

Guidance Pack

Private sector participation in municipal solid waste management



Part I

Executive Overview

By Sandra Cointreau-Levine
and Adrian Coad



SKAT

An introduction to the concept and contents of
this Guidance Pack and a brief review of some
of the key points

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Authors: Sandra Cointreau-Levine and Adrian Coad

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Foreword

The provision of municipal solid waste services is a costly and vexing problem for local authorities everywhere. In developing country cities, service coverage is low, resources are insufficient, and uncontrolled dumping is widespread, with resulting environmental problems. Moreover, substantial inefficiencies are typically observed. One solution commonly proposed is to contract service provision with the private sector in the belief that service efficiency and coverage can be improved, and environmental protection enhanced.

There are three important roles for the private sector in the solid waste management field. First, where existing public service delivery is either too costly or inadequate, private sector participation offers a means of enhancing efficiency and lowering costs through the introduction of commercial principles and greater attention to customer satisfaction. Second, in situations where local public funds for investment are in chronically short supply, the private sector may be able to mobilize needed investment funds. Third, the private sector is well situated to draw on local and international experience in the waste management field and introduce proven and cost effective technologies along with management expertise.

Field studies conducted by the World Bank and others tend to substantiate these claims that the private delivery of municipal solid waste services can be successful in terms of greater efficiency, coverage and quality of service. Keys to successful private sector involvement in municipal solid waste management include creating contestable markets, establishing an appropriate regulatory framework and operations standards for contractors, and strengthening local government capacity to negotiate contracts and monitor performance. In the simplest terms, the focus must be on competition, transparency, and accountability.

Nonetheless, private sector participation should be viewed as a possible opportunity - not a panacea. Important questions are *whether* and *how* to involve the private sector in the provision of municipal solid waste services. These questions have been given priority attention by a joint initiative of the Swiss Agency for Development and Cooperation (SDC), the Urban Management Programme (UMP), the World Bank, and the Swiss Centre for Development Cooperation in Technology and Management (SKAT), along with a host of other collaborating external support agencies, professional associations,

and non-governmental organizations. In February 1996, SDC and the World Bank sponsored a workshop in Washington DC on private sector participation for the provision of municipal solid waste services, with the participation of SKAT, the Inter-American Development Bank, the Solid Waste Association of North America, and leading solid waste specialists. The contributions of the participants provided valuable impetus and direction to this project. Subsequent efforts have been focused on promoting effective public-private partnerships, understanding and developing the role of informal private sector groups (waste pickers, micro- and small enterprises, and community groups), and developing guides for the preparation of contract and bidding documents. This *Guidance Pack* - the latest in a series of publications sponsored by the joint initiative - focuses specifically on the latter objective.

In preparing this *Guidance Pack*, Sandra Cointreau-Levine provides a framework and a set of tools to assist local authorities in deciding whether to engage the private sector in the delivery of municipal solid waste services. This *Pack* also presents tools and examples of how to prepare bidding documents, contracts, and franchise and concession agreements to effectively engage private operators. The author draws on her substantial experience in the field as well as that of the staff of supporting agencies, and the findings and recommendations of a number of international workshops held on the topic, to provide concrete, practical guidance and tools. We hope that they will be widely studied and applied.

Carl R. Bartone
Principal Environmental Engineer
Transport, Water & Urban Department
The World Bank

Françoise Lieberherr
Senior Programme Officer
Urban Development
Swiss Agency for Development and Cooperation

(i) Introduction of this Overview

Welcome to Part I of a **Guidance Pack** that consists of five parts.

This part is called the “Executive Overview” because it is written for busy people. It aims to provide links to the rest of the **Guidance Pack** so that decision-makers can determine whether this document is relevant to their needs and, if so, which parts are of particular interest.

This booklet should also prove useful to the reader who wishes to study the whole **Pack** in more detail, since it provides an introduction to the material found within this **Pack** and an explanation of the concept and organization of the whole publication.

The main part of this **Overview** is devoted to introducing **Part II** of the **Pack**, briefly focusing on some of the key

points and indicating where a more detailed discussion can be found in the other Parts of the **Pack**.

The remaining three Parts are:

	Introduced on
■ Part III Tools for Preparing for Private Sector Participation	page 10
■ Part IV List of Terms and Definitions	page 10
■ Part V Sample Contracts and Other Documents	page 10

This overview provides a brief introduction to these other Parts and closes with acknowledgements of the many and varied contributions to the preparation of this **Guidance Pack** (page 11).

(ii) Introduction to Part II: THE GUIDANCE NOTE

(ii)-1 What is the subject of the Guidance Note ?

The focus is on services related to municipal solid waste (also known as garbage or refuse), and the provision of these services by private companies (and other organizations which are outside local government or municipal administrations). Some examples are drawn from industrialized countries, but this publication is written for readers who are concerned with improving waste management standards in Africa, Latin America and the Caribbean, and the less prosperous economies of Asia.

For the purposes of this publication, the term “municipal solid waste” refers to wastes from domestic, commercial, institutional, municipal and industrial sources, but excluding excreta, except when it is mixed with solid waste. Some reference is made to hazardous wastes from hospitals and industry, but wastes from mining and agriculture are not referred to.

The **Guidance Note** views privatization processes principally from the local government perspective. It provides detailed and practical guidance for municipalities that wish to involve the private sector in the provision of waste management services, or improve the way in which they currently manage such participation.

Some of the issues that are discussed in this Pack

Privatization	Commercialization	Competition	Segregated accounts	Hidden subsidies
Open competition	Institutional reform	Franchises	Level playing field	Contract period
Private sector participation	Private enterprise	Transparency	Contestability	Bonds
Competitive tendering	Public accountability	Co-opetition	Accountability	Service zones
Divesting	Municipal responsibility	Collusion	Capacity building	Microenterprises
Public/private partnerships	Monopolies	Concession	Licensing	Economies of contiguity
Contracting	Corruption	Private subscription	Public consultation	Labor redundancy

(ii)-2 Who is responsible for public services ?Reference *
for further
information

Whether the service is provided by private companies or local government, government (local, state or national) retains responsibility for the collection and disposal of solid wastes. Government remains responsible to ensure that a service is provided, and that it meets required standards in terms of reliability, efficiency, customer relations and environmental protection. These fundamental responsibilities are not diminished by any privatization process. The role of the City government changes as the private sector becomes more involved. Resources are concentrated towards monitoring and enforcement, but it is still government that is responsible.

Part II: 6.1

(ii)-3 Why involve the private sector ?**What are the advantages of private sector participation ?**

- The private sector has shown that it can provide a more efficient or cost-effective service.
- The private sector often has better access to capital financing and so it is able to use more efficient equipment.
- The private sector may have easier access to specialist skills. For example companies can form joint ventures with international specialist firms.

Part II: 2.3

Part II: 5.15

Part II: 3.1

(ii)-4 Why can the private sector be more efficient ?

Private sector operators are motivated by accountability and competition, and by the need to fulfil certain specific requirements as set out in contractual agreements.

Private sector managers generally have more control over who is in their workforce and how they should work.

Private sector companies are less restricted by bureaucratic procedures and more able to concentrate resources where they are needed.

Part II: 2.4

Part II: 2.4

Part II: 2.4

**Photograph 1**

The private sector should be given as much freedom as possible to use the type of technology that will enable the most cost-effective and reliable service. This photograph shows waste being brought to a transfer station in a donkey cart, and loaded into an open truck. Lahore (Pakistan) 1995

**Photograph 2**

Here a franchise collection service is using a rear-loading compactor truck, Accra (Ghana) 1996. This can be an efficient method where the waste has a low density, where the roads are large enough and strong enough for heavy vehicles and where good maintenance can be guaranteed.

**Photograph 3**

Educating children about waste collection in Accra (Ghana) 1997. Public education may be retained as a responsibility of local government or taken over by the private sector.

* Beside the text are some references to other parts of the Guidance Pack where further information on the particular topic can be found. For example, "Part II: 3.4.1" means Part II, Chapter 3 and Section 3.4.1.

(ii)-5 Common misconceptions concerning private sector participation

Reference
for further
information

This section lists some commonly held opinions that are not always accurate.

a) The private sector is always cheaper and more efficient.

Private companies will be cost-effective and efficient only if they have a reason to be so. If the involvement of the private sector is well managed by local government, there is competition, both at the tendering stage and during operations, and such competition produces efficiency. Conversely, if there is no competition and monitoring is poor, a private sector service may be inefficient and expensive.

Very often cost comparisons between the private and the public sectors are unfair because not all of the actual expenditures are included in estimates of public sector costs.

It is not uncommon for municipal administrations to be unaware of the actual costs of their waste collection and disposal operations because their accounting systems do not provide information on all the costs related to waste management.

b) The private sector is always more reliable.

Whilst it is true that private companies generally provide reliable and good quality services, this is not always or automatically the case. Private companies can generally achieve better vehicle maintenance and their workforces are more flexible to cope with unforeseen circumstances, but well-written agreements and good enforcement are important in ensuring good operational performance.

c) The private sector does not care for the environment, and so will cause serious pollution.

There are certainly cases where private sector operators have shown no concern for the environment, and have dumped piles of waste illegally, in order to save time and travel, and to avoid paying disposal fees. Private operators of disposal sites are capable of negligence that leads to serious pollution.

Whilst these accusations may be true in particular cases, there are two incentives that encourage private companies to demonstrate a care for the environment.

The first is reputation or public image, especially where the general public is aware of

environmental issues and concerned to reduce pollution. In such cases companies want to avoid gaining a bad reputation and thereby earning public opposition, and so for this reason private sector managers are keen to operate according to high environmental standards. Waste management companies require planning and operating permits, and a bad reputation can make obtaining of these permits very difficult.

The second incentive to encourage good environmental standards is the monitoring by government inspectors. If contractual agreements are well written and effectively enforced, private companies can expect to be penalized for any action which causes environmental pollution. Service providers that do not have contractual agreements with government should be required to hold a license which can be revoked in the case of unacceptable performance. Information in Parts II, III and V shows how this can be done.

Part II: 5.10,
5.18

Part II: 6.6

Part II: 4.3

Part II: 5.17

(ii)-6 A brief comment on the historical context

Before the 1980s there were private sector enterprises of a various sizes and styles involved in waste collection – from small enterprises operating informally to large companies. However, it was during the 1980s that national governments and development agencies began to vigorously promote the private sector as a provider of municipal services.

In some industrialized countries local government was forced to compete with the private sector for contracts in solid waste management. Mistakes were made, and lessons learned, but in general costs were reduced without sacrificing standards.

In low- and middle-income countries there have been successes and failures. The Guidance Note (Part II) refers extensively to both positive and negative experiences, and draws many useful lessons from them.

Part II: 1.2

Part II: 4.6

(ii)-7 Different ways in which the private sector can become involved

a) **Activities** The ranges of activities and scales of operations are very large – from pre-collection of domestic waste from a small urban area to the operation of a large sanitary landfill. Methods may be labor-intensive or capital intensive.

Part II: 4.1

- b) **Extent** There are many forms of private sector involvement, varying from reduced government control to complete private sector ownership. Part II: 4.2
- c) **Arrangements** Basically there are four options: contracting, franchise, public subscription (or open competition) and concession. The table below is not complete, but shows some of the major differences between the options. Part II: 4.2.3 to Part II: 4.5

Arrangement	Source of income	Monopoly in service area?	Type of work
Contract	Government	Yes	Service
Franchise	Customers	Yes	Service
Private subscription	Customers	No	Service
Concession	Government and user fees	Yes	Construction and operation



Photograph 4
A workshop for determining the collection zones for each refuse collection contract. Accra (Ghana) 1997

(ii)-8 Problems and fears – and some solutions

Reference for further information

Municipal managers may worry that there will be a lack of real competition because only a few companies are interested in tendering for the work. As a result prices may be high and an inadequate company may be awarded the work.

- The sizes of the collection zones should be appropriate to the capabilities of prospective bidders. (Photograph 4 shows a workshop in which the sizes of zones for waste collection were discussed.) Part II: 5.8, 5.9
- The tendering and monitoring procedures should be transparent and fair, and effective so that unscrupulous companies are not able to cut corners. Part II: 5.13, 5.17
- Arrangements and estimates should allow sufficient freedom to the company to develop its own methods, and a sufficient profit margin.
- Currency restrictions and other legislation should not discourage joint ventures with foreign specialist companies.

Private companies may be reluctant to participate in a contract because they fear that local government will not pay regularly and on time.

- A franchise agreement allows the company to collect its own fees directly from its customers. Part II: 4.3 Part II: 5.7, 5.15, 5.16

Bid prices may be excessive and there may be collusion between bidders to fix high prices.

- If the municipal administration knows accurately its own costs for providing the service, it has a yardstick for judging bids. Part II: 5.18 Part II: 6.2, 6.72
- If local government either joins the bidding process or retains some areas for its own service, high bids can be rejected. Part II: 3.6.3

Municipal administrations may fear opposition to privatization from labor unions and the workforce.

- Such problems have been overcome in many cities. Several strategies are presented in the Guidance Note. Part II: 5.3

Private sector companies may exploit their workers in terms of low pay or unacceptable working conditions.

- There is no doubt that this has occurred in some places. Requirements should be written into contracts and rigorously enforced. Part II: 5.6

Private sector working standards may be low or decline, resulting in environmental degradation and many complaints.

- Contracts and agreements should clearly specify the standards that should be attained, and prescribe penalties for failures. In the even of serious failures government should be able to take over. Part II: 3.6.2 Part II: 5.10, 5.11

Reference
for further
information

- Companies providing services by private subscription are required to have licenses. The license can be revoked if performance is unsatisfactory. [Part II: 5.17](#)

There is the risk of commercial failure of the company providing the service, resulting in a breakdown of the service.

- Very low bids may be rejected at the tender stage. [Part II: 6.7.3](#)
- Performance bonds provide resources for maintaining the service by government or other private sector companies. [Part III: A5](#)
[Part III: A10](#)
- Flow control agreements should guarantee revenues for recycling and disposal operations. [Part II: 5.5](#)

The municipal administration may lose control of prices and standards if all the work is done by one company. Privatization is a “one-way street.”

- Regulations may set limits to the proportion of the work that can be taken by one company. [Part II: 5.2](#)
- The public sector should continue to be involved in service provision so that it can take over from unsatisfactory companies and prevent a monopoly situation. [Part II: 1.2](#)

Political changes cause uncertainty and changes in contractual arrangements.

- Central government should provide some guarantees of stability. [Part II: 5.5, 5.19](#)
- Longer contract durations and restrictions regarding terminations of contracts help to maintain service arrangements through political turbulence. [Part II: 5.12](#)

The legislation framework may not allow private sector participation or may severely limit the possible arrangements.

- It may be necessary to change some laws to allow the private sector to provide services that have previously been provided by local government, and to collect fees for these services. Examples are given of countries that have made the necessary changes and developed very satisfactory arrangements with the private sector. [Part II: 5.18](#)
[Part II: 5.19](#)

The private sector may use unsuitable equipment

- There are certainly cases where the private sector uses very unsuitable vehicles. This is either because the duration of the agreements is too short to allow the companies to take out and repay loans for the purchase of suitable vehicles, or because the agreements do not specify requirements, or the requirements are not enforced. [Part II: 3.5](#)
[Part II: 5.4](#)

(ii)-9 Three important words

These words appear and reappear throughout the guidance note, and are in many ways the three vital ingredients for successful private sector participation. [Part II: 5.1, 5.20](#)

Competition

There should be competition between different private sector companies, and also, if possible, between the private and public sectors. Competition provides motivation to maintain effort. It provides a standard against which performance is compared or assessed. Furthermore it provides a continual reminder that there are others engaged in the same activity who could take the place of a competitor who is performing poorly. [Part II: 1.2](#)
[Part II: 3.6](#)
[Part II: 5.2, 5.11](#)

This element of competition is illustrated in the cartoon below, in which the fulfilling of an agreement for providing a solid waste management service is represented as running a race.

Accountability

Private sector service providers should sense that they are accountable to the people whose waste they collect and to the local government agency that has engaged or licensed them. The companies know that if they fail to provide the required service in the required way, there will be consequences. They are not free to do as they please. Such accountability results from a well prepared contractual agreement, from effective enforcement of the terms of the agreement, and from the understanding that there will be financial penalties if expectations are not met. [Part II: 5.11, 5.16](#)

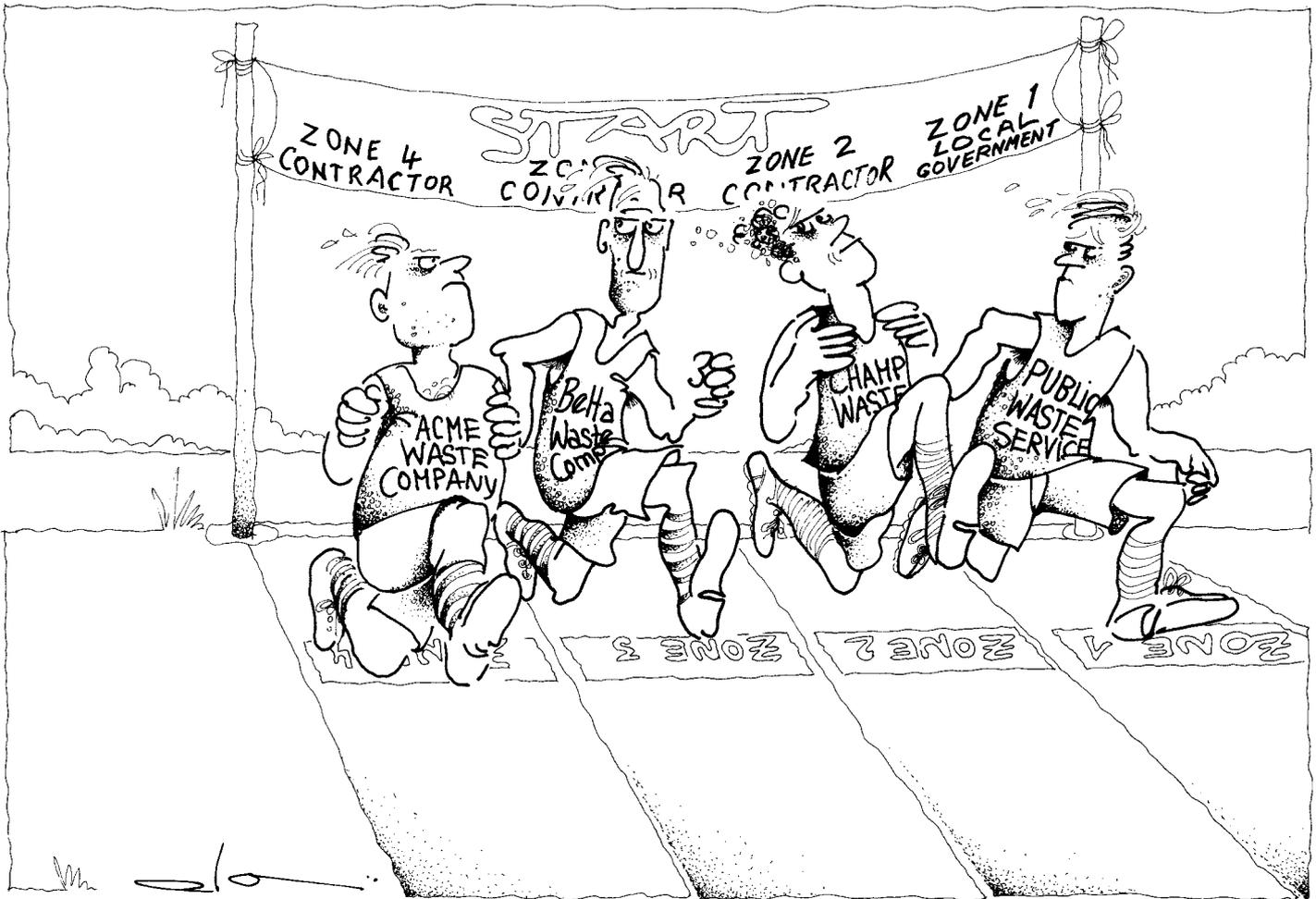
Microenterprises which draw their workforces from the communities that are served benefit from the accountability that the laborers feel towards their neighbors who expect a fair and satisfactory service. [Part II: Box 4.3](#)

The public sector agency (whether municipal or regional government) that is responsible for the service should also feel accountable to both the public and the elected representatives for the way it oversees the service. Often capacity building will be needed if government is to effectively discharge its responsibilities.

Transparency

There is a growing concern about the crippling effects of corruption and favoritism or “cronyism”. More and more emphasis is being placed on “good governance” at city, regional and national

levels. Financial dealings and decision-making should be transparent. The reasons for decisions – especially the selection of private sector service providers – and the management of public funds should be open before the public. In this way the service can enjoy the support of the public and competition is encouraged, since the competitors are reassured that they will have the opportunity of competing on fair and equitable terms. Public support can be expected to result in more widespread payment of charges or taxes, and fair competition to result in lower costs and better services.



Fair competition is one key to the provision of good waste management services. The runners represent service providers – both public and private sector. They are closely watching each other's performance. They are motivated!

(iii) Introduction to Part III: TOOLS FOR PREPARING FOR PRIVATE SECTOR PARTICIPATION

Part III has been bound separately because it contains tools which will be needed for implementation of decisions made on the basis of Part II.

It contains checklists, sample documents and questionnaire forms that are related to the issues discussed in Part II. Annex 10 is a comprehensive, annotated checklist of issues

that must be considered in the preparation of contractual agreements for waste collection, transfer stations and landfills. The last Annex is a short list of reference literature and web sites.

Some of these tools are also provided in electronic format in Part V so that they can be modified and used by the reader.

(iv) Introduction to Part IV: LIST OF TERMS AND DEFINITIONS

This includes a wide range of words for which dictionaries may not be a suitable source of help, because

- some of the words are technical terms which may not be found in most dictionaries;
- some words have several meanings, and this list explains how the words are used in this Pack;
- some words are used in different ways by different writers or in different countries, and this list explains the meaning given to particular words in this publication. (An example is the term "Public/private partnership", which many people use in a general way, but which has a more precise meaning in this Pack.)

It is anticipated that the readers of this **Pack** will come from many backgrounds – both in terms of formal education and mother tongue. No reader will need to refer to all definitions, but it is expected that most will benefit by consulting some.

The first time a word that features in Part IV is mentioned in each chapter, it is written in **italics**, so that the reader knows that a definition is available.

This word list is provided as a separate document so that it can be used conveniently with either Part II or Part III.

(v) Introduction to Part V: SAMPLE CONTRACTS AND OTHER DOCUMENTS

These documents – some of them very long – are presented in electronic format for two reasons. Firstly, if printed, they would greatly add to the bulk of this **Pack**. Secondly, they can be loaded into readers' computers and modified for use. It is not recommended that contracts be copied and used without careful modification – by legal experts, to suit the local legislation framework, and by municipal managers

to suit local conditions. However, the questionnaire forms and terms of reference may be useful with only minor amendments.

The material is presented in WORD for WINDOWS 6.0/95 format.

A brief printed introduction to each file is provided in Part V.

Acknowledgements

The preparation and printing of this Guidance Pack has been financed by the Swiss Agency for Development and Cooperation, SDC, and by some additional support from the World Bank.

This publication is the result of many years of research and application by its author, Sandra Cointreau-Levine. During a large number of consultancy assignments she has patiently recorded and collected information and observed situations and solutions. A vast amount of experience and expertise has been distilled into this publication.

All of the photographs have been provided by Mrs Cointreau-Levine.

Prasad Gopalan has made a very valuable contribution in the form of a detailed checklist and commentary on contractual agreements - Annex A10 in Part III. This Annex should be regarded as essential reading for anyone involved in the preparation or amendment of contracts and other agreements. The assistance of SITA in reviewing this Annex is acknowledged.

Carl Bartone has provided invaluable support throughout the duration of the project, providing vision, guidance and encouragement, and thoroughly reviewing the text. The World Bank has organized two workshops that have had major impacts on this publication. The first was in February 1996 as part of the UMP/SDC Collaborative Programme on MSWM in Low-income Countries, and the contributions of the participants provided valuable impetus and direction to this project. The second workshop was held in February 1999 to review the draft and decide matters of presentation. The contributions of World Bank and IFC staff (including Carl Bartone, Prasad Gopalan, Penelope Brook-Cowen, Jerry Esmay, Gabrielle Boyer, Paola Riddolfi and Dirk Sommer) are also acknowledged.

The inclusion of sample contract documents in Part V has significantly enhanced the value of this Pack. The support and

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Dorsi Germann created the cartoons.

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SKAT is grateful to each one for their contributions to this document, and is confident that their efforts will be further appreciated by readers and users of this Pack.

Adrian Coad
SKAT, St.Gallen
September 1999

Addresses

The Swiss Agency for Development and Cooperation, SDC,
Freiburgstrasse 130,
3003 Bern, Switzerland
Tel: + 41 31 322 3475
E-mail: info@deza.admin.ch

SKAT,
The Swiss Centre for Development Cooperation
in Technology and Management,
Vadianstrasse 42,
9000 St.Gallen, Switzerland
Tel: +41 71 228 5454,
E-mail: Info@skat.ch

Dr Carl Bartone,
Principal Environmental Engineer
Transport, Water & Urban Department
The World Bank
1818 H Street N. W., Washington D.C. 20433, USA

Sandra Cointreau-Levine,
Solid Waste Management Consulting Services,
P O Box 241, 12 Church Street,
Roxbury, CT, 06783, USA

Prasad Gopalan,
Investment Officer,
International Finance Corporation,
1818 H Street N.W.,
Washington, D.C. 20433, USA

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 this should be done. The information in this book is not just theory; it is based on a wide range of case studies and examples from the Author's extensive international experience.

