by the contractor or their financial partners prior to bidding on the contract reveal conditions different than previously assessed, procedures for ascertaining the baseline conditions of the assets on which to bid on need to be clearly defined. Also, criteria for asset sale (e.g., non-usable/useful assets) and the use of the proceeds of such sale should be defined in the contract.
- The obligations and rights to making improvements and additions to the transferred assets should be outlined clearly in the contract under an asset management plan.
- If capital additions are made during the period of the BOT contract, the ability of the contractor to pledge them as security for lenders should be addressed (and the scope for grantor to remedy the claims should the contract be abrogated before expiry).
- If the BOT operator operates on a “sale-leaseback” mode of arrangement (i.e., the contractor sells the assets as soon as they are constructed and operated to the satisfaction of the grantor and leases them back to operate on a long-term basis) or a simple lease mode, then scope for pledging assets as security for lenders should be addressed.
- At the end of the BOT contract, the mechanism of transfer of assets back to the grantor must be clearly defined.

k. Consents

Consents regarding on capital mobilization, labor (foreign labor as well as requirements on use of existing workforce by contractor and wage rates), and type of equipment used for disposal need to be addressed in the contract. Environmental consents, health and safety consents, waste disposal consents, waste importation consents, transportation consents, and importation consents (for import of equipment) and other legal consents that may cover disposal activities (including proposed resource recovery activities) should be obtained prior to construction and operation of the facilities.

The onus for applying for and obtaining these consents could rest with either the Contractor or the Owner. These roles and responsibilities of the Owner and the Contractor should be clearly identified in the contract. Should the Contractor be responsible for obtaining the consents, the level of Owner’s assistance should be clearly identified. In case of delays in obtaining the requisite approvals, the roles and responsibilities of the contractor and the owner need to be addressed.

Risk of delays in obtaining these consents should be clearly addressed in the contract along with recommendations on managing such a risk. In addition, the duration of effect of such consents should be sufficient enough to minimize the risk of making adverse modifications of these consents during the course of the contract. Should the contents not cover the entire contract period, the responsibility for re-obtaining the consents needs to be addressed.

l. Dispute Resolution

The mechanism of dispute resolution needs to be addressed in the contract -- whether it be through arbitration, court proceedings, or through an expert panel for resolving the disputes. The duty to resolve disputes should rest with both the entities that are party to the contract. Enforceability of judgement on Owner or Contractor should be clearly addressed in the contract. Legal provisions within the jurisdiction of dispute resolution should enable enforcement of awards or penalties against either contentious parties to the

dispute. The law and the applicable legal framework governing the dispute resolution procedure needs to be identified in the contract. Responsibility for progress of work during the dispute period needs to be clearly delineated under the contract conditions.