This *Pack* consists of five separate parts, divided up for the convenience of the users.

Part I, the **Executive Overview**, introduces the *Pack*, touching on highlights of the other Parts and directing the reader to more detailed discussions in the subsequent parts.

Part II, the **Guidance Note**, contains the arguments for private sector participation, reviews the options, explains the issues that must be considered, and suggests the steps leading to implementation of its recommendations. There are frequent references to experiences and lessons learned in Africa, Asia, and America.

Part III - the **tools** - provides lists of criteria, checklists, sample terms of reference and questionnaire forms that will be of great assistance to municipal managers and consultants who are preparing to involve the private sector.

Part IV is a comprehensive **word list** that will help many readers to identify the precise meanings of the technical terms found in this *Pack*.

Part V provides valuable **sample contracts and agreements** for both collection and disposal operations, allowing the reader to benefit from the experience of many cities and avoid making the mistakes that are often made when contractual agreements are initially drawn up. It also contains questionnaire forms so that they can quickly be adapted and used. The documents are provided on a CD-Rom.

Many readers will initially wish that this *Pack* had been produced some years ago, but when they discover the depth and breadth of the up-to-date experience that it contains, they will realize it has been worth waiting for. If it had been produced earlier it would not have had the benefit of many lessons that have recently been learned around the world.

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Part II

Guidance Note

By Sandra Cointreau-Levine

A review of recent international experience of private sector involvement in municipal solid waste management and guidelines for the steps to be taken to ensure successful private sector participation in the coming years



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Tel: +41 71 228 54 54
Fax: +41 71 228 54 55
e-mail: info@skat.ch
url: www.skat.ch

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Chapter 1: INTRODUCTION

1.1 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 *private sector participation*¹ options is presented, including some case study experiences.²

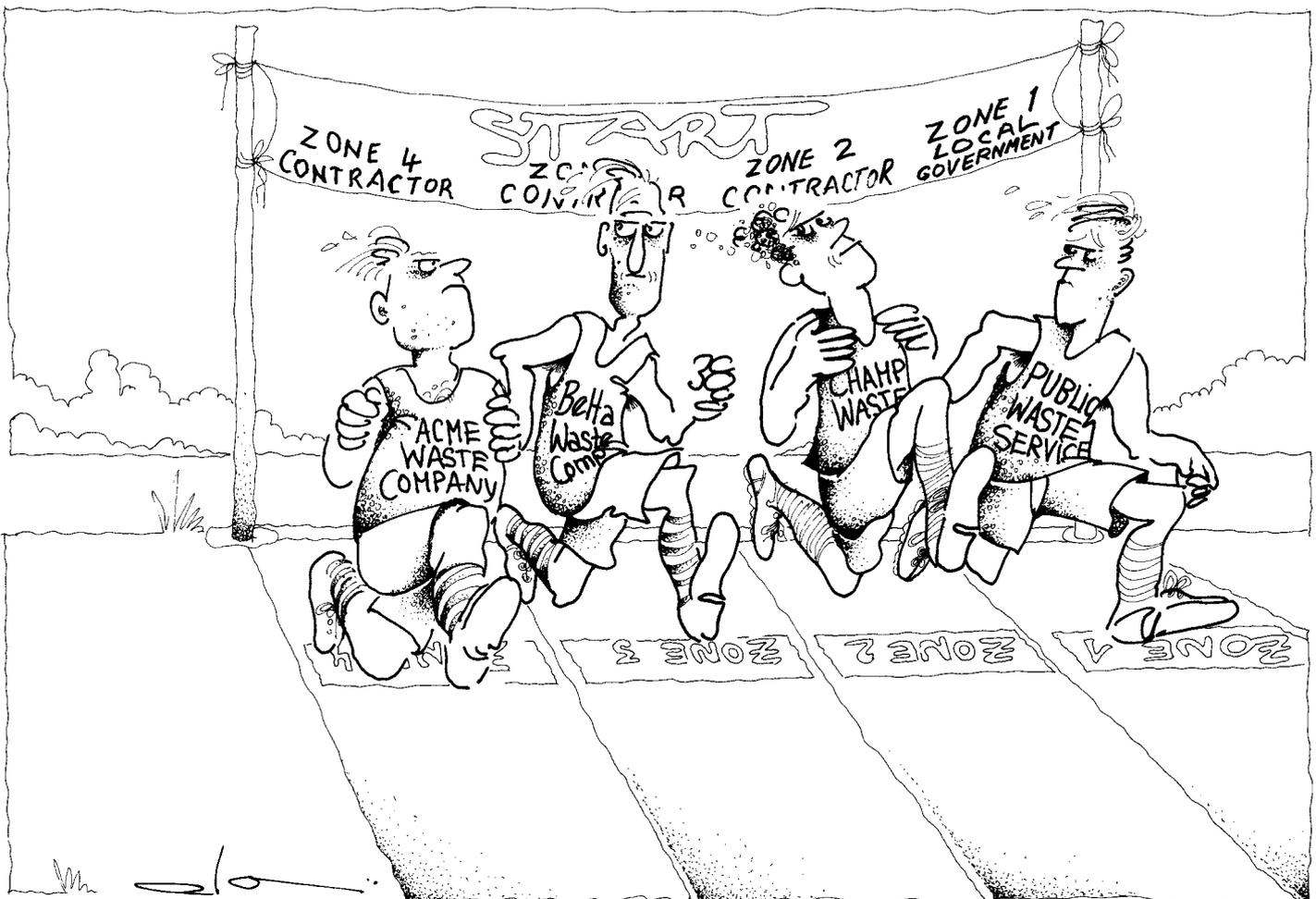
1.2 Recent experience shows the need for guidance

At the end of the 1980s, economic advisors to many developing countries were advocating 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. Unfor-

tunately, the last decade of private sector participation 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 private sector participation, numerous government monopolies have been replaced by private sector monopolies.

Without competition and *contestability* (See Box 1.1 and Cartoon 1) there is no way to assure that excessive government costs are not being replaced by excessive private sector costs. Government costs may be high because of high salaries, high social benefits, redundant personnel, and low *productivity*. Private sector costs may be high because of contract *kickbacks*, high commercial borrowing costs, foreign exchange risk, custom duties, corporate taxes, and insurance. (This is discussed further in Section 3.4.)



Cartoon 1

Where there is effective competition, the best performances can be achieved. There are distinct advantages in continuing to use the public sector in one part of the city.

¹ Words are shown in italics to indicate that they are included in the List of Terms and Definitions (Part IV).

² 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, its source is referenced in the text, and the details of the source can be found in the Bibliography (Annex A11 of Part III).

CONTESTABILITY – THE PUBLIC SECTOR IS ALSO A COMPETITOR

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 relationships inhibiting competition; apparently different *firms* may actually be owned by the same people. 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.

Box 1.1

In most private sector agreements signed during the last decade, technical specifications have been inadequate; *sanctions* for poor performance were minimal; and output monitoring by government was poorly done.

In most private sector agreements signed during the last decade, the following shortcomings have been observed:

- technical specifications have been poorly and scantily defined – such as simply specifying “removal of *refuse*” and “street cleaning”; instead of describing the work in precise and quantified terms;
- it has been difficult to penalize private companies which performed poorly, partly because agreements have not included effective default clauses or sanctions;
- output monitoring by government was insufficient, and
- the durations of *contractual* agreements have been too short to enable the private sector to invest in suitable equipment - most agreements are for periods that are only 10% to 30% of the time needed for the *depreciation* of the investment required. For example, contracts for solid waste collection are often for only one year whereas the depreciation period for collection vehicles is usually four to ten years.

Many governments moved toward *privatization* in the last decade, but few have done so successfully. One of the better examples of good private sector participation 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*; the duration of the contract included the construction stage and the following 15 years. 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 in 1991, then three *sanitary landfills* followed under design, build and operate (DBO) concessions in 1992, 1993, and 1994, and finally several more transfer stations (Photo 1.1). All these projects involved long term concession agreements, 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” (Cointreau-Levine, 1994) was published by the World Bank to outline some of the issues to think about before involving the private sector in urban services. That publication gives numerous examples of the pros and cons of various privatization arrangements. It also discusses in detail some contextual issues such as labor *redundancy*. In 1994 there was too little experience to provide guidelines for how to privatize. This document is based on extensive recent experience and so takes the next step, 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.

Photo 1.1
The entrance to a private sector transfer station in Hong Kong



³ Based on personal experience of the author, Sandra Cointreau-Levine; and (Stokoe, 1998)

⁴ The International Finance Corporation is authorized to finance DBTO or DBOT concessions, while the International Bank for Reconstruction and Development and the International Development Agency can finance only DBO concessions.

Chapter 2: WHY PRIVATIZE ?

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 *coverage* from 50% to 85%. Through contracting for *disposal* equipment, Georgetown was able to substantially improve its disposal operations.

The principal reasons for *privatizing* are to bring in private sector investment and improve operational *efficiency*. Some of the advantages and disadvantages of *private sector participation* are discussed below.

2.1 Solid waste management is a public good

Solid waste service is a public responsibility because it is a *public good*, as discussed in Box 2.1. But being responsible for a 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 to provide the service. In such a role, government defines the work to be done, arranges for payment to the private sector, and oversees the work. Furthermore, being responsible for arranging payment does not necessarily require government to pay the private sector. Government may choose to arrange payment by requiring its residents to pay fees directly to the private sector or to commissioned bill collectors.

SOLID WASTE MANAGEMENT IS A PUBLIC GOOD FOR THE FOLLOWING REASONS:

Solid waste collection and disposal services are

- **essential:** the services are essential to public welfare;
- **non-exclusive:** benefits derived from these services accrue to more people than those who directly receive the services;
- **non-rivalled:** benefits derived from these services are shared without the benefits to any individual being diminished.

This is discussed in more detail in (Cointreau-Levine 1994).

Box 2.1

2.2 Existing solid waste services are inadequate yet costly

Solid waste services in most developing countries do not satisfy the full demand in urban areas. In the poorest countries, the service sometimes reaches only 10% to 40% of the urban population. In the better-organized middle-income countries, the services reach from 50% to 85% of the urban population. Most of the waste collected is discharged to *open dumps*, which are often characterized by *open burning*, waste picking for *recyclables*, and animal scavenging for food wastes. Uncollected wastes and the wastes placed in open dumps are probably polluting nearby streams and underground aquifers.

Despite the gross inadequacies in service, the costs are substantial, as illustrated in Box 2.2. The data in this box are 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 the budget, reflects the differences in priority placed on efficiency, level and frequency of service, and the acceptability of open dumping. Also, the percentage of the budget depends on the number of urban services that are decentralized to the local level. The size of a city is not a major factor affecting the percentage of the budget that is allocated to solid waste services.

SOLID WASTE SERVICE COSTS ARE HIGH

Total estimated costs (including safe disposal):

- 0.7% to 2.6% of GNP in *low-income* countries
- 0.2% to 0.5% of GNP in high-income countries

Recurrent actual costs (based on existing systems, usually without safe disposal in low-income countries):

- 20% to 50% of city *revenues* in low-income countries
- 1% to 10% of city revenues in high-income countries

Box 2.2

2.3 Experience shows the benefits of private sector participation

There are many cases of dramatic reductions in costs as a result of the involvement of the private sector. Box 2.3 gives some examples, drawn from (Donahue, 1989), (Stevens, 1980), (Bartone, 1991), (Bartone, 1997) and (McDavid, 1997), among others.

EVIDENCE FROM AROUND THE WORLD

UK and USA Studies

- Private sector service costs have been at least 25% lower due to rationalized operations and greater management flexibility.
- **Managed competition**, with competition between government and private sector operations, is the most cost-effective option.

Canadian Studies

- Private sector service costs have been at least 25% lower in most provinces, and at least 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 have been about 50% lower due to higher labor and vehicle productivity.

Malaysian Study

- Private sector service costs have been at least 20% lower due to greater efficiency.

Box 2.3

2.4 What are the reasons for private sector efficiency?

Rather than having a blind belief that the private sector must always be more efficient, it is useful to understand the reasons why the private sector can be more efficient than the public sector. The main reasons are summarized below.

- A private sector service provider is **accountable** to its customers, and is obliged to react if the customers are not satisfied.
- **Contestability** – competition between the private and public sectors - is effective in improving cost-effectiveness (Box 1.1).
- If clear **performance measures** are specified in the **contract** or agreement, and the private sector operator is supervised effectively, good standards of operation can be achieved.
- Private sector management have more flexibility -
 - to hire qualified staff
 - to pay staff according to their performance
- to **terminate** the employment of unsatisfactory workers, and
- to adjust working hours according to service demand.
- The private sector is less restricted by bureaucracy
 - in obtaining spare parts for repairs, and
 - so that it can lease equipment when it is needed and subcontract to meet peaks in demand.
- The private sector generally enjoys more freedom from political interference
 - so that it can optimize the size of the work force and the ratio of professional to operational staff, and
 - to concentrate its resources on the service for which they are intended, without staff or equipment being requisitioned for other purposes.

When the reasons for higher private sector efficiency are understood, it is possible to prepare arrangements for involving private companies such that the higher potential for efficiency is achieved in practice. The next Chapter suggests how this can be done.

Chapter 3: KEYS TO SUCCESSFUL PRIVATE SECTOR PARTICIPATION

3.1 Successful private sector participation needs careful structuring

Involving the private sector in the delivery of urban services, if properly structured, does the following:

- it improves service *efficiency*, and
- it increases investment.

However, if the arrangements and conditions are not well structured, *privatization* may not achieve either of these objectives, regardless of the effect of *market forces*.

Take, for example, the objective of improving service efficiency. Improving efficiency generally requires

- the upgrading of knowledge and skills,
- improvements in the equipment,
- rationalization of operations and maintenance,
- *accountability*, and
- *performance monitoring*.

In many developing countries, the private sector has had no experience in the provision of solid waste services and so 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, making the same mistakes. 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 less suited to solid waste services than the equipment previously used by the public sector.

3.2 Remember the objective – low costs

Higher *productivity* alone does not lead to lower costs. Even though a private sector team tends to handle more waste in a daily shift than an equivalent team of local government workers, the private sector must bear many costs that government is not required to pay. 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. Whilst local governments do not usually pay interest on such grants or transfers, the total finance cost should include the interest rate which central government pays on its treasury notes, as an *opportunity cost* of capital.

Costs of government and private sector collection of solid waste in Quito (Ecuador) were analyzed and compared by the Author in 1998. Interestingly, there was no significant difference between costs on a per tonne basis. While total costs were similar, there were numerous differences in 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 operations, 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 that most workers had completed many years of service (44% of the workers had been working for local government for more than 15 years). Also, the labor unions had, over time, negotiated high benefits (250% over basic salaries).

One of the few comparable items was the measurement (by *time and motion* studies) of the productivities of the collection workers - they were similar for both sectors per hour of work. A 10% profit was assumed for the private company. The similarity between the costs of government and the private sector was determined to be largely because the government waste collection workforce had incorporated many improvements into its working practices during the previous four years. Collection routes had been rationalized, worker and vehicle productivity improved, vehicle *downtime* minimized, use of *consumables* controlled, and public cooperation developed. Quito had thus improved the daily productivity of government collection workers from 1.19 to 3.06 tonnes per collector between 1993 and 1997, and its vehicle productivity from 7.69 to 11.91 tonnes per vehicle.

Figure 3.1 shows the costs of the government and private sectors in Quito (Ecuador) It is worth noting that, in this situation, there is a relatively little difference in costs between the private sector and government. Photographs 3.1 and 3.2 show two of the types of vehicle referred to Figure 3.1

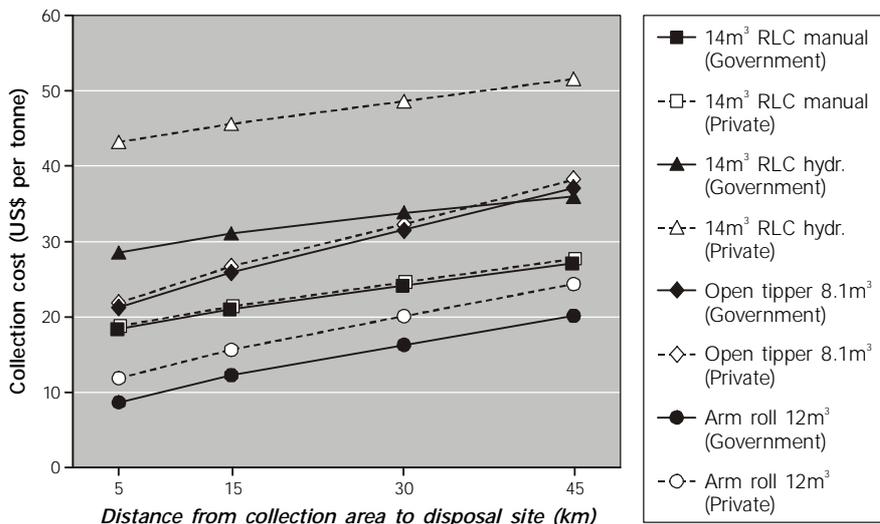


Figure 3.1 Waste collection costs – government and private sectors Quito (Ecuador), 1998

Notes

RLC Rear-loading compactor truck, specially designed for collecting low-density solid wastes, manual loading or hydraulic (hydr) lifting of bins

Arm roll See Photograph 3.2

3.3 Allow 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 demonstration projects of new infrastructure concepts. A key objective of involving the private sector is to open up a new source of capital financing.

Private sector companies in developing countries typically borrow to make investments for new contracts and agreements. Data collected by the Author in a number of developing countries show that the private sector typically pays interest rates 10% to 20% higher than government's opportunity cost of capital. Smaller private companies pay even higher interest rates, because of perceived risk and limited collateral (although experience shows that small businesses default less frequently on bank loans than middle-sized businesses).

Private companies should not be penalized for this situation. When cost estimates are being prepared, the extra costs of borrowing (that the private sector must pay) should be included in estimates.

3.4 Other extra costs which the private sector pays

Additional costs which private sector companies bear, 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 3.1. Customs duties in a developing country typically add from 20% to 100% to the cost of any imported equipment and spare parts; in addition there are often hidden costs for obtaining the cooperation of customs officials. Comprehensive insurance, which is required by any commercial bank which finances equipment, adds 3% to 6% of the assessed value of any equipment to its annual cost of ownership. To vehicle and company registration costs must be added, as a hidden cost, the unofficial payments needed to "grease" the government's bureaucratic "wheels"; so that paperwork and approvals are completed properly and on schedule. Company income and property taxes may be small, but in some countries the cost of negotiating these taxes downwards needs to be recognized. In most developing



Photograph 3.1 Loading an open truck, collection contract, Quito (Ecuador), 1998



Photograph 3.2 An arm roll truck picking up a container in the Medina district of Fez (Morocco), 1985. (Waste had been brought to the container by a contractor using donkeys because of the access problems in the narrow lanes.)



Cartoon 2

If the playing field is not level and one of the competitors has an unfair advantage, the disadvantaged players are likely to withdraw. The final result is that there is no effective competition.

countries, foreign companies must pay taxes in full, which results in unfair competition if local companies can avoid these taxes - the playing field is not level. (Cartoon 2 illustrates the concept of the **level playing field** – if the circumstances strongly favor one of the competitors, other competitors may be discouraged from taking part and withdraw, so that the benefits of competition are lost.) 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.

These extra costs are not paid by government. Box 3.1 lists some of the extra costs of the private sector. While the private sector must pay hidden costs, government benefits from hidden subsidies – which should also be regarded as costs. These costs might not necessarily be paid directly by the residents who receive the local government service under consideration, but might be covered by taxes collected from residents or businesses elsewhere in the same country. Hidden subsidies usually are not discernible in local govern-

ment budgets. Such subsidies may be included in general administration budgets, rather than under the budget for the solid waste service. Sometimes operational subsidies are buried within capital development budgets, which include transfers from central government. Some hidden subsidies of government service are listed in Box 3.2.

EXTRA COSTS OF PRIVATE SECTOR SERVICE

(These costs are usually paid by the private sector but not by government.)

- Marketing
- Political manipulation
- Cost of borrowing for capital investment and to cover cash flow needs when payments are delayed
- Customs duties and value added taxes
- Corporate and property income taxes
- Equipment insurance and registration
- Company registration
- Cost of corruption
- Cost of transactions

Box 3.1

HIDDEN SUBSIDIES OF GOVERNMENT SERVICE

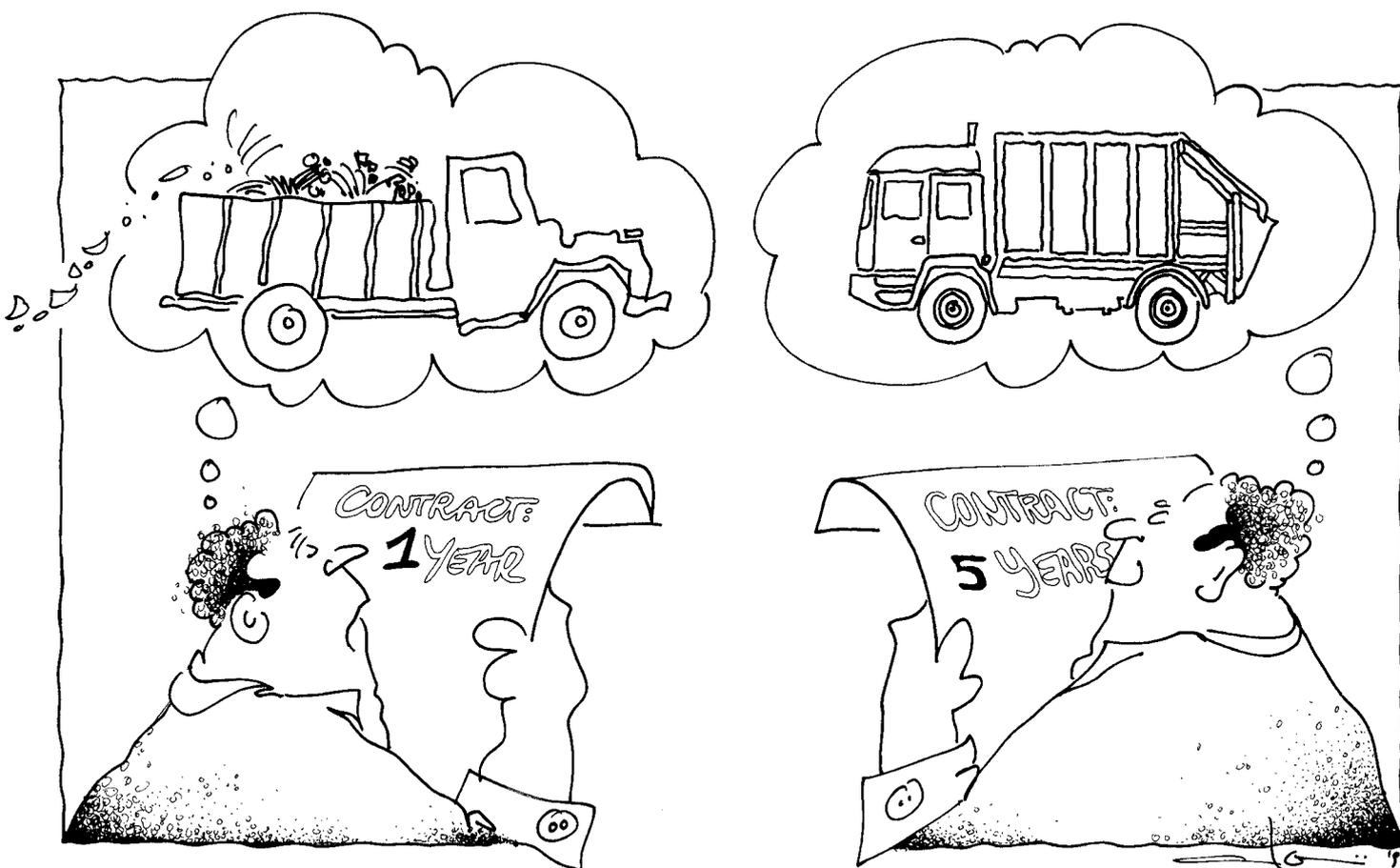
(These costs are not normally considered when the cost of public sector service is being estimated.)

- **Depreciation** of assets (buildings and equipment)
- **Debt service** on capital investment for **utilities** and infrastructure services
- Replacement of equipment destroyed by accidents instead of paying for insurance
- Seconded staff from other municipal departments or from central government
- Administration overheads
- Social benefits (vacation, pension, medical)
- Loss of income from corporate taxes and value added taxes (which would be paid if the private sector were providing the service).

Box 3.2

3.5 Duration of agreement - minimize risks to maximize cost savings

To encourage the best use of the private sector's potential for raising investment capital, governments need to take steps to minimize the private sector's investment risk and enable safe and appropriate periods of financing. Nevertheless, most privatization agreements 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 needed to match the depreciation period of the new investment, as illustrated in Cartoon 3. (Typically 5 years are needed to pay off loans for **refuse** collection equipment, and 15 years for major transfer or **disposal** facilities). When queried about short agreement durations, governments give several reasons. Often, there is a **procurement** ceiling above which local officials



Cartoon 3
 If a contract or other form of agreement is for a period of five years or more, the entrepreneur is able to pay back a loan that enables him to buy suitable vehicles. If the duration of the agreement is for one year, he probably cannot afford to buy efficient vehicles and must try to provide the service with vehicles that are old and inefficient.

cannot approve contracts 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 three-month **service contracts** with small companies, regardless of the greater opportunity for efficiency and reliability from five-year investment-based contracts with larger companies.

3.6 Contestability and competition

Developing countries which contract for solid waste collection service often assume that **private sector participation** automatically means lower prices. Government costs are seldom analyzed in advance of privatizing to provide a basis for assessing the private sector's costs. Comparative **monitoring** of costs of various private sector service providers is not undertaken. The private sector is not forced to set low prices unless there is **contestability** (through comparison with the costs of government service) and competition (by comparison of the bid prices in several tenders and by monitoring the costs of the companies providing the service).

3.6.1 Competition is not what it seems

The appearance of competition is greater than the reality in most developing countries. In some, companies 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 is the appearance of competition but some of the companies that are bidding are actually owned by key government officials and are 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., neither medical insurance, unemployment benefits, welfare, nor disability compensation) and no explicit framework of business ethics, relationships need to be protected. To the extent that there is an appearance of competition, it is typically prearranged by mutual agreement and in harmony.

3.6.2 Contestability enhances competition

Since competitive forces are constrained in developing countries, it is advisable for the government to create contestability. In other words, government should continue to provide a service in part of the city, deliberately not contracting out the whole city to the private sector. (In small secondary cities, there may be too small a population to allow the formation of a sufficient number of **zones** to stimulate operational competition among private **firms** operat-

ing in different zones.) To create contestability, the private sector should service no more than 70% of any city; and government should service the remainder. By having some collection vehicles and labor available, government contestability is further enhanced by its ability to step in to take over from the private sector if there are failures, thus encouraging the private sector to perform optimally. In this arrangement, the private sector also creates contestability, since government workers realize that private sector participation could be expanded; and so they may 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 costs for solid waste collection services have achieved contestability through **managed competition**, wherein government submits bids in the tendering process alongside the private sector.

During tendering for solid waste services, often only the private sector submits bids. In such cases government has no way of knowing the full basis for the bid price offered; nor can government readily determine whether the various bidders have agreed together to set prices (i.e. **collusion**). One way for government to truly understand the requirements and costs of supplying a solid waste service is to actually provide the service, even if only in one limited area. This allows government to monitor the work of the private sector from a position of knowledge rather than theory, since it must prepare its own estimates for tendering.

Box 3.3 describes an interesting approach to competition, in which there is also an element of co-operation.

3.6.3 Managed competition

Managed competition has been introduced by a number of local governments in the United States. It involves direct competition between municipal solid waste departments and private sector service companies for a publicly tendered service contract. To ensure fairness, contractors are selected 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 include in the accounts all indirect costs or hidden subsidies (Box 3.2) that are commonly hidden in the costing of public sector operations. Developing a bid obliges public sector staff to consider all related costs, and it motivates them to work hard to find ways to reduce costs and rationalize operations, to assess the competition and to think in the same way as the private sector. The municipality benefits from this new approach whether it wins the bid or not, as Sacramento (California) and many other local authorities have discovered.

Co-opetition

Co-opetition (Brandenburger, 1996) is a new business philosophy that 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 *generators* receiving the service), and 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 responsible for developing the rules that protect the interests of residents, and for making the playing field level so that service providers may compete on an equitable basis.

Government creates **direct rules** that require residents to make their wastes available for collection in an acceptable way and pay charges to cover costs. These direct rules also require the private sector to submit bids according to specified procurement procedures and abide by contract law. Government 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 determine whether foreign companies may 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, a more personalized service, a more frequent service, obligatory **public consultation** on new facilities, or more remote **siting** of facilities (as a result of the **NIMBY** syndrome of public resistance - “*not in my back yard*”).

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, large private waste management companies lobbied hard for stringent **sanitary landfill** regulations during the 1970s. 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 private sector participation in developing countries is that governments change 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 shortcomings or lack of services that can result in penalties being imposed. Yet, these contracts 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 usually limited. In other words, there are so few players that the risk of playing by win-lose rules is unacceptable. 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 private sector participation efforts in Ghana, Guyana and Guinea involved government officials 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,
- arrangements to guarantee regular and punctual payments, and
- other ways to minimize risk to investors.

In these countries the private sector capacity has developed substantially. 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 by the private sector, provide profitable work for private companies, and secure good service delivery for a reasonable price. In Quito (Ecuador) the city solid waste agency worked closely to create and train two **microenterprises** for solid waste collection, each comprising residents of the neighborhoods they would serve. Every few months, the city solid waste managers meet with the microenterprises to review the accounts and assist them to improve service efficiency and quality.

Box 3.3

Chapter 4: OPTIONS FOR PRIVATE SECTOR PARTICIPATION

4.1 Most solid waste management activities can be privatized

Most activities undertaken 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 competition to government service. Furthermore, solid waste services are considered relatively easy for the private sector to undertake, considering the level of skills required, the magnitude of the needed investment, and investment risk. Maintenance of vehicles should also be given priority consideration for private sector participation, because of the delays typical of government workshops (often caused by slow **procurement** procedures and cash flow problems in purchasing spare parts). Sweeping is another area for potential private sector participation, because, as a public sector activity, it is often subject to labor restrictions on the hours worked and because of high costs and administrative difficulties relating to overtime working.

Private sector participation in solid waste management may involve any of the activities listed below. Box 4.2 contains descriptions of the various types of **contractual** arrangements mentioned in the list.

- Provision of vehicles or heavy equipment - by lease or rental agreement with equipment owners. Drivers or operators and maintenance may also be included in the arrangement.
- **Pre-collection** of residential solid waste by **private subscription**. (Under this arrangement each household engages any **licensed** collector of its own choosing and pays a fee directly to the licensed collector. A number of different collection enterprises may service the same neighborhood.)
- Pre-collection of residential solid waste by **service contract**. (In this case the City selects the company which receives the **contract**, based on qualifications and competitive bidding, and pays the private company.) Alternatively the service may be arranged by means of a **franchise** (i.e., where the City selects the company which receives the franchise, based on qualifications and proposals, and the users pay directly to the private company).
- Collection of construction and demolition debris - by private subscription.
- Collection of industrial wastes from large factories - by private subscription.
- Collection of commercial wastes from hotels, offices, markets or stores - by private subscription
- Collection and final **disposal** of infectious **healthcare** wastes from hospitals and clinics - by private subscription with private establishments, and **concession** or service contract with public establishments.
- Collection of general municipal wastes from entire neighborhoods - by service contract or franchise, or by **management contract** (meaning that the City selects a company to manage government equipment and staff, and pays for that management input).
- Sweeping or cleaning of streets and open areas - by service contract.
- Repair of municipal solid waste equipment - by service contract on an as-needed basis, where each repair job is contracted after solicitation of several quotes from a list of accepted suppliers.
- Repair of municipal solid waste equipment - by service contract on a long-term basis.
- Conversion of waste to compost - by service contract or concession.
- Operation of a **transfer station** and long distance hauling system - by service contract or concession.
- Operation of a disposal site - by service contract or concession.
- Mining (i.e. excavation and screening) of decomposed waste from a disposal site for sale or use as compost soil conditioner - by concession.
- Collection of **user charges** or waste taxes - by franchise with bill collection agents, water authority, or electricity utility.

4.2 Types of private sector arrangements

Private sector participation involves reducing government control, ownership and/or activity within a service, such as solid waste collection and disposal, traditionally provided by government.

4.2.1 Reduced government control

Government **control** is decentralized by **commercialization**. Commercialization can take many forms. Government agencies for solid waste management are restructured into semi- or quasi-private enterprises with some degree of government **oversight**, but with the management freedom to operate at optimum **efficiency** and generate **revenues** exclusively for their own use. 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). This may not be exactly private sector participation, but seeks to graft many of the strengths of private companies onto a decentralized government organization. Various forms of commercialization include: private corporations, public corporations, semi-private corporations, and public authorities.

Commercialization reduces government control over decision making. If the public organization has been fully commercial-

ized, the only government ownership may be the shares and the only influence may be the Board appointments. Each commercialization option is slightly different in its level of autonomy.

Commercialization involves changing the financial arrangements of the solid waste organization, including creation of **segregated accounts** and separate revenue streams. As part of the commercialization process, the public solid waste organization is typically changed in its organizational structure so that has more autonomy and **accountability**.

4.2.2 Reduced government ownership

Government **ownership** is reduced when government-owned enterprises are divested (or transferred to the private sector), and when public/private **joint ventures** are formed.

See Box 4.1

REDUCING GOVERNMENT OWNERSHIP

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 as defined in contractual agreements. While this term is sometimes used broadly to mean all public/private arrangements, it is a legally defined term in some countries (such as Indonesia), signifying a joint venture.

Box 4.1

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. Alternatively, government awards a management contract to a private firm to provide management oversight of others who are providing solid waste services.

Franchise *

Government grants a private firm an exclusive monopoly to provide a specific type of solid waste service within a specific **zone**. The firm collects its own revenues from **generators** within the zone or from the sale of 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 fee** 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 fees paid by non-government customers typically cover the remaining costs. Government provides a guarantee of **flow control**, so that amounts of 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 daily quantity of waste is not provided.

Private subscription

Government licenses private firms to compete with each other in providing solid waste management services. No firm has a monopoly within a zone and price regulation is not required. Each firm collects its own revenues from its customers or "subscribers". (Also known as "open competition")

Box 4.2

4.2.3 Reduced government activity

Private sector participation is also a means of reducing government **activity**. Government activity is reduced when the private sector participates in service delivery through contracts, franchises, concessions, and **open competition** (or private subscription). See Box 4.2.

4.3 **Selecting the most suitable option for waste collection**

Each of the above options has value. Selection from among these options should include consideration of site-specific conditions. Generally, in middle-income and high-income countries, contracting for household collection services is preferred over franchise and private subscription (or open competition). In contracting, government is the client and the source

of payments, and therefore has control to ensure that the **contractor** meets performance expectations. For contracting of collection services to be possible, government needs to have sufficient revenues to fully cover the total costs of the services, including **depreciation**, interest on borrowing, salaries, **consumables**, insurance and profit. When governments provide collection services with their own staff and equipment, their budgets typically include only salaries and consumables – and depreciation costs are hidden subsidies (Box 3.2). For collection contracting to be possible, government budgets for **recurrent** expenditures 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 (or private subscription).

Franchise is sometimes the preferred method of privatizing solid waste collection in **low-income** countries that have very

* 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.

constrained government revenues. Also, in countries which have had a strong socialist or 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 the first case they may feel that their contribution is not necessary, and in the second they may believe that the money will not be used for the intended purpose.) In such countries, residents may prefer the franchise method for 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 insights into residents' preferences. (See Part III, Annex A9.) Theoretically, individuals paying for a service under franchise arrangements have limited individual bargaining power with the franchisee and little influence on the quality of the service, because the franchisee has a zonal monopoly. However, franchisees are financially motivated to satisfy their customers in order to be paid, and experience indicates that franchisees are very responsive to the demands of customers. Government, however still retains overall responsibility. Whilst not responsible for making payments, government still has the responsibility for awarding the franchises only to qualified and responsible firms, and for **monitoring** their performance with respect to agreed specifications.

Private subscription is generally not recommended for household **refuse** collection in **laid-out** (or planned) residential areas, because it does not allow **economies of contiguity** (i.e., the benefit in efficiency when only one collection vehicle travels a continuous collection route to collect waste). However, private subscription is the most common and preferred method of collecting waste from large generators, such as large hotels, embassies, industries, and commercial establishments. Private subscription may also be viable for large residential apartment complexes. Typically, cities require large commercial and industrial sites that generate (say) over 2 cubic meters of waste each day to 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 domestic wastes are also handled through private subscription arrangements, wherein households request special collection of bulky wastes, construction or demolition debris, and yard wastes, (on the infrequent occasions when such a collection is required). Private subscription is also an appropriate way of arranging for the collection of non-domestic special wastes, when establishments request special collection of infectious healthcare wastes, **hazardous** wastes, and spoiled or outdated foods or medicines.

Pre-collection is typically provided through franchise arrangements. In small communities, pre-collection laborers gather the waste from door-to-door and take it to a **communal transfer 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 Indonesian cities, reaching about 70% of the country's urban population. In these cities, pre-collection involves hand carts or tricycle carts collecting the waste from door to door. In some neighborhoods, pre-collection is done by 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 (secondary) collection.

In the mid-1980's, neighborhood pre-collection systems (involving **microenterprises** created by neighborhood residents – Box 4.3) began to be developed in Peru. They are now 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 a pre-collection service directly to a franchisee.

MICROENTERPRISES

The term "microenterprise", when used in the context of solid waste management in Latin America, means more than a very small business. It typically refers to the creation of a new organization from among residents in the neighborhood for the specific purpose of cleaning the neighborhood. Microenterprise workers usually have no previous work experience and have not previously collaborated in such a venture. The microenterprise is developed with the help of external technical, and often financial, assistance. The people have no apparent entrepreneurial ability and they need training and guidance in even simple accounting and contract negotiation. Microenterprises are expressly created with government's approval, and not hired through any tendering process. The concept is that people from the neighborhood are more likely to feel accountable to their friends and neighbors, and also that residents in the neighborhood would be more willing to pay if they know the microenterprise people they are paying and feel responsible to help them with their livelihood. This is one of reasons that youth groups and women's groups are particularly successful - there is the **willingness to pay**. In some cases - only after gaining experience - these microenterprises then venture beyond their own neighborhoods to provide cleansing services in other neighborhoods, as has been the case in Quito (Ecuador).

(There is further discussion of micro- and small enterprises in Haan, 1998)

Box 4.3

Since 1990, a significant number of African cities have been implementing pre-collection schemes. The African examples include microenterprises set up by neighborhood youths in Abidjan (Ivory Coast) and Dakar (Senegal); by non-government organizations (NGOs) in Cotonou (Benin), and by private entrepreneurs in Conakry (Guinea).

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

Phnom Penh, Cambodia has a citywide franchise collection system managed by one company, known as Than. This company has sub-franchise agreements with several companies, through a fee-sharing arrangement. While the city would have preferred to contract out the collection service, the revenue base was far too small for this option to be considered.

The biggest concern associated with using private subscription and franchise systems for solid waste collection is that some waste generators would not be willing to pay for the service and that they would not properly dispose of their wastes themselves.

In the rural areas of the USA, where economies of contiguity are of less importance than in urban areas, private subscription is the most common method of solid waste collection despite its higher cost. Private subscription is preferred because generators like to choose their own service provider, and solid waste costs are only a small portion of household income, so residents may be prepared to pay a little more for a service they prefer. However, every rural community provides a local collection point, so that residents who are not willing or able to pay for a house-to-house 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.

In private subscription and franchises, the residents pay for their wastes to be removed from their neighborhood but do not pay attention to where the wastes are taken for disposal or how much the trucks weigh when fully loaded. In many cases residents would still be willing to pay the collection fee even if the wastes were not taken to an official disposal site. To ensure that wastes are not dumped illegally, private subscription necessitates a strong regulatory and enforcement framework. Franchise agreements should include a clause that the agreement can be **terminated** if the franchisee disposes of waste illegally, and the licenses for

private subscription should be revoked if official disposal sites are not used. This problem is avoided when contractors are paid by municipal authorities, since payment can be made upon proof of discharge of wastes at an official disposal site, often based on the weight of the wastes discharged. This creates an incentive for contractors to dispose of their wastes at official sites.

4.4 Private sector participation arrangements for disposal

For disposal services, in the context of a good environmental regulatory framework and enforcement, open competition (private subscription) is preferred to contracting. 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 a disposal service, it limits the service to wastes generated within its geographical 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 for any pollution resulting from inadequacies in the design. 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, for which the private sector invests in **equipment and supplies**, and a concession, for which the private sector invests in a **facility**. Under a concession, the replacement and repair of the facilities need to be carefully considered, in terms of both the defining of responsibilities and technical aspects.

Privatization of **landfill** operation at existing sites can be achieved by means of 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 a new sanitary landfill using a concession, and Hong Kong has already implemented two new sanitary landfills in this way. In the Colombo case, the World Bank has made available project financing for a significant part of the capital investment, thus minimizing the risk to private sector investors and making the project more attractive to them.



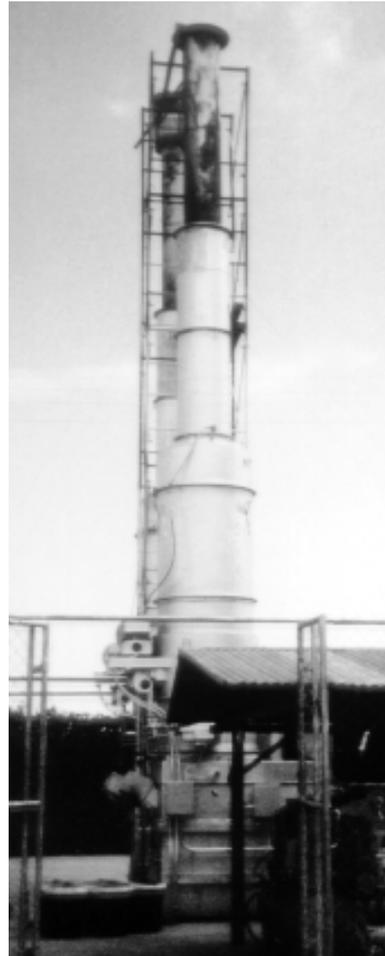
*Photograph 4.1
Landfill operated by a
contractor, Casablanca
(Morocco) 1996*

In Mauritius, under a World Bank project, a sanitary landfill was designed by one contractor, constructed by another contractor and operated by a third. During the transition period between the construction and the operation phases, there were many disputes regarding the adequacy of construction, with the operating contractor refusing to take full responsibility for maintaining the works he had taken over. If, in the long-term, there were adverse environmental consequences (such as groundwater pollution), there undoubtedly would be a legal battle between the design engineer, construction contractor and operations contractor over which one is responsible. The lesson learned was clear – when a new sanitary landfill is to be constructed and operated by the private sector, responsibility for all stages should rest with one company.

To deal with the need for minimizing the investment risk faced by the private sector, the Inter-American Development Bank is now able to provide financing to governments to cover part of the cost of a concession. Invitations to tender can include a statement that financing to the private sector also can be arranged. Both the World Bank and the Inter-American Development Bank can provide guarantees against non-commercial risk.

4.5 Healthcare wastes

Privatization of the collection, treatment, and disposal of high-risk healthcare wastes is recommended. Because hospitals are generally willing and able to pay for such services, the preferred mode of privatization would be a concession agreement to design, build, own, and operate (DBO) the collection and treatment systems for special healthcare wastes. (The concession is basically for the treatment and disposal operations, with the collection included because of the considerable advantages of having one company responsible and accountable for the waste at all stages, from source to disposal.) Also, the same private company could supply the special containers for sharps (such as blades and syringe and drip needles) and infectious wastes (such as bandages and wastes from infectious disease wards).



*Photograph 4.2
Incinerator for healthcare
wastes built and operated
by a private company in
the Philippines*

In Metro Manila (the Philippines), a private sector entrepreneur built a special high temperature incinerator for high-risk healthcare wastes and established a well-controlled collection system. Wastes are sealed in plastic bins at the source and each is given an identification code. The sealed bins are 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 have 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 to have its wastes taken away and treated. See Photograph 4.2

4.6 Summary

SOME EXAMPLES OF WHO IS DOING WHAT IN PRIVATIZATION

Commercialization of the solid waste management agencies:

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

Commercialization of the composting agency:

Ho Chi Minh City, Vietnam

Public/private joint ventures for collection:

Riga, Latvia
Semarang, Indonesia

Public/private joint ventures 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 contracts 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 contracts for transfer:

Lahore, Pakistan
Damascus, Syria

Service contracts for sanitary landfilling:

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

Contracts for vehicle repair and maintenance:

Padang, Indonesia
Semarang, Indonesia

Contracts for performance monitoring:

Buenos Aires, Argentina
Sao Paulo, Brazil
Bogota, Colombia

Franchises for pre-collection:

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

Franchises for collection:

Accra, Ghana
Bogota, Colombia
Conakry, Guinea

Franchises for collection of recyclables:

Cairo, Egypt
Medan, Indonesia

Franchises for mining compost from dumpsite:

Medan, Indonesia
Mumbai, India

Franchise for recycling of construction debris:

Riga, Latvia

Franchises for fee-based cost recovery:

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

Concessions to Build, Own, Operate transfer stations:

Port Louis, Mauritius
Jakarta, Indonesia
Hong Kong

Concessions to Build, Own, Operate sanitary landfills:

Colombo, Sri Lanka
Hong Kong
Lahore, Pakistan

Concessions to Build, Own, Operate compost plants:

Semarang, Indonesia
Porto Novo, Benin

Open competition for waste picking at disposal:

Most cities

Open competition for buying recyclables at source:

Most cities

Private subscription for collection from large sources:

Most cities

Private subscription for pre-collection or collection in marginal areas:

Most cities

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

Box 4.4

Chapter 5: CONSIDERATIONS FOR PRIVATE SECTOR PARTICIPATION

5.1 Introduction

It is relatively easy to improve solid waste collection and *disposal* by involving the private sector. But service improvement is not the most important measure of success. *Private sector participation* is successful only when service improvements are financially sustainable and cost-effective. This chapter discusses some of the considerations for how to optimize private sector participation. Competition, *accountability*, and *transparency* are essential ingredients for successful involvement of the private sector.

To achieve successful private sector participation the following actions are recommended:

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

5.2 Maintain a balance between the private sector and government

Service arrangements need to be

- for a period that is long enough to allow full depreciation of investments,
- on a scale that is large enough to allow economies of scale, and
- competitive enough to encourage *efficiency*.

Until the private sector within a developing country is well established, it is strongly recommended that government retain at least 30% of the overall collection service area, and continue to provide the solid waste collection service in this

part. Often this stage would last for the first five years of private sector participation. After that, for another 5 years, to maximize contestability and minimize the potential for *collusion*, government probably should continue to provide the service in at least 20% of the overall collection service area.

In Stockholm (Sweden), the local government operates 15% of the collection service and contracts out the remainder to five 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 the private sector to improve its methods of operation (Wiqvist, 1998).

In Bogota (Colombia), initially – in 1990 - only one zone of service was awarded to a *contractor*, with government continuing to provide the collection service in about two-thirds of the city. After the next several years, there were eventually three 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 performance of the contractors and the Bogota government collection service were *monitored* and compared by an independent consulting company, to optimize contestability. In 1993, because government could not adequately improve its performance in the zones where it was operating (reportedly due to labor restrictions), the city converted to an entirely *privatized* system, which now has seven zones operated by four *franchisees*. These companies collect *user fees* through a separate company in which all of them are stockholders.

Dakar (Senegal), after experiencing a *public/private joint venture* which was essentially a monopoly, implemented a more competitive privatization arrangement of multiple *service contracts*.

Managed competition has already been discussed in Section 3.6.3. Managed competition has become the most cost-effective service delivery option in the United States. It began in the late 1980s and involves government and the private sector bidding to provide services against each other, and both operating in different but comparable zones in a competitive manner.

Phoenix (Arizona) was one of the first cities to implement managed competition. Initially, the local government team failed to win service zones during the bidding process; but eventually it became a successful bidder and won back many of the city's service zones. Every seven years, in each service zone, Phoenix's solid waste department must compete again with the private sector for the service contract for that zone.

5.3 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 the hiring of new staff. Over a period of time the size of the government workforce reduces because older workers retire and some of the younger staff leave to join the private sector. Private sector participation can then be phased in to cover the shortfall in service, filling the gaps caused by the reduction of the government workforce. 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. Whilst employment is guaranteed, employees are not assured of keeping the same job in the local government workforce. Jakarta (Indonesia) slowly phased in private sector participation to fill the gaps in the collection service caused by the gradual reduction of the government workforce achieved by this natural attrition, without any employee terminations. Phoenix (Arizona), on the other hand, guaranteed employees that they would not need to change jobs, but did not promise that salaries would be maintained at the same levels.

Private sector participation in Bogota (Colombia) did not result in job terminations for government workers until the fifth year of private sector participation, when all the waste collection work was contracted out to private companies because it had not been possible to obtain improved **productivity** from government workers. Other cities of Colombia organized 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 were able to compete effectively

In Mauritius, solid waste collection contractors were obliged to hire workers transferred from local 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 employment policies and so it is not a fair arrangement. It is especially unfair to older “permanent” employees who have worked for many years in government service with the expectation of employment security and a full pension.

In 1998, Quito (Ecuador) studied how best to phase in private sector participation without adversely affecting labor or creating significant extra 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 voluntary retirement, with an attractive lump sum payment incentive, to all workers over 55 years of age who had completed more than 20 years of service. Private sector contractors were required to offer incentives to encourage government workers to transfer to the private sector and work with them. These incentives were targeted at workers who were not eligible for 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.

5.4 Appropriate duration of agreement and the provision of equipment

Contracts or franchises that involve investment in vehicles should have a minimum length of five years, and investment in fixed facilities requires a minimum agreement duration of ten years. Shorter periods lead to higher prices, because contractors or franchisees are forced to depreciate their investments over periods shorter than the normal economic life of the machines or facilities.

Agreement durations should cover the standard depreciation period and thus enable lower costs. For example, solid waste collection contracts in Bogota (Colombia) were set for a five year period. Shorter periods of obligation are possible for privatization of **pre-collection**, because the investments are for equipment such as handcarts which often last for a shorter time and so can be depreciated over a shorter period. Agreements for transfer and disposal should be for longer periods because of the greater investment involved. For example, **transfer station** concession agreements in Jakarta (Indonesia) were for a ten year period, and both transfer station and **sanitary landfill** concessions in Hong Kong were for 15 years.

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 has been done for a World Bank financed project for secondary cities in Ghana. (For suggestions regarding contractual arrangements for equipment, see Section A10.2.2b in Annex A10 of Part III and the comments in the NSWMA document in Part V.)

5.5 Flow control and regional agreements

A significant issue for successful implementation of **regional** solid waste facilities is **flow control**. In **transfer**, treatment and disposal contracts this issue needs to be carefully addressed to minimize risk to private investors. Flow control involves the guarantee that a minimum quantity of waste will be delivered to a facility. Private sector participation contracts should specify the minimum, and require a “**take or pay**” commitment from government, wherein government either ensures that the agreed amount of waste is brought to the facility or pays the sum that it would pay 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 1980s; the closure of a privatized composting plant in Semarang (Indonesia) in the 1990s; and loss of **revenues** at a privatized sanitary landfill in Mauritius in 1998. In the case of regional facilities that are intended to serve many municipalities, it is more difficult to oblige each municipality adhere to the flow control requirements, even though each is a signatory of the **intermunicipal** agreement. New political administrations sometimes walk away from the commitments made by previous administrations, without paying any 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 obligations defined in such agreements. In the case of regional disposal facilities, provincial government and/or central government may need to provide flow control guarantees. Perhaps such guarantees could be backed by the option of making adjustments in central government financial transfers to local governments, thus discouraging municipalities from abandoning their commitments.

Concern over flow control is greatest for disposal facilities. Where transfer facilities are available, there is an inherent economic incentive for **haulers** to bring their waste to the transfer stations, because they save money on transport. In contrast, disposal is simply a cost to haulers and waste collection agencies (and this cost can be avoided by **clandestine** dumping). 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 private entrepreneur planning to provide a solid waste disposal service for a region would need to be sure that the environmental regulatory framework is adequately developed and that this framework and any flow control agreements would be effectively enforced, so that the waste continues to arrive at his site.

5.6 Worker Health and Safety

Data from high-income countries show that laborers in solid waste management face a relatively high risk of disease and injury. In Denmark, solid waste workers are six times more likely to have an occupational infectious disease compared to 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 operators of heavy equipment,
- respiratory infection from **bioaerosols** during loading of collection vehicles,
- 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, and
- vehicle accidents during collection.

The range of adverse health impacts that could threaten solid waste workers is described by Cointreau-Levine (1998).

With private sector participation, special care must be taken to ensure that worker health and safety are not being sacrificed in an attempt to reduce costs. The private sector in developing countries is, in general, not regulated in terms of occupational health and safety. Furthermore, most private sector operations in developing countries rely heavily on workers hired on a daily or short-term basis. Such workers receive little or no training, and have no leverage (such as labor union membership) to support their requests for safe working conditions. Therefore, care is needed to ensure that contractual agreements cover the requirements for worker protection.

5.7 Willingness to Pay

Although solid waste management service is a **public good**, collection of **user charges** enables the service to be financially sustainable. House-to-house surveys can indicate which methods of waste collection are preferred and the sensitivity of **generators** to the level of the charge that they will be asked to pay. Surveys also provide contextual information on the economic levels of households and their ability to pay for service. On the other hand, until people actually receive a service and experience its benefits, they are not able to predict accurately 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, the start of the waste collection service. Annex A9 in Part III provides a sample willingness-to-pay survey questionnaire, and the questionnaire is also available in electronic format in Part V.

People in developing countries tend to be willing to pay for a service that they receive directly to their house, such as **curbside** service. But experience in developing countries indicates that generators are not willing to pay for a service which comes only generally to the neighborhood, such as the emptying of shared or **communal** containers, unless they pay for that service as a community. For example, in Accra



Photograph 5.1
House-to-house waste collection by contractor, Jakarta (Indonesia).

(Ghana) residents resisted paying a fee at the communal container for each load of waste they discharged into the container. On the other hand, in Sekondi-Takoradi (also in Ghana), residents agreed to pay their neighborhood association so that the association could, in turn, pay for the communal container to be emptied periodically. Similarly, residents of neighborhoods in Conakry (Guinea) paid as a neighborhood group for each emptying of their communal container.

Cities in Indonesia have used this *cost recovery* mechanism for more than a decade. Pre-collection (with pushcarts going from door to door) is managed by the neighborhood leaders. Secondary collection from the neighborhood *transfer depots* is provided by the city administrations. Residents pay their neighborhood leader for both pre-collection and secondary 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 a service provided by the private sector than for a similar service provided by government. This is partly because of a traditional bias that taxes are paid so that government can provide services, and therefore no further fee should be necessary. But, more importantly, there is a greater readiness to pay a fee to a private contractor because of the perception that private sector service is more efficient and reliable than government service. If the financial arrangements for a private sector service are well structured, so that poor service delivery is penalized by a reduction in income, the resulting efficiency and reliability of service are likely to be high.

5.8 Defining equitable collection zones

In many developing countries the private sector solid waste management industry is not well developed and the ethical

framework is often inadequate to minimize collusion and *procurement* irregularities. Therefore, the zones delineated for private and government service need to be as equitable (or similar) as possible for contestability to be assured.

It is not possible for the zones to be identical; each zone will have some unique differences. One mistake that has often been made 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 tendering process that recognizes that each zone is unique and allows contractors or franchisees to bid for work in each zone according to the conditions that exist in each particular zone.

For reliable collection services, it is recommended that, for private sector involvement, the minimum zone size should require at least three vehicles, so that if one of the vehicles breaks down, the remaining two trucks can finish the day's work by operating during a second shift. However (as discussed in the next section), for economical and effective supervision, the optimum *span of management* for each supervisor or mechanic is normally about five trucks, suggesting that zones should be sized for five vehicles. As a consequence it is recommended that each zone should typically include 50,000 to 100,000 residents. Zones for private sector participation in Caracas (Venezuela) and Bogota (Colombia) were developed to attract international waste management contractors and so were considerably larger. When international contractors are involved the zones should have populations of approximately 400,000 to spread the cost of foreign expertise for supervision of planning and operations.

To make the zones equitable, each zone should have a similar level of difficulty to service and a similar 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 A7 in Part III.

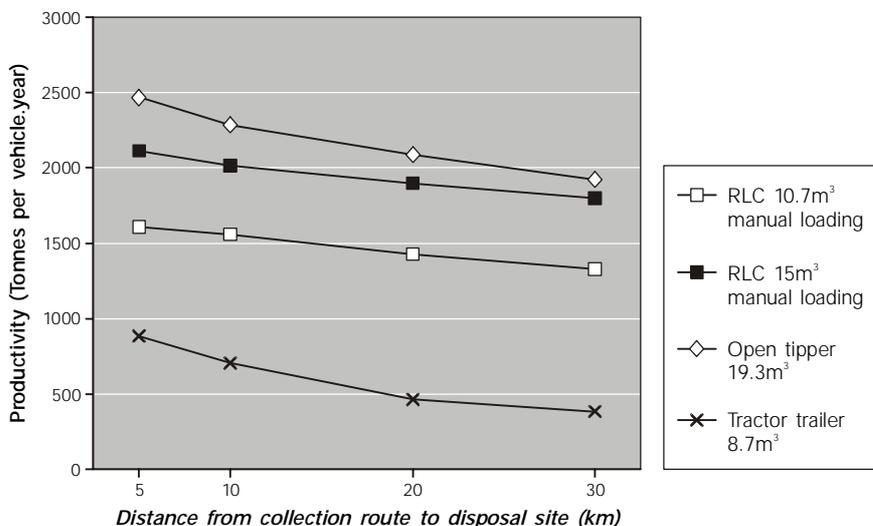


Figure 5.1
The productivity of different vehicles for Port Louis (Mauritius). Productivity depends on many factors including the type and size of the vehicles and the distance to the disposal site.

5.9 Economies of scale and span of management

Each method of collection (such as animal cart, tractor with trailer, or compactor truck) has a particular quantity of waste which it can collect during its daily work period. By *pilot testing* alternative loading techniques and crew sizes, coupled with *time-and-motion* analysis, a realistic estimate of this quantity can be determined. The quantity that can be collected each day 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).

Figure 5.1 shows the **productivity** of various equipment options for Port Louis (Mauritius)

For economies of scale in collection, each equipment unit needs to be fully utilized. The cost of collecting one tonne or one cubic meter of waste using different types and sizes of truck should be calculated based on data from pilot tests and time and motion studies. Only vehicles that are suitable in terms of weight, size and maintenance requirements should be considered. In this way the most economical size can be selected.

For efficient operation, the group of equipment units needs to operate at the optimum span of management for supervisors and mechanics. For collection trucks, the optimum span of management for supervisors and mechanics is usually 1 per 5 units. On the other hand, for manual pre-collection equipment (such handcarts, animals carrying pannier baskets or pulling carts), the optimum span of management for supervisors is about 1 per 10 units. For mechanized pre-collection equipment (such as **power tillers** with trailers), it ranges from 1 per 5 units to 1 per 10 units.

In the case of **transfer systems**, the sizes of the collection areas served by each transfer station should be determined in relation to the capacity of the **transfer vehicles**, so that the transfer vehicles are fully utilized. The size of the transfer vehicles and the distance to the disposal facility affect the quantity of waste that each vehicle can reasonably handle, as illustrated in Figure 5.2. Economies of scale for the bulk transport of waste from the transfer station favor large collection areas and few transfer stations, each transfer station handling large quantities of waste. However, the pre-collection stage would suffer if the collection zones became too large because the waste would need to be carried further to reach the transfer station. Therefore it is important to consider all the costs of the whole system. Another consideration, though less important, that may influence the size of the collection zones is the effect of the spacing of the transfer stations on the ease with which a supervisor can travel from one to another to supervise operations.

Economies of scale in disposal of solid waste are based more on the constraints of the facility itself than on the mobile equipment that it uses. There are very significant economies of scale for sanitary landfill. Figure 5.3 illustrates this fact by showing the cost differences for two sanitary landfill

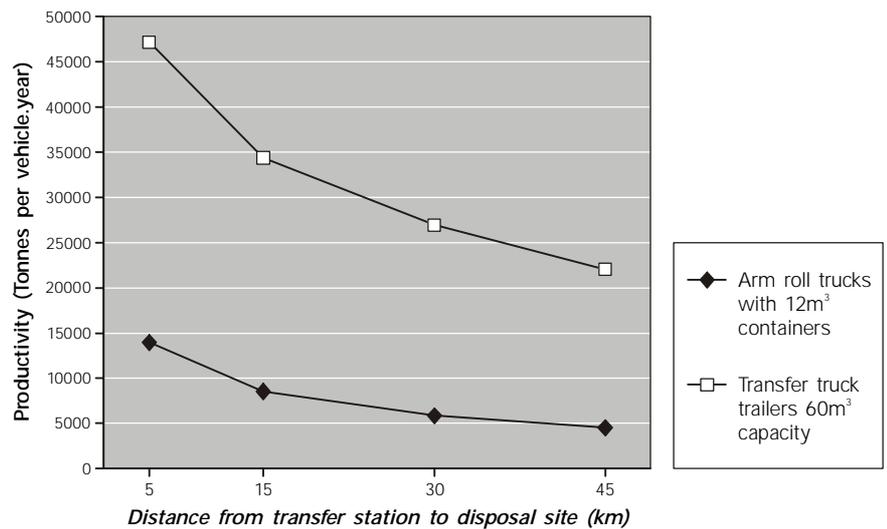


Figure 5.2
The effect of the distance to the disposal site on productivity, for two types of transfer equipment, Quito (Ecuador).



Photograph 5.2
Using a power tiller and a crew of five to collect waste under a franchise agreement in Accra (Ghana) 1997

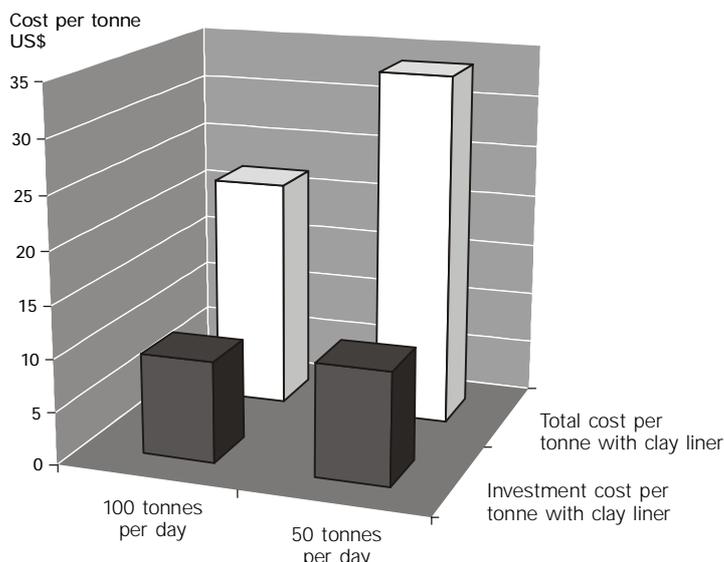


Figure 5.3
Economies of scale for landfill costs in El Salvador

sizes for El Salvador. The international private sector typically looks for a minimum landfill capacity of 300 tonnes per 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 5.1 contrasts the need to divide an urban area into collection zones with the need for bundling or grouping for the purposes of **transfer** and disposal.

ECONOMIC IMPACTS ON SOLID WASTE MANAGEMENT RATIONALIZATION

■ **For collection – Divide**

Divide the city into zones which enable collection economies of scale and optimize competition.

■ **For transfer – Bundle**

Bundle collection routes by constructing transfer stations and using large transfer vehicles when economic analysis indicates that this is cost-effective.

■ **For Disposal – Bundle**

Bundle cities and towns into regional groups of municipalities which enable economies of scale in disposal.

Box 5.1

5.10 Contractual clauses

Annex A10 in Part III provides a detailed listing (with some discussion) of issues which need to be addressed in the development of contractual agreements between the private

sector and government. A model collection and sweeping agreement, which is usable with either contractors or franchisees, can be found under the file name “SC-Lcoll” in Part V, together with some other sample contracts. The following list of categories of requirements indicates some of the issues that should be covered during the preparation of tender and contractual documents for privatization of any solid waste management service. (In the list below, the “Company” is the private sector entity which provides the service and the “Employer” is the **grantor** – usually local government - that is responsible for the provision of a service.)

Categories of requirements:

- types of services to be provided under the agreement;
- specified outputs from the Company in terms of quantity and quality of services;
- requirements regarding the age of equipment to be used and, perhaps, allowances for recently refurbished equipment;
- requirements on ownership of equipment and/or allowances for leasing of equipment;
- designated holidays or non-service days, if any;
- warranties, insurance, road and other taxes, vehicle registration, and company registration responsibilities of the Company;
- guarantee against political instability to be provided by the Employer;
- financing and bond requirements;
- subcontracting or subleasing provisions;
- foreign currency exchange requirements;
- cost indexing clauses for fuel, labor, and general **consumables**;
- **permit** requirements (such as permits required to operate waste management facilities - see also Section 5.17);
- reference to separate leasing arrangements between the Employer and the Company;
- length of contract;
- method, place, and timing of payments to the Company;
- inspections and audit requirements;
- procedures for handling complaints;
- **sanctions** for poor performance;
- allocation of risks, and remedial measures;
- circumstances in which the agreement may be terminated, definition of default events, and **step-in rights**;
- **Force Majeure** clause;
- indemnity clause; and
- arbitration procedures in the event of unresolved conflict.

Standards and requirements for performance should be carefully specified in private sector participation agreements, with adequate provision made for monitoring and penalizing the company (the magnitude of the penalties being commensurate with the seriousness of any failure in performance). Contractual agreements in many developing countries specify only that a zone should be “cleaned” - a performance measure that cannot be measured. Contractual documents should

specify outputs in quantitative terms, such as the amount of waste to be collected and the frequency at which the service should be provided.

Allowance should be made for the particular conditions of different zones. This was not done in Jakarta (Indonesia) where contractors were paid on a lump sum basis for cleaning, and payments for each zone not adjusted according to the distance to the disposal site and the difficulty of cleaning the particular zone.

Where major new facilities are being implemented, flow control (Section 5.5) is a key issue to be resolved.

Environmental requirements, such as the use of enclosed truck bodies or the covering of each load with a tarpaulin, and limits for exhaust fumes, need to be included. Health and safety measures for workers - including preventive vaccination and the provision of gloves, respiratory protection, boots, and uniforms - should be specified in the contract. For example, each contractor in Jakarta has uniforms and vehicles of a particular bright color, thus facilitating performance monitoring by residents and city officials.

5.11 Monitoring of performance

Performance monitoring establishes a basis for evaluating the efficiency, *effectiveness*, and cost of service delivery. It defines the “rules of the game” and measures how well the “game” is being “played”. Comparative performance monitoring of all private sector and government players 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; in addition, service delivery is linked with consumer satisfaction, and so actions are linked with their consequences. There is effective feedback.

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 the results of the monitoring among the different service providers, and
- comparison of the results of the monitoring with results obtained from earlier monitoring exercises.

The aspects of performance that are monitored include:

- service frequency and quantity;
- service efficiency and productivity;
- service reliability;
- service quality; and
- service cost.

For each activity being monitored, a wide variety of performance measures is possible. Annex A2 in Part III provides a

detailed list of possible performance measures for use in monitoring collection and disposal. Some examples of performance measures for solid waste collection are:

- number of households and establishments served per day, length of street swept per day, and length of drain cleaned per day;
- frequency of collection, street sweeping, and drain cleaning;
- tonnes or cubic meters of waste collected daily per solid waste collector, sweeper or drain cleaner;
- tonnes or cubic meters of waste collected daily per vehicle, according to vehicle type and size;
- number of trips (loads) made daily per vehicle, according to vehicle type and size;
- cost per tonne of collection, and cost per kilometer of street sweeping and drain cleaning;
- equipment breakdown frequency and duration, traffic violations, and accident rate per vehicle.

The contractual agreement should clearly define the performance measures by which the performance of the private sector service provider will be assessed – at least initially. In the early stages of private sector participation it is difficult to anticipate how well the selected performance measures will serve all parties. Therefore, a mechanism for annual review and amendment of performance measures is suggested. Actions that would constitute poor performance need to be clearly stated, and sanctions specified for each failure. Examples of poor performance are outlined in Box 5.2. Sanctions are typically penalties for each type of failure, the size of penalty increasing with each repetition of the same shortcoming. After a specified number of failures and related sanctions, the contract typically allows the grantor to cancel the contract, franchise or concession, or the *license* of the company may be revoked.

EXAMPLES OF POOR PERFORMANCE

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

Box 5.2

The key control location 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 facilities are also useful for monitoring operations. For example, in Lahore (Pakistan) four different points were used for performance monitoring of the private contractor who was transporting waste from a transfer station to the disposal

site. Two separate government agencies manned the different checkpoints, one at three points and another at one point. The inspectors at these checkpoints were responsible for writing the times when each truck passed by en route to the disposal site. For performance monitoring that allows comparison of public and private services, records of the volumes or weights of all loads delivered at the unloading points are essential.

For comparative performance monitoring of public sector versus private sector service, it is advisable to create an independent arrangement. A separate monitoring office within local government may be created for this purpose. 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 (Osborne, 1993).

It is also possible to contract for performance monitoring with a private consulting firm. In Bogota, local government continued to provide waste collection services in over 30% of the city area for nearly five years, and the service delivery performances of both government and the private firms were regularly compared by an independent consulting company. This consulting company operated the *weighbridge* at the disposal site as part of its contract requirements. Sao Paulo (Brazil) had a similar arrangement with a private firm, and used a management information system for reporting. Dakar (Senegal) assigned responsibilities for monitoring of the private contractors to four separate entities, to assure accuracy and objectivity in the data.

The costs of disposal operations should be paid from income derived from *tipping fees*, which are charged for each load of waste delivered to a transfer station or disposal site. In order to avoid paying these fees, private sector operators may be tempted to unload their waste clandestinely, at an unauthorized place. To safeguard against clandestine dumping, prohibition of such practices and vigilant enforcement are essential. Initially, tipping fees are set at a low enough rate to encourage full compliance with disposal regulations. Eventually, once the discharge records of all generators and haulers are clearly established (so that the authorities know how much waste can be expected from each source), tipping fees should be increased to cover the full costs of *transfer*, disposal, and *vigilance* against illegal dumping. Such a program has been successfully implemented in Izmir (Turkey).

5.12 Guarantee against political risk

Risk of political intervention is a major issue blocking effective private sector participation in many developing countries. Of particular concern is political intervention in the selection of contractors and interference in actual operations. Certain

neighborhoods may be given priority for public cleansing, because of the political influence of the residents. Private contractors are concerned about whether they will be paid fully and on time, without demands for *kickbacks*. There are numerous examples of private companies having their contracts canceled when these contracts have started to generate a significant profit, so that the work can be awarded to others with better political connections. With each change of 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 prefer to provide collection services under franchise agreements paid directly by customers through *direct user charges*, rather than under contracts with local government, paid from general revenues. For major new facilities (sanitary landfills and transfer stations), private firms may prefer DBOT concessions that have a significant level of government financing, also because of perceived or anticipated political risks.

In the case of such DBOT concessions, ownership can be transferred early during the concession period, after full payment for the capital investment. Hong Kong transferred ownership of its recently implemented sanitary landfills and transfer stations within one year of commissioning. This was done when the contractor had demonstrated that the facilities were operating properly, to reduce the risks to the private sector companies involved. Also, speedy transfer of ownership gave government more autonomy to curtail a contract that was not being well executed, in order to replace the unsatisfactory contractor. However, most developing countries do not have sufficient financial resources to enable them to follow the example of Hong Kong, unless they receive external financing (from organizations such as the World Bank or the regional development banks).

One way to minimize political risk is to form *public/private partnerships* (Section 4.2.2), as has recently been done for a hazardous waste disposal facility in Thailand, a collection system in Latvia, and a solid waste incinerator in Indonesia. However, such partnerships do not allow a reasonable degree of contestability. Governments find it difficult to enforce contractual requirements or impose sanctions within such partnerships.

Another way to minimize political risk is to implement a guarantee against non-commercial risk (such as the guarantee of the World Bank). These guarantees protect against all types of non-commercial risks, including foreign exchange conversion, expropriation, and refusal to abide by the terms of the contract or to respect the decisions of independent arbitrators. Thus far, the World Bank's guarantee has been applied to only a few projects; one example is a large power project in Pakistan. However, it can be adopted and applied at any time for any type of privatization project, whether or not the Bank is involved 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. Upgrading of the arbitration system may also help to reduce political intervention, if it allows private firms access to equitable judicial resolution of any conflict arising during a contract. Thirdly, multi-year contracts lessen the potential for political intervention. These steps have recently been successfully taken by the Government of Indonesia, because of its desire to attract private sector financing for its public infrastructure.

5.13 Guidelines for effective procurement

Government has as its objectives

- to minimize its efforts,
- to pay as little as possible for good service, and
- to gain the appreciation of voters.

The private sector has as its objectives

- to minimize its costs,
- to maximize short-term profits, and
- to develop a good relationship with its client.

The procurement process needs to take these objectives into account and attempt to achieve a win-win arrangement for both government and the private sector. Good companies rise to the position of leadership and win contracts when the procurement process is well structured.

To be effective, the procurement process should be

- well advertised, to attract a large number of qualified bidders,
- transparent enough to convince well-established and reputable firms that they can compete fairly with younger firms,
- equitable enough for foreign firms to believe they can compete fairly with local firms, and
- scheduled so as to give all bidders enough time to prepare a good bid.

5.14 Shift in budget allocations needed for private sector participation

When the private sector is engaged to provide a service, all currently hidden subsidies to government solid waste departments need to be included in payments to the private sector for services rendered. These hidden subsidies have been discussed in Section 3.4. They include **debt servicing**, customs duties, insurance, vehicle registration, social benefits, administrative overheads, and **utilities** charges. Also, capital budget allocations periodically provided in government budgets need, instead, to be considered as **recurrent** costs.

When the collection system is labor-intensive, privatization could lead to a reduction in a municipality's recurrent expen-

ditures. However, when the collection system is capital-intensive, privatization requires a significant increase in municipal recurrent expenditures, because depreciation and debt financing costs need to be paid to the private sector as part of the costs of providing the service. This involves recognition by local and central governments that private sector participation requires budgetary shifts from capital development transfers and other capital allocations to recurrent budgets.

Most recurrent budgets for solid waste management would need to be significantly larger if services are privatized. (Recurrent budgets for public sector operations typically include only salaries of operational personnel who are directly involved, fuel, tires, and spare parts.) 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 nearly 40 per cent (i.e. by about 55,000 Sucres (\$12) /tonne to 196,000 Sucres (\$44) /tonne).

5.15 Financing

The first thing that the private sector will investigate when considering investment in solid waste service delivery is whether government has the financial means to honor its contractual commitments. Box 5.3 provides a breakdown of solid waste management costs in developing countries and can be used as a framework for proper finance planning. It shows that, compared to collection, sweeping has a lower proportion of capital costs and a higher labor component, and that disposal requires proportionately more capital than collection or sweeping.

BREAKDOWN OF SOLID WASTE MANAGEMENT COSTS – TYPICAL RANGES

	Collection	Sweeping	Disposal
Capital costs	30 – 40 %	20 – 30 %	50 – 55 %
Labor costs	15 – 40 %	50 – 70 %	10 – 20 %
Consumables & maintenance	30 – 45 %	10 – 20 %	30 – 35 %

Box 5.3

Local government may obtain finance to cover capital costs from the following potential sources:

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

Increasingly, more and more developing countries are looking to the private sector for capital investment in the solid waste sector. Hong Kong, whilst not a developing country, set the trend for East Asian developing countries. Hong Kong has implemented an entirely new set of transfer and sanitary landfill facilities in the past six years with private sector financing through concessions. Indonesia and Malaysia have focused heavily on this over the past five years, using private sector investment to address the shortfall in collection services 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 right to develop the site.

5.16 Cost recovery

Apart 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. Taxes are one means by which local government can raise money to pay for services, and tax revenues are typically paid into *general* local government accounts or sometimes into the central government treasury. The private sector usually prefers a direct cost recovery system based on user charges, and also prefers that all of this income goes to a *segregated account* dedicated to 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:

- general local government revenues;
- penalties for littering, clandestine dumping and other solid waste infractions;
- license fees from private haulers of solid waste;
- revenues from the 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 customer since collection of fees may be more difficult if there is dissatisfaction with the service. User charges also provide revenues that can be reliably reserved for the solid waste sector. Furthermore, 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 which must themselves raise the revenue they need (Osborne, 1993). This involves the creation of segregated accounts and direct user charges. Box 5.4 gives examples of direct user charges from many different countries.

EXAMPLES OF DIRECT USER CHARGES FROM ASIA, AFRICA AND LATIN AMERICA

In its national strategy in 1988, Indonesia set a policy that municipalities should implement cost recovery through direct user charges, recommending tariffs averaging 1% of household income. Several Indonesian cities (notably Bandung, Medan, Surabaya, and Jakarta) have been successful in implementing the strategy, and have been recovering from 35% to 70% of total costs.

In 1991, Olongapo City became the first city in the Philippines to implement direct user charges to cover solid waste management costs, and cost recovery of about 35% of total costs is being achieved.

In 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 US\$24,000 per year (increasing by 10% every 5 years) to the City for the privilege of having the exclusive monopoly to provide solid waste management services. 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.

In 1996 in Hué (Vietnam), only 7% of recurrent costs for solid waste collection were being covered by direct user charges. Similarly, only 11% of recurrent collection costs were recovered in Nam Dinh (also Vietnam).

Accra (Ghana); Ouagadougou (Burkina Faso); Cotonou, (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 per cent of total system costs and, in most of the city, are collected by special government bill collectors and deposited into segregated accounts dedicated to solid waste management. Some parts of the city are served by a private *concessionaire*, who collects the fees directly from residents served. In 1996 in Bamako (Mali), about 95 per cent of the costs of pre-collection by donkey cart were covered by direct user charges. Nearly 100 per cent of the upper-income residents paid fully and on time, and about 45 per cent of the low-income residents paid.

In Sekondi-Takoradi (Ghana) all businesses within the city pay an "environment tax" as part of the fee for their annual business licenses. The receipts are used to help pay the costs of the city's sanitary landfill.

Municipalities in Ecuador raise their solid waste revenues largely by a 10 to 12 per cent surcharge on the electricity bill paid by each household. Quito (Ecuador) raises all of the money it needs to cover its existing level of recurrent expenditure, and even to finance capital expenditures equivalent to 6 per cent of its total costs. To obtain these revenues, it pays a 4.5 per cent commission 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 added to the bills of the municipal electricity company. Because Guayaquil has a significant industrial base for revenue generation, a commission of only 1.5 per cent is charged by the electricity company.

Box 5.4

Municipalities may attempt to set solid waste management tariffs by charging owners or residents according to the area of their properties. 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* (land survey) information is up to date and billing of landowners is relatively easy or automated, as is the case in Singapore and South Korea. Charging according to property area is difficult where cadastral information is incomplete.

An alternative method of setting the tariff and collecting the fee, which has been used successfully in Ecuador and elsewhere, is to collect the fee for solid waste management as a surcharge on the electricity bill. A small commission is paid to the electricity utility for this service (Box 5.4).

When the tariff has been set and the demands for payment of the fees sent out, there may be problems in collecting the revenue in an economical and effective way. Problems are exacerbated where the landowners are not locally available or are out of the country, as has been experienced in municipalities of Morocco and El Salvador.

To address problems of fee collection, 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 the same fixed fee each month (10 Colones per family each month) for solid waste management. Similarly, in Tema (Ghana) solid waste fees are collected door-to-door. Tema uses commissioned bill collectors hired by government.

Citizens of Cotonou (Benin) bring their user fee to a local fee collection office. Similarly, as part of a project that has GTZ technical assistance, residents of Cojutepeque (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 a project financed by the World Bank, residents were required to bring their fees to a local bank.

Pre-collection of domestic solid waste 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 in Conakry (Guinea) and Surabaya (Indonesia), the neighborhood revenues are also large enough to provide at least partial payment of (secondary) collection costs related to emptying the communal container or removing waste from the communal collection depot.

Cost recovery is also possible through the sale of recyclables and recovered resources. For example, in Accra (Ghana) a composting operation has been set up with German technical assistance. Solid waste and treated *septage* sludge are co-composted. The cost of producing one cubic meter of the compost was US\$ 9.2. But the market has been willing to pay only US\$ 3.2 for a cubic meter of compost. The compost is now also marketed in plastic bags, at a higher price. At the price of 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 per cubic meter of solid waste converted into compost.

In the end, the secret of success 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 maximize the trust of generators.

5.17 Licensing

For collection of special wastes (such as from hospitals and laboratories), 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*. (Reputable companies that operate according to government regulations would not be able to do the work as cheaply as an unscrupulous company that cuts costs by unacceptable practices.) As part of a licensing program, legislation is necessary to require all waste generators to hire only licensed haulers. Box 5.5 summarizes the reasons why licensing is necessary, and Annex A3 in Part III provides a listing of licensing criteria to consider when privatizing, particularly when *private subscription* methods of private sector participation are being considered.

WHY HAVE A LICENSING SYSTEM ?

- Licensing protects customers from incompetent private organizations, fraud, unfair pricing, and (perhaps) liability.
- Licensing assists 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 5.5

Private haulers collecting hazardous wastes and private facilities handling hazardous wastes should be required to have a special license, in addition to the license they would need to handle general industrial refuse. To qualify for this license, they should be required to complete training in the health and safety aspects of hazardous waste management, as well as receiving instruction on special equipment and handling procedures.

The financial strength of the company is an important criterion for licensing facilities for which long-term ability to protect the environment is essential. For sanitary landfills, the United States has published detailed guidelines on financial requirements that landfill owners and operators must satisfy. These

minimum financial requirements include bond provisions, record keeping, and net worth. ("Financial Assurance Mechanisms for Corporate Owners and Operators" 40 CFR Part 258, final rule published April 10, 1998 in the Federal Register). The purpose of these requirements is to ensure that the operator has the financial resources to react to any pollution risk from the site for a long period after the site is closed.

For hazardous wastes to be managed appropriately and separately from general *municipal solid wastes*, there needs to be a special regulatory framework for hazardous wastes. Such regulation should be enforced by provincial or central government. 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 the costs of transport, treatment and disposal of their hazardous wastes.

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. The cooperative was given assistance with training and in the sale of their recyclables through the development of networks with buying agents. Any individual in Surabaya is allowed to collect waste from door to door, but only registered pickers (with photo identification cards) are allowed at transfer and disposal facilities. More than half of Surabaya's waste pickers had decided to register by 1996.

Licensing should generate income. At a minimum, the fees should cover government's costs for audit, administration, and monitoring of licensees. The fees are often based on the estimated future gross revenues of the waste management contractors. Annual auditing of all accounts provides a basis for annually updating the license fee.

Licensing often involves amending City byelaws to allow licensed private organizations to provide solid waste collection services. The regulatory framework must prohibit residents and establishments from making use of any private organizations that are not licensed. (Generators may be allowed to manage their own waste.) The most important sanction against licensed firms that do not work according to the regulatory framework is that their licenses can be revoked following a prescribed procedure of warnings and sanctions. Appeal and arbitration procedures need to be defined within the licensing rules. The rules should also specify any procedures for allowing a revoked license to be reissued.

5.18 Capacity building

It might appear that private sector participation reduces the need for *capacity building* in municipalities since work that was previously done by the municipality is now done by the private sector. In fact, the introduction of private sector participation usually requires municipal strengthening, because of

the new tasks which municipal managers are required to perform. Local governments often need technical assistance and training so that they can

- write competent tender documents for privatization of solid waste services,
- prepare estimates of waste quantities and service costs for central government,
- handle complaints, and
- monitor the performance of the private sector operators.

Many countries pay large sums of money to solid waste contractors, and yet are unwilling to allocate even a small amount to providing staff, transportation and communication facilities for performance monitoring. Only seven inspectors were engaged for the whole of Phnom Penh to monitor the performance of the city's private franchisee, which held a monopoly for the solid waste collection service for the entire city. Similarly, in Mauritius, only two inspectors were engaged to monitor all transfer and disposal operations conducted by private contractors throughout the island. If insufficient resources are devoted to the supervision of private sector firms, it is difficult to ensure a good service and to prevent clandestine dumping.

Information and training are often needed on the technical aspects of solid waste management and procurement procedures. Governments need help with technical and economic decisions such as:

- What requirements should be specified regarding the vehicles to be used for collecting waste?
- How large should the collection zones be?
- How frequently should waste be collected?
- Is source segregation of recyclables economic?
- Are transfer stations desirable?
- How many disposal sites should be implemented?
- What type of treatment and disposal is cost-effective?

They also need help in assessing what method of private sector participation will give good results and achieve lower 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 for its operation?
- Should all solid wastes in a given area be collected 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 automatically and always result in the lowest possible bid prices being offered. However, in many developing countries, competition is not well developed, and laws governing cartels, collusion and price setting are seldom enforced. A number of 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 directors of the companies that are bidding. All of these unethical practices limit actual competition in many developing countries. Therefore, capacity building may be required to enable local government to prepare its own cost estimates prior to bidding. In the case of collection, these estimates should take into consideration the unique characteristics of each zone such as:

- ease of access,
- the willingness of the residents to cooperate,
- the average distance between stops,
- the method of storing wastes at the source,
- traffic,
- the distance to the transfer facilities or disposal site, and
- road conditions.

Government needs to be able to estimate a target fee (for the work to be tendered) that considers the full range of costs which the private sector pays and provides for an acceptable profit margin. The costs which the private sector must pay include debt service on investment, insurance, registration, fair wages and benefits for workers, uniforms and protective clothing and equipment, and marketing, as discussed in Section 3.4.

The Republic of Trinidad and Tobago was one of the pioneering countries in contracting out collection. There, private companies have been collecting solid waste for over thirty years. Over half of the nation's solid waste is collected by private contractors. Yet, government does not prepare cost estimates for the zones. Each year's bids are simply compared to the previous year's bids to check if they appear reasonable ... and it is assumed that the bidding process automatically leads to the lowest possible bid prices being offered. This suggests that even administrations with long experience in private sector participation could benefit from capacity building.

Subsections (a) and (b) below list issues that generally need to be addressed in capacity building for improved solid waste management and in preparation for the participation of the private sector:

a) **At the municipal level:**

- Strengthening of municipal capacity to analyze existing costs and project the estimated costs of various privatization activities which could increase investment and improve efficiency in the solid waste sector;
- Creation of new municipal ordinances to achieve the following objectives:
 - ➔ to require residents to cooperate with any private sector agent of the government assigned or licensed to provide service, including economic groups, non-government organizations, *microenterprises*, and private enterprises;
 - ➔ to require residents to pay for the service they receive in accordance with regulations concerning the revision of fees at regular intervals;

- ➔ to require residents to make their waste available to the collecting agency in the appropriate way. (In the case of curbside collection waste should be put out at the right time on the designated day and the an appropriate container – a household dustbin or plastic bag. If a yard collection service is to be provided, generators are required to ensure that their wastes are accessible. For block collection the residents are required to bring their wastes to the waiting vehicle. If communal containers are to be provided, generators should be required to place all wastes inside these containers.);

- ➔ to require residents to cooperate with policies and programs that seek to minimize waste generation at the source, and encourage source segregation of recyclables or special wastes for special collection;

- ➔ where private subscription arrangements have been introduced, to require residents and establishments to use only licensed private haulers for the collection of wastes. (This may apply only to certain types of waste such as recyclables, construction and demolition debris, garden wastes, high risk healthcare wastes, hazardous household wastes, hazardous industrial and commercial wastes, or non-hazardous wastes from large sources);

- Strengthening of capacity to specify technical requirements and performance standards, operations 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 companies interested in providing solid waste services, conduct a transparent and accountable evaluation of bidders, and negotiate the terms of agreement;
- Developing favorable arrangements which allow municipalities to engage private sector service providers, with minimal bureaucratic obstacles and delays, and for a multi-year period which matches the depreciation period of the necessary investment;
- Improving the flexibility and efficiency of the municipal workforce so that it can compete with the private sector. This may include the 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 which receive all income from direct user charges and special taxes designed to support the solid waste system, so that revenues are not shifted to other sectors for political reasons;
- Assistance in the creation of inter-municipal agreements for improved collection, transfer, recycling, treatment or disposal in large *metropolitan* areas;
- Development of competence in supervision and performance monitoring, 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 poor performance and illegal conduct.

b) **At the central government level:**

- Development of policy guidance on private sector participation and cost recovery, to enable municipal leaders to take the political steps to make the necessary changes;
- Development of strong legal deterrents against clandestine dumping of wastes and the use of open dumps, coupled with adequate capacity for vigilance and enforcement; and
- Development of 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 analyses 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, but this one is open to both government and private sector solid waste managers. By means of regular meetings and seminars, such associations can promote the exchange of information on existing systems and new concepts, as well as providing a lobbying group to upgrade the solid waste regulatory framework in the country.

5.19 Central government support

Several developing countries have dramatically supported their private sector participation activities by changing national laws and policies, by providing guidance and setting norms.

Colombia modified its constitution so 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 to, and competition in, all public services. Before that, public services had been provided by 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. Local governments were provided with technical assistance, model contracting specifications, and guidance concerning prequalification criteria and procedures, and they were encouraged to enter into multi-year contracts. By the end of 1992, most local governments in Malaysia had contracted out 10 to 80 per cent of their solid waste collection work, and the number of contractors involved in each city varied from one to nine. Nationwide monitoring to compare local government and private sector operations was set up, and it showed that the private sector was more efficient.

Indonesia and Tunisia have nationwide private sector participation programs for urban environmental services, which have been developed with technical and grant assistance from the US Agency for International Development (USAID). 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 each country, the private sector participation program is directed by an active multi-ministerial steering committee and supported by a consulting team funded by USAID.

5.20 Summary

Each year, as private sector participation is initiated in more and more developing countries, we are moving up the learning curve. The main lesson that has been learned is the importance of pursuing the following three objectives:

competition, accountability and transparency

The list in Box 5.6 provides a summary of some of the key issues to keep in mind when involving the private sector in solid waste services.

KEY TASKS FOR SUCCESSFUL PRIVATE SECTOR PARTICIPATION

- Build local capacity to develop technical specifications and to tender competitively.
- Build local capacity to enable local government to provide contestable services.
- Build local capacity to generate revenues, and operate as a cost center with segregated accounts.
- Create a level playing field by means of a regulatory framework.
- Specify worker safety and environmental requirements.
- Provide mechanisms to assure flow control.
- Define sanctions and enforcement mechanisms that discourage non-performance.
- Prepare for agreements that are long enough to allow full depreciation of investment.
- Prepare separate agreements for different activities to optimize expertise.
- Prepare agreements that are large enough in scope to allow economies of scale.
- Ensure contestability, enable the participation of small to medium sized businesses, and set up decentralized monitoring.
- Include price indexing to allow adequate cash flow and continuous profitability.
- Include public consensus in all key decisions.
- Ensure competitive, transparent procurement, with several competing tenders to obtain efficiency.
- Quantify outputs to enable comparative performance monitoring.
- Enlist public cooperation.
- License and control all private sector involvement.
- Monitor performance to compare service providers.

Box 5.6

Chapter 6: ACTIVITIES FOR PRIVATE SECTOR PARTICIPATION

6.1 Introduction

Involving the private sector does not mean giving all problems to the private sector and walking away from them. **Government** maintains the responsibility to determine what is cost-effective and appropriate for its citizens, and should not involve the private sector unless real benefits are anticipated. The private sector competes most effectively when the parameters of service are determined in advance and clearly specified.

Private sector participation requires strong government and a clear regulatory framework. It also requires that careful study and planning be conducted in advance, so that the best technical systems are selected and specified, and their costs are reliably estimated. Many governments have rushed into **privatization**, not considering the different ways of involving the private sector and not requiring competition in the tendering process. Experience shows that cities pay much higher costs when they proceed in this way.

6.2 Technology Assessment Studies

Prior to private sector participation, studies are needed to determine

- which technology is most cost-effective,
- the optimum sizes and numbers of the required equipment to suit local conditions, distances and waste quantities,
- how many staff to assign, and
- how to obtain public cooperation.

Cost analyses of various types of collection systems, **transfer** facilities, and **disposal** options need to be performed for the existing waste quantities, waste **densities**, transport distances, and road and traffic conditions. Choices between options may not be based entirely on economic considerations. Two similarly priced options (considering **unit costs**, e.g. cost per tonne) may vary significantly in the number of jobs they create, if one is capital-intensive and the other is labor-intensive. Similarly-priced alternatives may have significantly different aesthetic and environmental consequences. The final choice might, therefore, be made for reasons of employment creation, aesthetics or environmental protection, and not simply on the basis of cost.

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. Another type of information that is needed comes from **time and motion** studies. Reliable data are needed on vehicle and laborer **productivity** for existing systems, as well as for proposed systems, based on **pilot** trials. Most consultants and master plans give insufficient attention to the collection of these baseline data, and consequently are unable to develop adequate quantitative analyses to compare the various technology options. Figure 6.1 shows an example of comparative analysis of collection options. Figure 6.2 shows results for transfer costs, in which intersections of curves indicate the need to change from one system to another. Figure 6.3 shows the **economies of scale** for **sanitary landfilling**.

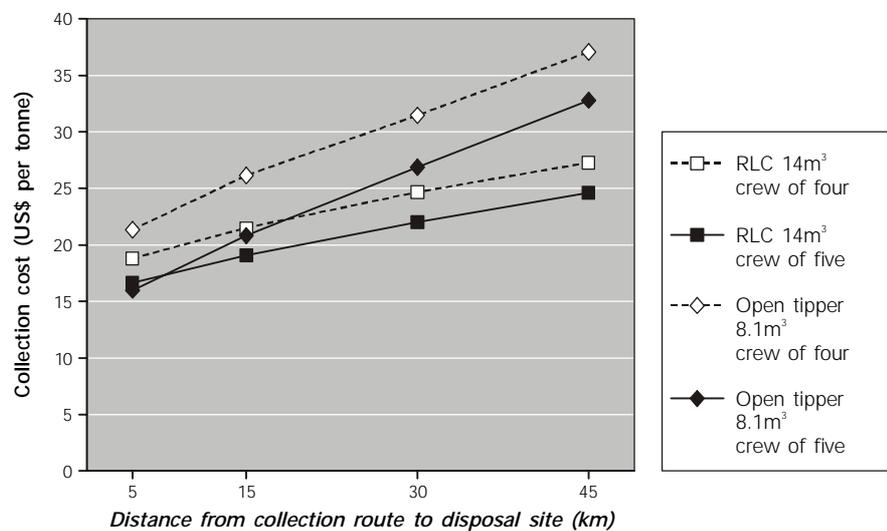


Figure 6.1
Effect of crew size on total collection costs for the public sector in Quito (Ecuador), 1998

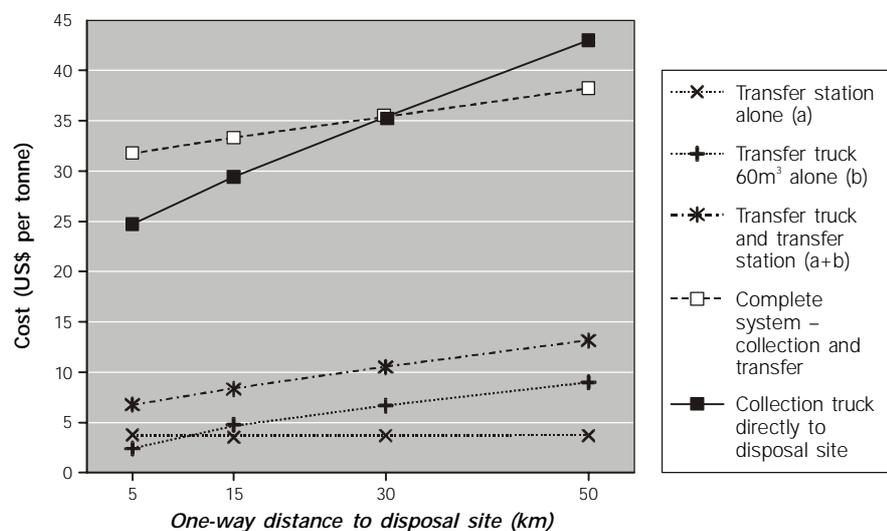


Figure 6.2
Costs for public sector collection and transfer systems, Eastern Zone, El Salvador 1998

Figure 6.3a
Total landfilling costs for sites of different sizes

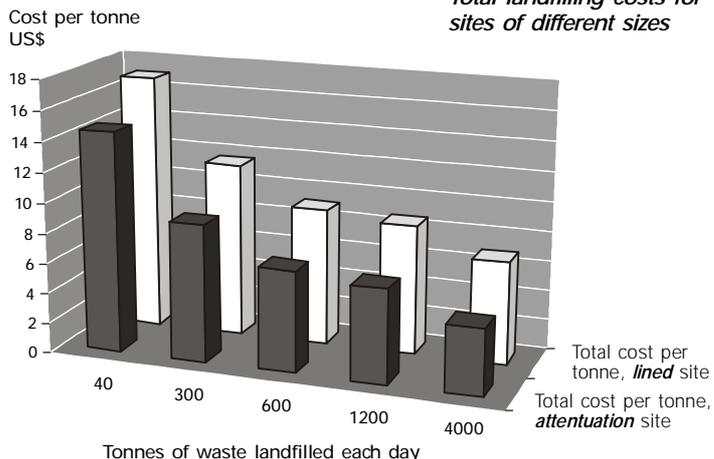


Figure 6.3b
Effect of landfill size on investment and total costs

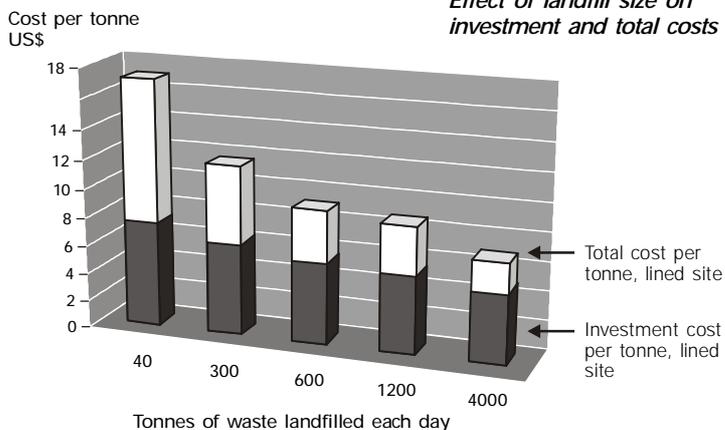


Figure 6.3
Costs of different types and sizes of sanitary landfill for Cavite and Laguna Province (Philippines), 1997. The costs per tonne decrease as the size of the facility increases, indicating economies of scale.



Photograph 6.1
Transfer station built and operated by the private sector, Port Louis (Mauritius), 1998

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 overheads, are typically less than 25% of total costs. (These figures are based on total costs that the private sector must pay, not typical municipal budget figures that do not include the hidden subsidies mentioned in Section 3.4) On the other hand, in high-income countries, the bulk of the cost for is for personnel.

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, as outlined below.

- a) *open tipper* truck (built to transport construction materials), 7 m³ capacity.
Calculated productivities:
 - 4.7 kg/minute.worker,
 - 14.3 minutes/m³ of truck capacity for a crew of 6 workers;
- b) rear-loading rotopacker type of compaction truck, 14 m³ capacity
Calculated productivities:
 - 13.9 kg/minute.worker,
 - 7.2 minutes/m³ of truck capacity for a crew of 4 workers.

(Based on field work conducted by the Author, Sandra Cointreau-Levine, in 1997)

Box 6.1

Crew sizes in developing countries should be large enough to optimize vehicle productivity. A study in Quito (Ecuador) indicated that a five-person crew would be less costly than a four-person crew (Figure 6.1). Ideally, since each city is unique with regard to traffic congestion and speed, road conditions, worker productivity, types of vehicles available, and public cooperation with collection systems, pilot tests should be conducted for various crew sizes and collection methods. Time and motion studies leading to a full cost analysis of each collection option are essential for determining which is the most cost-effective.

Cost analysis in Phnom Penh also showed that there was a significant extra cost where there was a lack of public cooperation. When the collection crew was required to shovel waste up from the ground instead of loading it in plastic bags or from *dustbins*, the cost of collection was about ten per cent higher. When it was necessary to provide a *pre-collection* service using a handcart (because residents would not bring their wastes to a *communal* collection point), the cost was about 100 per cent higher.

To obtain good strategic plans and baseline data that are useful for decision-making, the terms of reference for the preparation of these plans and the collection of the data need to be carefully developed, and good consultants or advisors engaged. Unfortunately, most studies are undermined by poorly written terms of reference. The quality of the profes-

sionals (e.g. engineers, economists) who actually undertake a consultancy assignment is, unfortunately, often lower than the quality promised in the consultancy proposal. To be effective, the planning process must be managed by a government agency that has both expertise and commensurate authority.

6.3 Public consultations

The public is generally united in its view on waste management - "Pick the waste up, but don't put it down". Everyone wants a waste collection service in their neighborhood, but no one wants a disposal site near their house. **NIMBY (Not In My Back Yard)** has become a common slogan. But the waste must be deposited somewhere. There are no cities in the world that are able to recycle 100 per cent of their waste. The cities in the USA and Europe that are recycling the highest proportion of their waste still need to dispose of about half of the quantity that is generated. Waste reduction and resource recovery are still in their infancy. Waste disposal facilities will continue to be necessary for many years to come. The public should be involved in decisions relating to waste disposal operations near their homes, otherwise their opposition may make operation impossible. A thorough program of **public consultation** in the entire planning process, from the establishing of technical options to the development of **site screening criteria**, is essential to lay the foundation for eventual public acceptance of recommended sites and techniques.

To determine public preferences and to increase the public's **willingness to pay**, public consultations are essential. They should be conducted from the beginning of planning, for determination of overall objectives; and then conducted at critical stages of the planning process, 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 of the planning of any proposed resettlement of residents.

6.4 Environmental impact assessment

A consideration of the anticipated effects of any project on the surrounding environment is one of the most important inputs into the decision-making process regarding the type and location of any waste management construction project. **Environmental impact assessments** are needed for public consultations. Alternative technologies and sites which are studied in a planning process can be compared more systematically if the environmental consequences of each alternative are described and assessed. The impacts should

be explained in terms that the public can understand – such as any effects on jobs, water supply, **wildlife species** or habitat, the appearance of the countryside, air quality (from stack emissions or dust), noise, etc. Impact assessment is needed to select the best solutions to problems and to 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.

6.5 Design

When privatization involves only services or mobile equipment, the company providing the service should be given some freedom to select and design its methods and equipment in the way that it chooses, provided that they comply with performance specifications. This also applies to the design of large facilities under **concession** agreements. However, if government intends to build and own the facility and use the private company only as an operator, government must take responsibility for the design. For facilities such as sanitary landfills, designs typically require 12 to 18 months to complete.

6.6 Permits

In many countries, waste processing and disposal facilities may not be operated without a **permit**. The permit indicates that the statutory environmental agency is satisfied that the facility is not going to cause unacceptable environmental pollution.

From the onset of planning any new facility, the critical points of the **permitting** process need to be considered. The process leading to the award of a permit includes agreements from



Photograph 6.2

A community meeting to discuss cost recovery for waste collection, Sekondi-Takoradi (Ghana), 1997

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.

6.7 Steps to private sector participation

Successful implementation of privatization involves taking a number of steps. These steps are listed below. All of these steps are to be taken by Government, and so, in many cases, the capacity of local and national government organizations will need to be substantially improved (Section 5.18) if successful private sector participation is to be achieved.

6.7.1 Identification

- a) Define the problem regarding the adequacy of existing services and constraints to service improvements.
- b) Assess the needs and demand for services, and assess the capacity of the private sector as a service provider in competition with government.
- c) Assess resource constraints affecting both potential service recipients and the private sector, in terms of skills, experience, assets, access to credit, and manpower.
- d) Assess the **affordability** of various service options, considering both capital and operating costs.
- e) Establish priorities for action both within the solid waste sector and in relation to other urban services.
- f) Determine when and how to involve the public in building a consensus towards an acceptable and desired solution.
- g) Develop a private sector participation strategy, determining which services are to be privatized, which method of privatization to use, the size and duration of private sector participation agreements to be developed, and the schedule.

6.7.2 Preparation

- a) Conduct detailed and comprehensive pre-privatization cost analysis of the 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 other costs which must still be paid after privatization.
- b) Communicate with personnel who may be affected by the privatization, providing information on anticipated

changes in service quality or quantity, **redundancy** issues and proposed remedial measures, cost and **cost recovery** changes.

- c) Staff and strengthen the office that will procure, administer, **monitor** and control private sector service delivery, and will promote public cooperation with the privatized services. Include management, legal, financial, and technical staff in the capacity building program.
- d) Analyze costs and compare impacts of the technical options, and select the most suitable and cost-effective technology.
- e) Analyze the costs of hauling the waste directly to the disposal site and of using **transfer stations** and large transfer trucks, to determine which is the more economical system.
- f) Determine optimum sizes for collection **zones**, transfer stations, and disposal facilities, considering economies of scale.
- g) Preselect potential sites for the facilities, and determine whether some sites require special privatization arrangements (such as private sector ownership of a parcel of land within larger land holdings that the private sector operator might wish to control⁵).
- h) Rationalize **routing** of collection and transfer vehicles in government zones of service, in anticipation of providing **managed competition** to the private sector in its operations in the other zones of service.
- i) Define collection zones to achieve **equitable** and comparable service conditions. (Section 5.8)
- j) Initiate public participation in assessing the demand for the various options, and the acceptability of the proposed sites, facility concepts and environmental consequences.
- k) Plan resettlement programs (if necessary) and compensation to land users at prospective facility sites.
- l) Undertake environmental analysis of options and sites.
- m) Develop **contractual** conditions for privatization of services.
- n) Develop technical and performance specifications for **procurement** documentation.
- o) Evaluate finance and private sector participation options.
- p) Assess willingness and ability to pay, and relate willingness-to-pay to alternative methods and levels of service. (See Annex A9 in Part III.)
- q) Develop plan of action, schedule of implementation, and critical path.

6.7.3 Appraisal

- a) Create a tariff structure and cost recovery mechanism based on projected costs, willingness to pay and ability to pay. Prepare a phased scheduling of fee increases.
- b) Develop a supportive regulatory framework requiring

⁵ In many situations, land cannot be obtained for waste disposal operations, because major landowners oppose the siting of a waste disposal site on land that they do not control and that is next to their own land. They also may refuse to provide a site within their own land holding. On the other hand, if the operator forms a joint venture with a large landowner (such as a sugar authority or mining company), the siting of the landfill within the land holding would be acceptable to the landowner because it would have control over the operation. Locating the landfill in the middle of a large estate would be more acceptable to the public, since the operation would probably be undetectable from the perimeter of the land holding. If a city buys a site outright and then arranges for it to be developed, it loses these opportunities which only the private sector can arrange.

- public cooperation with the private sector, licensing of private sector participants, and direct user payment for services.
- c) Establish an enforcement system that is quick and responsive, including special wardens and municipal courts, as needed, to effectively secure public cooperation with the solid waste system.
 - d) Create 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.
 - e) Develop agreements regarding **flow control** to ensure that the private sector will have adequate business levels which can provide sustainable incomes. (Section 5.5)
 - f) Arrange private sector access to reasonably priced credit lines⁶.
 - g) Take measures to manage private sector risk in order to minimize unnecessary cost padding in bids. These measures may include
 - guarantees against non-commercial risk, (Section 5.12)
 - contractual provisions and arbitration clauses regarding cancellation of the contract or payment problems,
 - cost escalation indices,
 - foreign exchange agreements, and
 - arrangements for repatriation of funds.
 - h) Build local government capacity to undertake inspection, enforcement of the regulatory framework, and **performance monitoring**. This could also include developing terms of reference and a short-list of qualified consulting engineers who might be requested to submit proposals for monitoring **refuse** collection performance.
 - i) Facilitate land acquisition and any resettlement of residents. Negotiate rights of way and traffic management, and make preparations for an environmental permit.
 - j) Develop and implement a **public awareness** campaign regarding the need to change the city's solid waste management system, including changes in service delivery levels, requirements for cooperation from waste **generators**, and cost recovery.
 - k) Establish a **segregated account** for receiving all **license** fees, **user charges**, **tipping fees**, and financial penalties related to solid waste management.
 - l) Establish a qualified and honest procurement evaluation team. If prequalification is deemed necessary, this same evaluation team should also conduct the prequalification exercise. Consider placing an "honest broker" on the team, such as a foreign expert with a strong ethical reputation.
 - m) Prequalification is desired in cases where bid preparation involves major work and expenditure on the part of prospective bidders. (See Annex A4 in Part III.) This is usually the case for site studies and designs, which are needed when tendering for transfer or disposal facility concessions which involve the design, construction and operation of the facility. When prequalification is needed, prequalification criteria for prospective bidders should be developed. Prospective bidders are assessed according to
 - their experience in management, and in the management and maintenance of a vehicle **fleet**,
 - their financial soundness,
 - their experience of managing a labor force,
 - their knowledge of local conditions, and
 - the professional experience and qualifications of key personnel.
 At this stage of the process, technical proposals and bids are not included as criteria.
 - n) Advertise for prequalification in local newspapers and through letters to all embassies, as well as through international competitive tender listings.
 - o) Conduct prequalification in a quantitative and transparent manner according to the prequalification criteria developed. (See Annex A4 in Part III for a sample prequalification advertisement.)
 - p) Develop evaluation criteria for selecting the preferred bid. The criteria should include:
 - bid requirements for insurance,
 - proof of fair labor management and payment of fair wages,
 - 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 the experience and financial soundness of the company, and the professional experience of key personnel, as outlined above for prequalification criteria. (See Annex A5 of Part III for sample evaluation criteria.)
 - q) Advertise tender documents in local newspapers and through letters to all embassies or, if prequalification has been undertaken, distribute tender documents only to prequalified firms.
 - r) Conduct a transparent and accountable evaluation of bids received.
 - s) Select the preferred bid and negotiate with the winning company. A two-envelope system of bidding is preferred. The first stage of selection involves the review of the contents of the first envelope from each bidder. This envelope contains the technical proposals, qualifications, and documents required to meet the tender informational requirements (bonds, insurance, tax returns, etc.). As a

⁶ In many countries, recently established companies that wish to become involved in solid waste management have no access to credit. If they are successful in winning a contract or franchise, they are required to pay for loans at high interest rates because they are considered high risk, especially if they have no significant assets or savings. Furthermore the payback period may be shortened, often to only two years, even though the loan is for the purchase of a vehicle with a normal economic life of six years. Arranging access to credit may involve

- the creation of a new line of credit for small disadvantaged businesses engaged in this type of work,
- the support of a "big brother" - such as the Chamber of Commerce, as in Alexandria (Egypt) - to provide some form of guarantee,
- the arranging of a longer term contract from the city that matches the payback period of the loan, or
- agreement by the city to pay a fixed amount monthly directly to the Bank providing the loan.

result of this process, the tenders that qualify on technical grounds are identified. The second envelopes of these qualifying companies are then opened. These envelopes contain the financial details of each bid. Typically the lowest priced bid is selected and this bidder is invited 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 in terms of price, simultaneous, competitive negotiations may be conducted between these bidders and government.

6.7.4 Implementation

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

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 this should be done. The information in this book is not just theory; it is based on a wide range of case studies and examples from the Author's extensive international experience.

This *Pack* consists of five separate parts, divided up for the convenience of the users.

Part I, the **Executive Overview**, introduces the *Pack*, touching on highlights of the other Parts and directing the reader to more detailed discussions in the subsequent parts.

Part II, the **Guidance Note**, contains the arguments for private sector participation, reviews the options, explains the issues that must be considered, and suggests the steps leading to implementation of its recommendations. There are frequent references to experiences and lessons learned in Africa, Asia, and America.

Part III - the **tools** - provides lists of criteria, checklists, sample terms of reference and questionnaire forms that will be of great assistance to municipal managers and consultants who are preparing to involve the private sector.

Part IV is a comprehensive **word list** that will help many readers to identify the precise meanings of the technical terms found in this *Pack*.

Part V provides valuable **sample contracts and agreements** for both collection and disposal operations, allowing the reader to benefit from the experience of many cities and avoid making the mistakes that are often made when contractual agreements are initially drawn up. It also contains questionnaire forms so that they can quickly be adapted and used. The documents are provided on a CD-Rom.

Many readers will initially wish that this *Pack* had been produced some years ago, but when they discover the depth and breadth of the up-to-date experience that it contains, they will realize it has been worth waiting for. If it had been produced earlier it would not have had the benefit of many lessons that have recently been learned around the world.

Guidance Pack

Private sector participation
in municipal solid waste management



Part III

TOOLS for preparing for private sector participation

By Sandra Cointreau-Levine
and Prasad Gopalan



SIKAT

Criteria, checklists, terms of reference and
questionnaire forms that can be used to prepare
for private sector participation in municipal solid
waste management

Guidance Pack

*Private sector participation
in municipal solid waste management*

Part III

TOOLS

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*Criteria, checklists, terms of reference and
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waste management*

Authors: Sandra Cointreau-Levine and Prasad Gopalan

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Annex A1: SUPPLEMENTARY DATA

Table A1.1 Global perspective on solid waste quantities

	Generation rates kg / capita.day		
	<i>Low-income country</i>	<i>Middle-income country</i>	<i>High-income country</i>
Mixed urban waste - large city	0.50 to 0.75	0.55 to 1.1	0.75 to 2.2
Mixed urban waste - small to medium city	0.35 to 0.65	0.45 to 0.75	0.65 to 1.5
Residential waste only	0.25 to 0.45	0.35 to 0.65	0.55 to 1.0

Notes:

1. Country categorization by income is based on 1992 GNP data from the 1994 World Development Report published by the World Bank. Waste data are based on a wet, "as received", condition (i.e. not oven dried).
2. For the purposes of this table, a small to medium city is assumed to be under 500,000 residents, and a large city is one above 500,000 residents.
3. Urban waste includes residential, commercial, industrial and institutional waste, as well as street sweepings and yard waste. Construction / demolition debris is not included.

Source: Sandra Cointreau-Levine 1999

Table A1.2 Global perspective on solid waste management costs versus income

	<i>Units</i>	<i>Low income country</i>	<i>Middle income country</i>	<i>High income country</i>
Average waste generation	tonnes/cap.yr	0.2	0.3	0.6
Average income from GNP	\$ / cap.yr	370	2,400	22,000
Collection cost	\$ / tonne	10 - 30	30 - 70	70 - 120
Transfer cost	\$ / tonne	3 - 8	5 - 15	15 - 20
Sanitary landfill cost	\$ / tonne	3 - 10	8 -15	20 - 50
Total cost without <i>transfer</i>	\$ / tonne	13 - 40	38 - 85	90 - 170
Total cost with <i>transfer</i>	\$ / tonne	16 - 48	43 - 100	105 - 190
Cost as % of income	per cent	0.7 - 2.6	0.5 - 1.3	0.2 - 0.5

Notes:

1. Incomes are based on 1992 Gross National Product data from the World Development Report 1994, published by the World Bank.
2. Costs are for owning, operation, maintenance, and debt service in 1995, assuming no equipment provision through grants.
3. If a sanitary landfill can be located within an economic *haul* distance, so that direct haul in collection vehicles is economical, the cost of transfer can be avoided. An economic haul time for a small truck carrying 2 to 6 tonnes is typically 30 minutes one-way from the collection area to the unloading point. Depending on traffic conditions, in 30 minutes a distance of 15 to 30 kilometers can be covered. The maximum economic haul distance for larger trucks is typically 30 to 50 kilometers one-way.
4. "\$ / tonne" means US Dollars per metric tonne, and "\$ / cap.yr" means US Dollars per capita and year.

Source: Sandra Cointreau-Levine, 1999

Annex A2: PERFORMANCE MONITORING MEASURES

Developed by Sandra Cointreau-Levine

A2.1 Performance monitoring measures for solid waste collection operations

<i>Performance measures</i>	<i>What is measured ?</i>	<i>How is it measured ?</i>	<i>Where is it measured ?</i>	<i>How often is it measured ?</i>	<i>By whom is it measured ?</i>	<i>Basis for sanction ?</i>
<i>Cleanliness of service areas</i>	Existence of litter Existence of <i>clandestine</i> waste piles Waste in drains Improperly placed waste bins Regularity and frequency of collection service Cleanliness around <i>communal</i> 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 complaints register	Service zones	Daily	Assemblies Districts ¹	Yes
<i>Safe disposal of collected wastes</i>	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
<i>Customer satisfaction</i>	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
<i>Customer dissatisfaction</i>	Complaints about improperly placed waste bins, damage of waste bins, uncollected wastes, rude behavior by collectors, poor appearance of collection vehicle and collection crew.	Zone inspection reports Records of complaints Records of follow-up of complaints Records on attainment of service frequency targets	Service zones	Weekly	Assemblies Districts	Yes
<i>Worker productivity</i>	Number of workers in service Waste quantity per worker each shift Absenteeism	Zone inspection reports Records at disposal sites Vehicle log books	Service zones Disposal sites	Weekly	Assemblies	No
<i>Vehicle productivity</i>	Number of vehicles in service Waste quantity per vehicle each shift Waste quantity per vehicle each day Vehicle <i>downtime</i>	Records at disposal sites Vehicle log books Zone inspection reports Load inspections at landfill	Service zones Disposal sites	Weekly	Assemblies	No

¹ 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.

<i>Performance measures</i>	<i>What is measured ?</i>	<i>How is it measured ?</i>	<i>Where is it measured ?</i>	<i>How often is it measured ?</i>	<i>By whom is it measured ?</i>	<i>Basis for sanction ?</i>
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 Operational status of vehicle lights (night lights, brake lights, and reversing lights) Number of accidents Adequate accident liability coverage (insurance)	Zone inspection reports Survey of workers Medical records Accident records Insurance policies	Service zones Records from service provider	Weekly	Assemblies	Yes
Fair labor practices	Wages paid - minimum or above Payment for overtime Medical expenses 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 showing 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

<i>Performance measures</i>	<i>What is measured ?</i>	<i>How is it measured ?</i>	<i>Where is it measured ?</i>	<i>How often is it measured ?</i>	<i>By whom is it measured ?</i>	<i>Basis for sanction ?</i>
Reliability	Downtime of vehicles Number of accidents Worker strikes Absenteeism, illness and accidents of workers	Vehicle log books Workshop's 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 Adherence to 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 Reports of independent auditor	Records from service provider	Yearly	Assemblies	Yes

A2.2 Performance monitoring measures for solid waste landfill operations

<i>Performance measures</i>	<i>What is measured ?</i>	<i>How is it measured ?</i>	<i>Where is it measured ?</i>	<i>How often is it measured ?</i>	<i>By whom is it measured ?</i>	<i>Basis for sanction ?</i>
Quantity of waste received for landfill	Waste quantity per shift Waste quantity per day	Landfill inspection reports Landfill records Vehicle log books Zone inspection reports	Landfill	Daily	Assemblies Districts	No
Construction of landfill base according to design	Compaction of base soils at optimum moisture Slope of base soils Placement and sealing of impermeable <i>liners</i> Placement and slope of <i>leachate</i> collection system	Survey instruments observed to be used during construction Construction inspection reports	Landfill	During construction	Assemblies	Yes
Construction of landfill cell according to design	Daily delineation of <i>working face</i> boundaries Survey of coordinates and elevations of daily <i>cell</i> construction, including slope of working face Continuous on-site availability of design drawings and O&M manual Closure of cell when final design elevation is reached Respect of maximum angle for side slopes Respect of minimum requirement for base slopes	Survey instruments observed to be used daily Marking up of daily progress in cell construction on design drawings Topographic survey map of completed cell area when final design elevation is reached	Landfill	Daily	Assemblies	Yes

<i>Performance measures</i>	<i>What is measured ?</i>	<i>How is it measured ?</i>	<i>Where is it measured ?</i>	<i>How often is it measured ?</i>	<i>By whom is it measured ?</i>	<i>Basis for sanction ?</i>
<i>Adequacy of internal access roads</i>	Roads free of waste Roads usable in all weathers Adequate drainage to keep roads free of flooding	Vehicle log books (Operational delays of collection vehicles at landfill) Landfill inspection reports	Landfill	Daily	Assemblies Districts	No
<i>Cleanliness of access routes to landfill</i>	Litter Clandestine waste piles Waste in drains Improperly placed waste bins	Zone inspection reports	Service Zones	Daily	Assemblies Districts	Yes
<i>Residents' and private haulers' satisfaction with landfill</i>	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 All haulers	Semi-annually	Assemblies Districts	No
<i>Residents' dissatisfaction with landfill</i>	Complaints about landfill noise, dust, odor, traffic, appearance and increase in vectors	Inspection reports Records of complaints	Area around landfill	Monthly	Districts	Yes
<i>Private haulers' dissatisfaction with landfill</i>	Complaints about landfill noise, dust, odor, traffic, appearance Complaints about delays suffered by collection vehicles at landfill, damage to vehicles and tires, inappropriate tipping fee charges, operation of weighbridge , difficulty in driving to working face	Inspection reports Records of complaints Records of follow-up to complaints	All haulers	Monthly	Assemblies	Yes
<i>Worker productivity</i>	Number of workers in service Waste quantity per worker and shift Absenteeism	Landfill inspection reports Records at landfill	Landfill	Weekly	Assemblies	No
<i>Equipment productivity</i>	Number of equipment units in service Waste quantity per equipment unit each shift Waste quantity per equipment unit each day Equipment downtime	Landfill inspection reports Records at landfill	Landfill	Weekly	Assemblies	No
<i>Recycling achievements</i>	Types of secondary materials recycled Quantity of secondary materials recycled	Landfill inspection reports Records from sales of recyclables	Landfill	Monthly	Assemblies	No

<i>Performance measures</i>	<i>What is measured ?</i>	<i>How is it measured ?</i>	<i>Where is it measured ?</i>	<i>How often is it measured ?</i>	<i>By whom is it measured ?</i>	<i>Basis for sanction ?</i>
<i>Environmental controls</i>	Control of equipment exhaust emissions Windblown litter Dust Noise Control of area of <i>working face</i> Daily compaction of deposited waste Use of adequate daily cover at the end of each day's work Washing of equipment Flies, rodents, birds Leachate treatment and discharges Control of landfill gas Drainage of surface water – adequacy and maintenance Presence of unauthorized people or animals Presence of <i>hazardous</i> wastes Recording of all collected waste loads Provision and maintenance of an attractive vegetative <i>buffer</i> around operational areas	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 <i>leachate</i> treatment plant discharges Groundwater and surface water monitoring Monitoring of landfill gases Records of incoming waste loads	Landfill and surrounding area	Weekly	Assemblies Districts	Yes
<i>Hazardous waste segregation</i>	Refusal to accept industrial or commercial hazardous waste Provision of special collection and storage area for household hazardous waste	Landfill inspection reports Inspection of loads at disposal sites	Landfill Disposal sites Records from service provider	Monthly	Assemblies	Yes
<i>Fair labor practices</i>	Wages paid - minimum or above Payment for overtime Medical expenses coverage Vacation and holiday allowances Adequacy of work breaks Proper hiring and justifiable <i>termination</i> procedures	Landfill inspection reports Survey of workers	Landfill Records from service provider	Monthly	Assemblies	Yes

<i>Performance measures</i>	<i>What is measured ?</i>	<i>How is it measured ?</i>	<i>Where is it measured ?</i>	<i>How often is it measured ?</i>	<i>By whom is it measured ?</i>	<i>Basis for sanction ?</i>
Occupational health and safety controls	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 of 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-time illumination Reversing lights and audio signals on all equipment	Landfill inspection reports Survey of workers Medical records Accident records Inspection of equipment units Insurance policies	Landfill Records from service provider	Weekly	Assemblies	Yes
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 files Landfill inspection reports Radio functioning between landfill and central offices	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

Annex A3: LICENSING CRITERIA FOR SOLID WASTE COLLECTION OPERATIONS

by Sandra Cointreau-Levine

The need for licensing has been discussed in Part II, Section 5.17. It is particularly important that private companies that contract directly with **generators** should be required to have and maintain a **license**, so that government has control over the quality of the service and the disposal method that is used.

Activities for which private haulers might be licensed include collection of

- construction and demolition debris
- **healthcare** wastes
- **hazardous** industrial wastes
- collection of waste tires

- general wastes from large industrial and commercial generators

- domestic wastes from peripheral zones

- oversized yard wastes from residential areas

The list below suggests factors that should be considered in deciding whether a private organization should be allowed to collect waste by **private subscription**. Some of these requirements presume that the company has been operating for some years, and so would exclude companies that are just beginning to operate. A degree of flexibility in interpreting some requirements might therefore be required.

<i>Licensing criteria</i>	<i>Factors to be considered</i>
Company equipment	<ul style="list-style-type: none"> ■ Strength of chassis for density of load (especially for construction and demolition debris, for compact trucks collecting domestic wastes having a high density, and where the road surfaces are poor); ■ Appropriateness of design for work to be done (considering health and safety aspects of loading and unloading methods; whether items can be blown or fall out of the body, or liquids leak out; special requirements for particular wastes such as hazardous healthcare or industrial wastes); ■ Capacity of equipment (adequate for economic service, considering the required haul distance and time, and economies of scale); ■ Number of equipment units in good working order (considering also the spare capacity needed when one or more vehicles are not available because of accident, maintenance or repair); ■ Age and condition of equipment units (They should be less than seven years old, unless significant spare capacity is available.)
Financial capacity of company	<ul style="list-style-type: none"> ■ Assessed value of fixed assets (indicating adequate ability to obtain financing to cover the investment needs of the intended service); ■ Assessed value of liquid assets (adequate to cover the cash flow needs of at least three months of operation, and to replace stolen or broken equipment, as needed); ■ Cash flow over the previous "n" years (adequate to demonstrate the needed level of operational experience); ■ Payment of corporate and property taxes over the previous "n" 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); ■ Medical insurance for personnel (Minimum requirements should be stated in license criteria for a level playing field – meaning that no company can gain an unfair financial advantage by providing inadequate medical care for its employees.)

<i>Licensing Criteria</i>	<i>Factors to be considered</i>
Staff qualifications	<ul style="list-style-type: none"> ■ Ability of key staff to read and write (so that they can read health and safety documents, respond to emergencies, follow operating manuals, and interact with the public); ■ The provision of training for the work to be performed (The required training may include specialized training for key staff on health and safety procedures, operating methods, preventive maintenance of equipment, interaction with the public, and general sanitation awareness.) ■ The provision of training on handling special wastes, particularly hazardous wastes (This might include health and safety training for handling the 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 convictions; ■ Previous record of operational experience; ■ Tax records for the previous "n" years; ■ Audited business accounts for the previous "n" years
Operation and maintenance of equipment	<ul style="list-style-type: none"> ■ Records of equipment availability and maintenance ("history" records for each item of equipment or workshop records); ■ Operational record of service delivery (customer satisfaction and complaint records).
Environmental controls on equipment and pollution mitigation measures	<ul style="list-style-type: none"> ■ Records of regular equipment inspections (exhaust gas monitoring and 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 vaccines and preventive medication provided to all staff who have contact with wastes; ■ Medical examination records for all staff; ■ Proof of a current and adequate health and safety plan (readily available to key staff, with emergency directions and telephone numbers displayed); ■ Reasonableness of work productivity targets, working procedures, and hours of operation (to level the playing field and demonstrate that workers will not be unfairly exploited).
Collection methods and disposal locations	<ul style="list-style-type: none"> ■ Adequacy of proposals outlining how the work will be performed. (They should show the ability to plan both the operations and the finances, and an understanding of the difficulties that may arise during operations.)
Tariff structures and billing procedures	<ul style="list-style-type: none"> ■ Adequacy of proposals for generating revenues (The plan should indicate a realistic view of the difficulties encountered in collecting revenues.); ■ Adequacy of office facilities and billing procedures for cost recovery; ■ Accountability of management and transparency of accounts.
Record keeping on services provided and customers	<ul style="list-style-type: none"> ■ An assessment of the management information system (Will it provide sufficient and reliable information for managers to control the operations?); ■ Willingness and ability to work cooperatively and openly with the government staff who are supervising operations. (This may be difficult to assess except by experience of working together with the company, and any assessment may be somewhat subjective.)

Annex A4: SAMPLE PREQUALIFICATION NOTICE FOR PRIVATE COMPANIES

by Sandra Cointreau-Levine

Prequalification is the first stage in the selection process used by many clients or grantors to select an organization to provide a service. The prequalification stage is designed to identify which potential bidders are clearly unsuitable for the task being considered. If unsuitable bidders are excluded at this stage they do not waste time and effort preparing the much more detailed tender documents. To prequalify a **firm** or **joint venture** must meet the minimum qualifications listed in the prequalification documents. Only firms that prequalify are invited to prepare a full bid for the work on offer. Joint ventures with experienced foreign firms are commonly allowed.

Prequalification is done in two steps. The first step is to identify which private sector organizations meet the minimum prequalification requirements. The next step is to rank the organizations that satisfy these requirements so that a predetermined number of the firms with the highest ranking are considered for the bidding stage. Prequalification is also discussed in Part II, Section 6.7.3.

The criteria described in the prequalification documents might include, but need not be limited to, the following.

Minimum criteria for prequalification:

1. Demonstrated experience in the management of labor and equipment operations and the maintenance of a **fleet** of vehicles comparable to the type required for the project and involving an annual turnover of at least \$ (or equivalent), over each of the last years.
2. Demonstrated experience in civil works and equipment operations comparable to the type required for the project and involving an annual turnover of at least \$ (or 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 \$ (or 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 vehicles.
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 for numerical ranking for prequalification:

1. Number, qualification, and experience of key personnel, relevant to the 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.

Annex A5: SAMPLE CRITERIA FOR EVALUATING TENDERS

by Sandra Cointreau-Levine

Selection criteria, which could be used for evaluation of 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. By imposing the prequalification stage, government can minimize the number of firms which spend considerable time and money to produce detailed tender bids.

(For large design, build and operate concession projects, where a small number of bidders have been prequalified, it has been suggested that the winning bidder could be required to compensate the losing bidders by a predetermined fixed lump sum for the time and effort that they invested in preparing their bids. In such a case the cost of this compensation would be built into the tender bid or offered tipping fee. This is not common practice so any attempt to introduce such a requirement should be operated with caution.)

The recommended method for evaluating tenders is the two-envelope system that is described in Part II, Section 6.7.3. The first envelopes for all bidders are opened first. The first envelopes contain the technical details of the proposal, and the required documentary evidence. Any tender that does not meet with the technical or documentary requirements is rejected, and the second envelopes from such bidders are not opened. The satisfactory bids may be ranked according to their technical merit. Then the second envelopes of satisfactory tenders are opened, and the company offering the lowest price bid is invited for negotiation, as discussed in Section 6.7.3.

The criteria that are listed below refer to the contents of the first envelope, and so usually do not represent the reason for the final choice of the winning tender. The final choice is usually based on financial information which is in the second envelope.

Evaluation criteria for the prequalification stage and the technical proposal. (This list would be provided to each bidder to assist in the preparation of the contents of the first envelope.)

1. Appropriateness and adequacy of the technical proposal for how the services would be provided, including
 - the number and type of vehicles (or other types of equipment) which are already available for use and in good working order, and the vehicles or equipment which would need to be procured for the purposes of the proposed work.
 - the personnel who are already available for work and the personnel who would be hired for the purposes of the proposed work,
 - the layout and design of existing facilities and any required facilities which would be constructed for the purposes of the proposed work, and
 - proposed service *routing*, frequency, quantity and methods.
2. The degree to which the firm demonstrates, through its technical proposal, an understanding of the work requirements.
3. The owner's experience in providing similar operational services, such as sweeping, drain cleaning, materials transport, and civil works.
4. The owner's experience in providing the type of services that are the subject of the tender, such as solid waste collection, transport, disposal or treatment services.
5. The owner's experience in maintaining, repairing, and operating a fleet of vehicles.
6. The professional experience of key managers and staff, with regard to training and experience in solid waste management planning, design, implementation, and operations activities.
7. The professional experience of personnel who will be responsible for planning routes, maintaining and repairing vehicles, accounting, operations management, and task organization.
8. The owner's experience in managing a business and a large staff of field workers.
9. Evidence that the firm has been a going concern for at least five years.
10. The owner's experience in dealing with labor and/or labor unions, and proof of regular payment of fair wages.
11. The reputation of the owner for being honest and reliable.
12. The working relationship of the firm with previous clients. Evidence of responsible and competent work in the recent past.
13. Relevance and quality of examples of work as described in reference letters from previous clients of the firm.
14. Financial statements of the proposing company certified by a nationally recognized firm of independent certified public accountants, including financial credit records including the debts of the owner and the company over the past 3 years.
15. The estimated value of assets owned by the company.
16. Proof of annual payment of owner's personal and corporate income and property taxes over the past five years.
17. Registration of the firm with government and designated boards or councils of relevance to the work to be done.
18. Membership of related professional organizations and participation in seminars, trade shows and training workshops in solid waste management over the past 3 years.
19. Current and proposed workloads of the firm, which might affect its ability to deliver the required services.
20. Evidence that the firm is capable of commencing service provision when required.

Annex A6: SAMPLE QUESTIONNAIRE ON EXISTING SOLID WASTE MANAGEMENT SERVICES, Public and Private

Developed by Sandra Cointreau-Levine

Note: Though 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.

This questionnaire might be given to a manager and collected at a later date, or it might be completed in the presence of a consultant. In the latter case it is useful for the consultant to note whether requests for detailed data are answered with the use of documents, or whether they are answered from memory, without referral to documentation. If documents are not used, this may indicate that the management information system is not well developed, and that some of the answers may be subjective and not very reliable.

If several *respondents* supply information independently for this survey, it is recommended that one form be used for each respondent.

Details of Respondent(s):

Name of City (or area being considered):

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

.....

Date:

General:

- 1.a Population of the City
- 1.b Area of City: square kilometers

- 2. What percentage of total population lives in areas intended for the following categories of land use within your City?
 - Dense, old, medina or walled city %
 - Low-income spontaneous residential %
 - **Laid-out** (planned) residential %
 - Central city commercial %
 - Low density commercial or residential %
 - Industrial %
 - Other (Please describe) %;

- 3. Describe in your own words the most important problems and needs your City is facing in relation to solid waste management.

.....

.....

Solid Waste System:

- 4.a What percentage of the total quantity of solid waste generated in the whole City is collected at least once a week? %

- 4.b Of the total collected, roughly estimate the percentage, which is collected by each of the following methods: (Note that both the pick-up point and the transportation method are specified.)
 - Door-to-door** Total percentage by various means %
 - Door-to-door by pushcart %

- Door-to-door by animal with baskets %
- Door-to-door by animal with cart %
- Door-to-door by small **pickup** truck %
- Door-to-door by farm tractor and trailer %
- Door-to-door by open truck %
- Door-to-door by compaction truck %
- Door-to-door by other means (Please describe) %

Communal collection points Total percentage by various means %

- **Communal** collection point cleared by animal cart, farm tractor, or collection truck %
- Communal collection point using containers which are emptied mechanically %
- Communal, using **skip containers** lifted and taken away by a truck %
- Communal, using **arm-roll** containers taken away by a truck %

Other systems

- **Block system** by truck (truck stops at intervals and sounds signal) %
- Other system (Please describe) %

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

	Number of vehicles
Small pickup truck
Farm tractor and trailer
Non-compaction side-loading truck
Open truck with non-tipping body
Open tipping truck
Compactor truck
Skip container and lift truck
Roll-on container and arm roll truck
Others (Please describe)

6. What is the average capacity (in cubic meters) of the following trucks, which have been noted above as achieving 70% availability and being less than 7 years old?

	Average capacity (in cubic meters)
Small pickup truck
Farm tractor and trailer
Non-compaction side-loading truck
Open truck with non-tipping body
Open tipping truck
Compactor truck
Skip container and lift truck
Roll-on container and arm roll 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 in your City 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 of day when the collection service is provided?

Disposal method	Distance from City center (km)	Travel time from center (minutes)
1
2
3
4

8. **Collection points** receive only small quantities of solid waste (i.e., loads less than 1 cubic meter) from pushcarts or 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, according to the method used to remove the waste from them:

- Cleared by bullock carts.
- Cleared by open trucks.
- Cleared by compactor trucks.
- Cleared by skip containers and lift trucks.
- Cleared by roll-on containers and arm-roll trucks.
- Other (Please describe)

9. **Transfer stations** predominantly receive medium-sized quantities of solid waste (i.e., loads greater than one cubic meter and less than ten cubic meters) from animal carts and collection vehicles. At these transfer stations the waste is loaded into large transfer vehicles, usually with a capacity of more than 15 cubic meters, which take the waste to a final disposal site. Indicate the number of such transfer stations in the City according to the method by which the waste is loaded into the large transfer vehicles:

- Open ground with clearing by wheeled loaders
- Ramp and elevated unloading platform with clearing by wheeled loaders
- Ramp and elevated unloading platform served by roll-on containers and arm-roll trucks
- Other (Please describe)

Human resources engaged in solid waste management:

10. How many people work in the solid waste service? Note which, if any, of these categories are represented by unions.

	Number of staff	Union representation? (Y / N)
Administrative and professional staff
Operations supervisors
Collection vehicle drivers
Operators of other plant
Collection workers (loading and transporting waste)
Sweepers
Workshop staff (portion for solid waste vehicles only)
Sanitary inspectors or health inspectors

11. Of the people working in the solid waste service, what percentage are:
- 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) %
12. Considering only the permanent government employees working in the solid waste service, roughly estimate what percentage will become eligible for retirement within the next 5 years.
 Estimated percentage %
- 13.a What is the amount of the total City recurrent budget for all services? (\$ or other)
- 13.b 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? (\$ or local currency)
- 14.a What percentage of the City's total recurrent budget is covered by property-based conservancy tax? %
- 14.b What percentage comes from Central Government transfers? %
15. Do you have a City byelaw requiring households and establishments to pay a solid waste user charge? Yes No
- 16.a Within your City, is there a tariff structure for solid waste user fees which are payable by residents? Yes No
- 16.b If so, is it based on waste quantity , consumer income level , or property size ?
17. Is the tariff structure for residents served by private sector systems different from the tariff structure for residents served by municipal systems? Yes No
- 18.a What percentage of the City's total recurrent budget is covered by direct user charges for solid waste services? %
- 18.b How are the charges collected?
- Separately, by door-to-door municipal bill collectors
 - Separately, by private, commissioned bill collectors
 - Directly, by the private firms providing the services
 - With water charges
 - With electricity charges
 - By neighborhood leaders
 - By NGOs
 - By direct bank deposit
 - Other (Please describe)

19. If you have a solid waste user charge, what is the method for increasing the tariffs periodically, (for example, annually)?

Private Provision of Services:

20. Please indicate (✓) which of the following types of private sector provision of service exist in the City.
- Pre-collection of residential solid waste - by **private subscription**
 - Collection of construction and demolition debris - by private subscription
 - Collection of industrial wastes from large factories - by private subscription
 - Collection of commercial wastes from large hotels, offices, markets or stores - by private subscription
 - Collection of **healthcare** wastes from hospitals or clinics - by private subscription
 - Collection of general municipal wastes from entire neighborhoods (transporting waste from collection point to disposal site) - by contract
 - 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
 - Repair of City solid waste equipment - by contract on a long-term basis
 - Conversion of waste to compost - by concession
 - Operation of a transfer station and long distance hauling system - by contract or concession
 - Operation of a disposal site - by contract or concession
 - Removal of decomposed waste from a City disposal site for soil conditioner - by concession
 - Collection of user charges or waste taxes - by franchise with bill collection agents
 - Other , please describe

21. Has the City had previous experience with private provision of solid waste services in the past?
 If any such services have been discontinued, please explain.

22. Does your City have a byelaw requiring households and establishments to cooperate with any private sector agents appointed by the City to provide solid waste services. (Such agents may be appointed under contract, franchise, or concession agreements, or they may be licensed to provide a service). Yes No

Give each type of private sector participation identified in Question 21 above a serial number and answer the following questions for each one. The abbreviation PSP stands for "private sector participation" and a "PSP arrangement" can be a contract, a franchise or concession agreement, or a licensing arrangement.

	Serial number	1	2	3	4	5
23.a	When did you begin planning and initiate steps toward implementation? (Write date)					
23.b	And when did the private firm actually begin to deliver the service? (Write date)					

24. 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? (Write answers on a separate sheet.)

Serial number	1	2	3	4	5
25.a	What is the duration in months of the current contracts, franchises or concessions?				

25.b If PSP arrangements are made for only one year or less, please explain why.

.....

26. Are PSP arrangements automatically renewed at the end of the contract, license or franchise period if performance has been satisfactory, or are the firms required to compete anew for a new PSP arrangement? (Show by ✓)

Serial number	1	2	3	4	5
Automatically renewed					
Tender competition each time					

27. Do your PSP arrangements have cost escalation indices, which are tied to the rate of inflation, exchange rates, or a consumer price index?

Serial number	1	2	3	4	5
Response	Yes <input type="checkbox"/> No <input type="checkbox"/>				

28.a Considering the PSP arrangements which you have in your city, please indicate the administrative level at which decisions concerning PSP arrangements and selection of service providers are made.

- At the City level?
- At the Provincial or State level?
- At the Central Government level?

28.b Is the level - at which decisions and selections for PSP arrangement are made – decided according to

- the monetary size of the agreement
- the length of the agreement period
- or the involvement of capital investment?

29. 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? Yes No

30. 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**, (i.e., suburban **laid out** residential areas (SLR), central commercial or residential areas of high priority use (CC or CR), marginal densely populated neighborhoods (MD), new developments in peripheral areas (PN)), and other aspects such as **density**, **road access**, **income level**, and **location**.

Serial number	Land use	Density	Road access	Income level	Location
1					
2					
3					
4					
5					

31. In communities which are served by private contractors, does the type and level of service vary at all from the service provided by the municipal authorities? Yes No

If "yes", please explain

.....

32.a Has the city done any comparative studies on the differences in performance between the municipality service and the private sector service? Yes No

32.b Has it monitored differences in **productivity** per worker , productivity per vehicle , quality of service , or cost of service ?

33.a On what basis do you pay the private firms which are under your PSP arrangements?
 According to → 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, or
 → (other)?

33.b Does the payment from the city to the various private firms vary according to
 → the difficulty of providing the service in a given area, Yes No
 → the travel time or distance to the transfer or disposal site, Yes No
 → the amount of waste to be collected? Yes No

34. What inspection, supervision, and/or performance monitoring do you provide in the areas served by private sector systems?

- 35.a Do you have any penalty or sanction clauses in your PSP arrangements? Yes No
- 35.b What course of action can you take if a private firm does not perform satisfactorily?
.....
.....
- 36. When PSP arrangements were being initiated, what kind of external technical or financial assistance did the City receive from central or provincial government, or from bilateral or multi-lateral agencies?
.....
.....
- 37. Did the city provide any land, buildings, equipment or human resources to support the private firms' activities initially?
land , buildings , equipment , human resources
- 38.a Did the city provide any support to the private firms to help them to obtain capital financing? Yes No
- 38.b Did the city provide any guarantees, or did the city arrange a multi-year contract to enable Bank financing?
Yes No Please specify
- 39. Did the city provide community education, general public education, and public participation workshops initially to support the transition to a PSP system? Yes No
If "yes", please provide further information
- 40. Are there any problems, observations or issues that you would like to share with us with regard to PSP systems and your experience with them (related to control , reliability , cost , political intervention , performance , other)?
.....
.....
- 41. 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? (Lessons related to performance specifications , bonds , cost , other .)
.....
.....
- 42. Have you experienced any benefits from involving the private sector in solid waste services? If so, please explain what these benefits have been. (Some possible examples are: freedom to hire and fire employees , flexibility in hours of work , freedom from bureaucratic procedures and delays , greater access to technical skills , access to credit .)
Other
- 43. Based on your experience, would you recommend that other cities implement PSP systems similar to yours?
Yes No

44. If you have not involved the private sector in solid waste management, please explain your concerns and reluctance to do so.

Is there concern about

- a greater likelihood that contracts would be audited for performance ,
 - political interference in performance ,
 - control ,
 - cost ,
 - reliability ,
 - labor unions ,
 - social issues , or
 - other factors
-
-

Annex A7: SAMPLE TERMS OF REFERENCE ZONING STUDY FOR PRIVATIZATION OF WASTE COLLECTION

by Sandra Cointreau-Levine

Introduction

These terms of reference are concerned with the development of zones for refuse collection in the urban area of (name of city). Some of the zones will be served by the private sector, and local government will serve others. To achieve optimum contestability, it is strongly recommended that the zones served by local government cover at least 30% of the population of the urban area. The solid waste that is 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, and transport to the officially designated discharge location (transfer, treatment or disposal site).

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 equivalent zones for the delivery of solid waste collection services. Some zones will be served by the private sector and others by local government. If the zones are similar it is possible to compare the performances of the private sector and local government teams, and **contestability** is maximized.

Each zone should be relatively similar in terms of

- the difficulty of providing the service,
- the methods of operating that are suitable,
- the cost of providing the service, and
- commercial and non-commercial risks.

In determining the zones for collection operations the following issues should be considered:

- public education and the willingness of residents to cooperate with the collection system;
- the ability of residents to afford **dustbins** or bags for storage of their solid waste;
- the availability of space for dustbins and **communal** containers;
- the population density,
- the climate, and other conditions affecting required frequency of service;
- access road conditions that might affect collection equipment; and

- distance from the zone to the discharge point (transfer station, treatment facility or landfill).

(This list is not exhaustive; it may be necessary to consider other issues also.)

The privatization of solid waste collection will be implemented gradually over a period of 5 to 10 years. Local government should continue to provide the collection service in at least 30 per cent of the city. Therefore, the process of zoning shall be conducted in such a manner that it is possible to update or modify the proposals. For this reason, it is recommended that the various issues for zoning be dealt with through a series of map **overlays**.

Scope of Work

This involves the preparation of a series of maps on transparent material so that they can be overlaid to show the combined effects of a range of parameters. It is likely that considerable effort will be needed to collect and compile the information needed for each map before the actual map can be prepared. (If a well-developed GIS system is already available, it may be simpler to print maps showing the required combinations of parameters, rather than preparing transparent overlays.)

Task 1. Develop a Base Map.

Develop a base map (showing all streets and major features) of the city for the zoning exercise. As much as possible, prepare the base map using existing maps available from government land use and public works agencies. Mylar, or another transparent material, will be used for the base map. From the base map, a series of similarly transparent copies will be printed. The copies will be used in the preparation 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 showing the distribution of existing land use on a city map. The land use categories should be in accordance with local designations such as: residential development of low, medium and high income; recently laid-out residential development, old congested, spontaneous urban, and semi-rural housing areas; commercial development; institutional (government office) development; industrial development; open spaces; and markets.

Task 3. Population Density.

Show on a city map the distribution of population by actual number and by density.

Task 4. Road Conditions.

Show on a city map all roads that can bear heavy truck traffic, such as trucks 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 which meet international design criteria for roads and bridges (including small bridges over culverts or canals) for carrying vehicles of a gross vehicle weight of 35 tonnes, or greater. (Vehicles serving a transfer station may weigh as much as this when loaded.) Actual weight limits depend on the national highway design standards.

Task 5. Traffic Condition.

Show on a city map the primary paved roads where traffic congestion significantly affects travel speeds. Indicate those primary paved roads where the travel speeds of motor vehicles are under 30 km/hour for more than two hours each day. Also, show on the same map the secondary unpaved roads that are occasionally flooded, so that access is limited or severe damage is likely during rainy seasons, or where there are other traffic constraints.

Task 6. Large Sources.

Show on a city map the location of all large waste generators where more than one cubic meter of solid waste needs to be collected each day. Include, as appropriate, large markets, hotels, hospitals, schools, restaurants, and office buildings.

Task 7. Community Organization.

Show 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. (Such communities generally have informal structures for communication, education, decision-making, and implementing improvements. Indicate those communities where the residents are already participating in a voluntary refuse collection scheme.

Task 8. Accessibility.

Show on a city map all neighborhoods where a door-to-door waste collection service cannot be provided by trucks because of access problems.

Task 9. Existing Services.

Show on a city map the location of all areas currently receiving solid waste collection and cleansing services. Indicate those areas which are receiving a door-to-door service, those served by communal containers, and those receiving a **block** collection service. Indicate the frequency of each existing service, (such as daily, twice weekly, once weekly).

Task 10. Waste Generation.

Compile waste generation information for the various land use categories that exist in the city. Map the distribution of waste generation in terms of tonnes per day per community, block or hectare. (These data can be generated using the known distribution of population and waste generation rates, or by site measurements.)

Task 11. Map the Privatization Zones.

Overlay these city map transparencies and define collection zones that are large enough for reliable operation and to benefit from **economies of scale**, and **equitable** (or similar in operational requirements, as discussed Part II Section 5.8). Because it will be most difficult to ensure the desired degree of competition in the first round of privatization, it is especially important that these zones be comparable. Obtaining the cooperation of residents with the privatized service will be most difficult in these initial zones, therefore other factors affecting the difficulty of providing service need to be balanced so that the initial privatization activities have a reasonable chance of success.

For **reliability**, a zone should require at least **three** vehicles of a single type, so that the zone can be served in a second shift when one of the vehicles is down for maintenance or repair.

Considering **economies of scale** and the **span of management**, a zone should be served by at least five vehicles, (as discussed in Part II, Section 5.9). 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.

Consideration of many local factors, including access, waste quantities and travel times, leads to recommendations regarding the capacities of the required vehicles and the populations of each zone.

Based on the above, it is recommended that the City be subdivided into similar zones with populations of to, based on the selection of suitable technology and the distance that the waste must be carried. The private sector will be invited to submit bids for serving individual zones, or, if the potential involvement of international firms is desired, any combination of to zones. In this manner, it is intended that the tender will encourage the formation of *joint ventures* with international firms in bidding for the multi-zone combination.

To the extent possible, each zone (which may be within one single boundary or may be a combination of areas) will have its *centroid* equidistant (in terms of travel time) from the discharge location. Each zone will be similar and equitable, to the extent possible, in terms of:

- access for vehicles,
- road and traffic conditions,
- the collection methods that can be used (door-to-door, communal or block),
- the willingness of residents to cooperate with the storage and timing requirements of the collection system,
- the willingness of residents to pay the fees, and
- quantity of waste to be collected from large waste generators.

Deliverables

Provide five copies of each set of transparent and replicable maps showing baseline information and defining the collection/cleansing service zones. All originals and copies shall be on high quality Mylar material.

Schedule

Deliverables to be provided within four months of the starting date of the signed contract.

Team

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

Annex A8: *SAMPLE TERMS OF REFERENCE for an INSTITUTIONAL, FINANCIAL AND PRIVATIZATION STUDY*

by Sandra Cointreau-Levine

When local information has been inserted into the gaps, this Annex can be used as Terms of Reference for a study. This Annex is also reproduced in electronic format in Part V so that it can be conveniently used.

Introduction

This proposed study covers all developed areas of (name of the city or urban area). The study area has about residents, of which per cent live in built-up (semi-urban) settings and together generate from to tonnes per year of municipal solid waste (i.e., mixed refuse from residential, commercial, institutional, and industrial establishments). Currently, about per cent of the solid waste from residents in the built-up areas is collected by their municipal governments. All collected waste is taken to open dumps, landfills or other treatment facilities in each of the main municipalities.

Revenues to cover the recurrent (operation and maintenance) costs of solid waste management are currently generated as follows:

- per cent from general tax revenues generated by the local government;
- per cent from subsidies and transfers from provincial or central government;
- per cent from **direct user charges** to households and establishments receiving collection services;
- per cent from **sanctions** for littering, **clandestine** dumping and other public cleansing violations;
- per cent from tipping fees at the existing disposal sites;
- per cent from **license** fees paid by private haulers and franchisees; and
- per cent from concessionaires permitted to extract recyclables or recover resources from the solid waste.

Capital investment costs for solid waste management in the past ten years have been covered as follows:

- per cent from grants or loans from provincial or central government;
- per cent from grants or loans from multilateral and bilateral development agencies;
- per cent from commercial loans;
- per cent from floating local government bonds; and
- per cent from private sector participation.

Objective of the study

The main objectives of the study are

- to examine the 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 (the urban area under consideration); and
- to evaluate the feasibility and advisability of involving the private sector.

The Consultants are expected to recommend appropriate cost recovery mechanisms, tariff structures and cost recovery targets. They are also expected to recommend the optimal private sector participation strategy and prepare model bidding documents for soliciting private sector participation (PSP) in various solid waste activities.

More specifically, the Study will:

- determine the appropriate institutional, commercialization or **corporatization** strategy to improve solid waste management in the project area, including the definition of (i) appropriate roles and responsibilities for the participating entities, (ii) organizational structure and (iii) staffing.
- conduct a financial analysis of the sweeping, collection, transport and disposal systems taking into account operating and maintenance costs in the target areas. (It should also include reviewing the reliability of estimates of capital costs which have been developed by others for new transfer, disposal, and treatment facilities).
- survey different types of generators of solid waste regarding their preferences regarding collection methods and their ability and willingness to pay for various solid waste management service options (The different types of generators may include residents, commercial establishments, ports, and tourist establishments. The views of interfacing activities and employees providing services should also be obtained, by surveying individuals involved in pre-collection, collection, recycling, transfer, disposal, and composting.)
- analyze the feasibility of alternatives for full cost recovery or partial cost recovery and propose (i) financial plans, (ii) pricing or rate structures, and (iii) mechanisms for collecting charges. These financial proposals should accompany the proposed institutional arrangements.
- determine appropriate methods of involving the private sector in order to improve efficiency, and reduce cost and capital investment in collection, transfer, composting, recycling, healthcare waste management, and general waste disposal.
- examine the legal framework governing relationships among the local, provincial and central levels of government, and between them and 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, *intermunicipal* public enterprises (for selected activities of solid waste management), and provincial solid waste public-private partnerships. The Consultant shall propose a strategy by which 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,
- low labor productivity,
- strikes,
- lack of management autonomy to allow selection of qualified staff,
- lack of management autonomy to terminate employment of non-performing personnel,
- lack of revenue generation capacity,
- lack of enforcement capacity,
- poor vehicle 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 sub-divided (for example, whether collection should be handled by local government and disposal should be handled by regional or provincial authorities). The Consultant should also examine the advantages and disadvantages of integrating solid waste management with any other services, such as water supply, water resources management, storm drainage, sewerage or wastewater treatment.

The proposed strategy should be accompanied by a recommended organizational structure 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 short-

ages or excesses of labor within the system. A capacity development program for managers and technical staff shall be prepared if deemed necessary, 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 and disposal systems (including pre-collection, recycling, transfer, composting and other means of treatment and resource recovery). This shall include a review of capital requirements for any new transfer, disposal, or treatment facilities and for vehicles and equipment for incremental developments of pre-collection, recycling, collection and transfer, as projected by previous technical work. The Consultant shall also prepare projections of operating and maintenance (O&M) costs for the first five years of the operation of the proposed new facilities and equipment. The land to be allocated to new facilities shall be appraised and valued.

The analysis must consider various public and private sector arrangements for the construction and operation of the proposed new facilities and for the pre-collection, collection and transfer system, and investigate the financial viability and technical advantages of alternative arrangements. The Consultant shall consider whether contestable and competitive solid waste collection services in various zones of the target areas should be provided through multi-year service contracts or franchises with private companies. The Consultant shall also investigate whether the new facilities should be implemented through concessions – either as build, operate and own or transfer (BOO or BOT), or as design, build, operate and own or transfer (DBOO or DBOT). If the authority takes responsibility for design and construction of the proposed new facilities, the Consultant shall consider whether they should be operated under service contracts. The Consultant shall determine the optimal capital structure(s) required to implement the proposed new facilities, together with the equity contributions of each participant.

The relative willingness and capacity of residents and corporations in the target areas to pay for solid waste management services shall be determined. (The sample questionnaire for assessing demand and willingness to pay in Annex A9 could be used for this purpose.) 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 payment of the full service charge. The Consultant shall develop

a proposed schedule of fines and penalties for violation of solid waste management byelaws, rules, guidelines, and regulations. The Consultant shall investigate mechanisms for the collection of fees, including the collection of fees together with payments for other utilities (such as water, sewerage and electricity). Consideration should be given to the segregating of the accounts for all solid waste revenues.

Based on these considerations, 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 tariff structures for solid waste fees to be collected from residents, commercial and industrial establishments, and tipping fees. The Consultant shall recommend alternative funding sources and financing mechanisms to cover potential shortfalls and provide temporary subsidies. Such financing may include but not be limited to loans, grants, bonds and limited stock offerings. If subsidies are needed, the Consultant shall determine the financial capacity of the local authorities to meet this need.

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 hazardous healthcare wastes, port wastes, and construction and demolition debris. The options of service contracting, management contracting, franchised service, **licensed** private subscription, and concessions shall be included.

The study should take into account the capacity for delivering the required services that currently exists in each area and examine the comparative advantages of using public and private sector operators in collection, recycling, transfer, and disposal, giving careful consideration to supervision 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

If there is a possibility of shared regional facilities requiring the participation of several public sector bodies, the Consultant shall identify the relevant laws, rules and regulations governing the association of several local authorities. This investigation should include the legal aspects of public-private participation in the establishment of such joint entities. Issues of jurisdiction must also be examined. The study shall identify the detailed process for reg-

istration and approval of the proposed legal structures by the appropriate authorities.

The Consultant shall also determine the legal options and mechanisms for implementing and enforcing the proposed tariff policy. The Consultant shall review existing byelaws that authorize private sector agents, and that require residents, visitors, and establishments to comply with the cost recovery arrangements. If necessary, changes shall be recommended. This shall include the legal arrangements for licensing private haulers of general and special wastes, and requirements that residents must not utilize the services of unlicensed haulers. If private sector participation is recommended, the Consultant shall formulate the necessary bidding procedures within the framework of the laws and regulations that govern contract, franchise or concession agreements. The basic provisions and format for bid and tender documents should be developed in consultation with the legal departments of the relevant authorities. Performance and design specifications will be outlined separately by technical specialists. The Consultant shall closely examine recent relevant privatization experiences in other countries for useful ideas and models. The Consultant shall propose an appropriate financial framework against which bids will be assessed.

Expected outputs

The Consultant shall produce the following:

- a) A report examining potential institutional strategies (including commercialization or corporatization) for various solid waste management activities, including recommendations for the preferred approach and the proposed organizational structure and staffing.
- b) A report providing a comprehensive financial analysis of the solid waste management services of the project area, accompanied by detailed recommendations concerning tariffs, cost recovery, subsidy policies and the timing of their implementation. A financing plan reflecting the recommended institutional structures should be included.
- c) A report examining existing laws and regulations applicable to the recommended institutional framework. It should also include proposals for appropriate modifications to the legal provisions.
- d) A report on private sector participation with recommendations on which activities should involve the private sector, and how privatization can be achieved. It should also include the basic format and provisions of model bidding documents and **procurement** procedures, excluding performance and technical design specifications which would be developed by others.
- e) 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 technical assistance required for building the local institutional and financial capacity needed for effectively managing private sector participation.

Schedule

The Consultant shall provide monthly progress reports summarizing progress in this work, outlining problems and constraints encountered, and presenting issues for the Client's decision, as required.

Five copies of the initial draft report covering all progress shall be submitted six months after the notice to proceed with the above scope of work. Five copies of the final draft report (which shall include modifications in response to the

Client's comments on the initial draft) shall be submitted 7.5 months after the notice to proceed with the above scope of work, assuming the Client shall have provided comments within two weeks after receiving the initial draft report.

Team

The team shall include

- at least one financial analyst with over 15 years of related experience,
- one specialist in private sector participation, who is familiar with the solid waste sector, with over 15 years of related experience, and
- one specialist in solid waste management with over 15 years of related experience in technical and economic aspects.

Annex A9: DEMAND ASSESSMENT AND WILLINGNESS TO PAY SURVEY for SOLID WASTE COLLECTION AND DISPOSAL SERVICES

by Sandra Cointreau-Levine

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. To assess demand, willingness to pay, and affordability, there is a need to communicate with the potential recipients of services, asking them for their opinions regarding service options, costs, and methods of payment. Since private sector provision of urban services is a new approach in many places, it is important to demonstrate to the private sector that there is a real demand and willingness to pay. Then the private sector may be convinced that investment risks are acceptable. For areas where no demand exists or where there is no willingness to pay for a waste collection service, decisions will be required as to what action to take. Options include providing a collection service which is financed by a subsidy, advocating on-site systems (such as household recycling, burial and composting), and doing nothing.

After this introduction there is a model questionnaire form for asking residents in actual or potential solid waste service areas regarding their preferences and willingness to pay. Before developing a final version of this questionnaire and conducting the survey, there needs to be feasibility study to determine which service options could be viable, and to estimate the full **amortization**, operating, and maintenance costs of each. Costs need to be developed in terms of costs per tonne and costs per capita per year. The cost recovery system should cover the costs for disposal as well as collection, so the viability and costs of disposal options also need to be studied.

There are costs that may not be covered by the cost recovery system and so government is obliged to pay them. Government payments commonly cover the costs of

- sweeping of public streets,
- cleaning of public parks,
- collection services to public hospitals, police and military barracks, government office buildings, and public schools.

During the initial stages of the development of a direct cost recovery system, government payments might also cover services to low-income residents. The cost of these services needs to be estimated and government's willingness and commitment to pay established, especially if the private sec-

tor is to be involved in collecting wastes from such areas. During the survey the **costs must be presented to the residents in clear terms** so that they can respond to questions in a meaningful way.

For the purposes of the survey, there needs to be selection of representative neighborhoods to give a comprehensive view of the range of conditions prevalent in the study area. Usually the following types of neighborhoods are surveyed:

- high income residential,
- middle income residential,
- low income residential,
- mixed commercial and residential, and
- 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 service areas:

- hotels,
- office buildings,
- department stores,
- industrial estates,
- airports and ports, and
- embassies and residences of ambassadors.

The data from the survey would enable balancing of the competing objectives of

- providing at least a minimum level of service to areas where the demand is low,
- providing adequately frequent and convenient services coverage to areas where demand and willingness to pay are high, and
- optimum cost recovery.

The data would help identify areas that might be suitable for **pilot** testing of privatization and cost recovery approaches.

A second survey should be undertaken after residents have experienced the service improvements. Comparison with the results of the first survey would show whether the waste generators have changed their expectations, demands, and willingness to pay after experiencing an improved service. Periodic surveys are recommended to monitor changes in demand.

Instructions

Identification of each household and establishment

The identification of each household and establishment needs to be specific enough and clearly recorded so that the same door can be found for subsequent surveys one or more years later.

Respondent

The person interviewed should be the head of the household (or establishment), or someone who is clearly involved in making decisions about the expenditures and commitments of the household or establishment.

Survey Purpose

The reason for the survey needs to be clearly explained to each respondent. If the survey may be followed by a *pilot* test, project, or service change, this should be clearly stated.

Service Options

Each collection system option needs to be described. Preferably, there should be drawings or photos to illustrate the various options, including the type of household container and the size and type of collection vehicle. For each option, the frequency needs to be stated. If the service involves participation by residents (such as carrying dustbins to the roadside early in the morning or taking waste to a communal container), the schedule, placement requirements, and walking distances should be described. The method of disposal following collection should also be described, as part of the income from fees should be used for environmentally safe disposal. Respondents should be invited to ask questions, and to express their doubts (which should be recorded for future reference).

Service Price

Before conducting the survey, the costs for each option must be carefully estimated. Respondents should be told the price of each collection system option during the survey. (Estimating the fee that should be paid involves determining the cost of the service and an assessment of the proportion of the households that will actually pay the fee. For example, it may be appropriate to assume that the service is provided to all the households and establishments within an area – because exclusion of households or establishments that do not pay is difficult – and to assume that fees are paid by only 80 per cent of service recipients.)

Service Preferences

The possible types of service provider - local government or a private company - need to be described. The survey should determine whether waste generators have a prefer-

ence, and record their concerns and doubts about the possibilities.

Fee Collection Preferences

The options for fee collection need to be described. The fee can be collected by government, the private company that collects the waste, commissioned fee collectors, or an existing authority (such as a water or electricity authority). The fee can be collected from door to door, by mail, at banks or at government offices. The survey should determine whether respondents have a preference, and record their concerns and doubts about the options.

Additional Information

Any other information that might be useful in determining demand and willingness to pay should be collected. If the household (or establishment) has unusual circumstances, burdens or constraints (such as a sick or disabled family member, or recent loss of employment or markets) which might influence their responses, this should be recorded separately. If the household (or establishment) appears to have a surprisingly large income (apparent in the display of affluence inconsistent with the declared income, or because of informal sector income, or income from relatives overseas) which might not be readily apparent from their responses, this should be recorded 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

The survey data should be sorted according to factors that might influence responses. For example, the service preference and willingness to pay responses could be correlated to factors such as literacy, ethnic background, urban or rural background, income, and prior experience with a particular type of collection service. The results of such correlations would show whether these factors have a significant effect on preferences and willingness to pay.

Pilot Test

It is extremely important that the questionnaire be tested and refined. Particular attention during the testing needs to be paid to sections C and F, because these general questions might fatigue the respondents and therefore not provide meaningful data which can be used to correlate results. Surveyors should take care that the descriptions of the various possible collection systems are sufficiently understood.

MODEL SURVEY QUESTIONNAIRE FOR ASSESSING DEMAND AND WILLINGNESS TO PAY

Date of interview:

Name of interviewer:

Area:

A. Identification:

"I would like to ask you some questions that would assist the local government in determining how to improve the solid waste collection service to your neighborhood. These questions usually take about minutes. We are interviewing a sample of per cent of the households and establishments 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."

A.1 Household (or establishment) identification:

A.2 Name of Respondent:

A.3 Position of Respondent:

Head of household (or establishment) Spouse of head of household (or establishment) Other , please describe

A.4 How many people (children and adults) live in your household (or work in your establishment) on a regular basis?

B. Major Concerns:

(For this question, present the list in a different order 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):

- a) Difficult access to drinking water
- b) Poor quality of drinking water
- c) Inadequate disposal of residential wastewater
- d) Inadequate disposal of human excreta
- e) Flooding and inadequate drainage of stormwater
- f) Poor access for motor vehicles
- g) Lack of public transport
- h) Unreliable electricity supply
- i) Inadequate solid waste collection service
- j) Presence of litter and illegal piles of solid waste
- k) Nuisance from solid waste transfer points
- l) Nuisance from solid waste disposal sites

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

Most serious problem (Write letter – a to l)

Don't know

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

Second most serious problem (Write letter – a to l)

Don't know

B.3 (If item (i) was not listed) In your opinion, how serious is the problem of solid waste collection in this area?

- Very serious a
- Somewhat serious b
- Not serious c
- Don't know d

B.4 (If item (j) was not listed) In your opinion, how serious is the problem of littering and illegal piles of solid waste in this area?

- Very serious a
- Somewhat serious b
- Not serious c
- Don't know d

B.5 (If item (k) was not listed) In your opinion, how serious is the problem of nuisance from solid waste transfer points in this area?

- Very serious a
- Somewhat serious b
- Not serious c
- Don't know d

B.6 (If item (l) was not listed) In your opinion, how serious is the problem of nuisance from solid waste disposal or dumping in this area?

- Very serious a
- Somewhat serious b
- Not serious c
- Don't know d

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):"

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

- Yes, we have metal or plastic container a
- We have basket or carton container b
- No, we do not have a container c
- Don't know d

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

- Yes a **Go to Question C.3**
- No b **Go to Section D**
- Don't know c **Try question C.3**

C.3 How frequently is your container usually taken out to be emptied?

- Several times each day a
- Daily b
- Three times a week c
- Twice a week d
- Once a week e
- Less frequently f
- Don't know g

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

- Head of household (or establishment) a
 Spouse of head of household (or establishment) b
 Another male adult c (Please specify)
 Another female adult d (Please specify)
 Any male adult e
 Any female adult f
 Any child between the ages of 13 and 18 g
 Any child between the ages of 6 and 12 h
 Don't know i

C.5 Where is your container taken to be emptied?

- The container is placed beside the road for emptying into a collection vehicle. a
 The container is emptied into a larger container in the same building. b
 The container is emptied into a communal container in the neighborhood. c
 The container is emptied onto an open pile of waste in the neighborhood. d
 The container is emptied at the final disposal, and the waste stays there. e
 Don't know. f

C.6 Approximately how far or how many minutes walking time one-way is it to empty your container? (If possible the respondent should indicate to the questioner where it is, so that the questioner can later check the distance.)

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

C.7 If your container is emptied into a larger container in the same building or into a communal container in the neighborhood, how often is that (larger) container emptied?

- Daily a
 Three times a week b
 Twice a week c
 Once a week d
 Less than once a week e
 Less than once in 2 weeks f
 Less than once in 3 weeks g
 Less than once a month h
 Don't know i

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

- Daily a
 Three times a week b
 Twice a week c
 Once a week d
 Less than once a week e
 Less than once in 2 weeks f
 Less than once in 3 weeks g
 Less than once a month h
 Don't know i

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

- Less than one year a
 One to two years b
 Two to five years c
 More than five years d
 Don't know e

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

- Local government a
- Local public authority b
- Neighborhood group c
- Private company d
- Don't know e

C.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?

- The same organization for the last five years a
- There has been a change in the last five years b
- Don't know c
- If there has been a change, please give more details
-

C.12 What is your opinion of the service that you are receiving for collection of solid waste from your household (or establishment) ?

- Very satisfied a **Go to Question C.14**
- Reasonably satisfied b **Go to Question C.14**
- Not satisfied at all c **Go to Question C.13**
- Don't know d

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

- The service is not reliable a
- Frequency of service – the interval between collections is too long b
- The location of the communal container or pick-up point is unsatisfactory c
- Lack of clean appearance, odors, flies or fires at the communal container d
- The collection workers are rude or impolite e
- Lack of clean appearance of the neighborhood f
- Other problem g Please explain
-

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

- Yes a **Go to Question C.15**
- Don't know b **Go to Section D**

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

- Yes a
- No b
- Don't know c

D. Description of Proposed Service Options

“Plans are being developed to upgrade the solid waste system in your neighborhood. 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.”

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

- Yes a **(Record questions and answer them)**
- No b

E. Demand Assessment:

“Different methods of collecting solid waste have different costs and require different levels of involvement from residents such as you. The vehicles used for collection could be either trucks or tractors, depending on the road conditions in your neighborhood. The main methods of solid waste collection are as follows:

a) Low Cost System

A large communal container - probably of 5 to 8 cubic meters capacity – (interviewer should demonstrate the 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 pick up the container and take it away to be emptied before it is completely full.

b) Low Cost System

A vehicle would come to the neighborhood on a scheduled basis and park for a few minutes at each block or road junction to collect solid waste. When the vehicle parks, it would ring a bell, sound its horn or play a musical jingle to summon residents to bring their containers out to be emptied. All waste in the neighborhood would be kept inside until the vehicle comes.

c) 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 by a worker using a pushcart or donkey, depending on which would work better in your neighborhood.

d) Higher Cost System

A vehicle would come to the neighborhood on a scheduled basis and provide a door-to-door service. At each building, containers of waste, which have been left at the curbside, would be emptied into 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.”

E.1 Which of the service options just described do you prefer, giving consideration to the convenience and the cost?

- Collection method (a) a – *Now go to Question E.2*
- Collection method (b) b – *Now go to Question E.7*
- Collection method (c) c – *Now go to Question E.10*
- Collection method (d) d – *Now go to Question E.13*
- Don't know e – *Ask if the respondent would like further explanation*

E.2 If your preferred collection method (a) were introduced, how far would you be willing to walk to the large communal container?

- 50 meters a
- 100 meters b
- 150 meters c
- 200 meters d
- More than 200 meters e
- Don't know f

E.3 If your preferred collection method (a) were introduced, would you be willing to have the communal container within 20 meters of your house (or establishment)?

- Yes a – *Now go to Question E.5*
- No b – *Now go to Question E.4*
- Don't know c – *Now go to Question E.4*

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

.....

E.5 The cost of collection method (a) is per person per month. For your household (or establishment), which has people, this amounts to per month.

Would you be willing to pay this fee to cover the cost of the waste collection service?

- Yes a – **Now go to Question E.21**
- No b – **Now go to Question E.6**
- Don't know c – **Now go to Question E.6**

E.6 What is the maximum fee per month that your household (or establishment) would be prepared to pay for the collection method that you have chosen (method a)?

- per month a – **Now go to Question E.17**
- Won't pay any fee b – **Now go to Question E.16**
- Don't know c – **Now go to Question E.16**

E.7 If your preferred collection method (b) were introduced, 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? (More than one answer may be checked.)

- Early morning before 9 a.m. a
- Anytime in the morning b
- Anytime in the afternoon c
- Early evening after 5 p.m. d
- Anytime during daylight e

E.8 The cost of collection method (b) is per person per month if the collection vehicle comes times per week. For your household (or establishment), which has people, the fee would be per month.

Would you be willing to pay this fee to cover the cost of the collection service?

- Yes a – **Now go to Question E.21**
- No b – **Now go to Question E.9**
- Don't know c – **Now go to Question E.9**

E.9 What is the maximum fee per month that your household (or establishment) would be prepared to pay for the collection method that you have chosen (method b)?

- per month a – **Now go to Question E.17**
- Won't pay any fee b – **Now go to Question E.16**
- Don't know c – **Now go to Question E.16**

E.10 If your preferred collection method (c) were introduced, would you be willing to have the communal container within 20 meters of your house (or establishment)?

- Yes a
- No b
- Don't know c

E.11 The cost of collection method (c) is per person per month for collection times per week. For your household (or establishment), which has people, this amounts to per month.

Would you be willing to pay this fee to cover the cost of the collection service?

- Yes a – **Now go to Question E.21**
- No b – **Now go to Question E.12**
- Don't know c – **Now go to Question E.12**

E.12 What is the maximum fee per month that your household (or establishment) would be prepared to pay for the collection method that you have chosen (method c)?

- per month a – **Now go to Question E.17**
- Won't pay any fee b – **Now go to Question E.16**
- Don't know c – **Now go to Question E.16**

E.13 If your preferred collection method (**d**) were introduced, what type of containers do you think that you and your neighbors should use for putting out your waste at the curbside?

- Metal dustbins a
- Plastic dustbins b
- Plastic or nylon bags c

E.14 The cost of collection method (d) is per person per month for collection of your waste from the curbside times per week. For your household (or establishment), which has people, this amounts to per month.

Would you be willing to pay this fee to cover the cost of your preferred collection method?

- Yes a – **Now go to Question E.21**
- No b – **Now go to Question E.15**
- Don't know c – **Now go to Question E.15**

E.15 What is the maximum fee per month that your household (or establishment) would be prepared to pay for the collection method that you have chosen (method d)?

- per month a – **Now go to Question E.17**
- Won't pay any fee b – **Now go to Question E.16**
- Don't know c – **Now go to Question E.16**

E.16 What is the reason that you are unsure or don't want to pay for a collection service?

.....

E.17 (For those who stated that they are unsure or don't want to pay for the collection service from government, or are not willing to pay the government enough to cover the full cost of service.)

Would you be willing to pay the full cost of the collection service if a private company was providing the service and collecting the fee directly from you?

- Yes a – **Now go to Section F**
- No b – **Now go to Question E.18**
- Don't know c – **Now go to Section F**

E.18 What is your reason for not being willing to pay a fee to cover the full cost of a waste collection service from the government or a private company?

- Can't afford to pay for the full cost a – **Now go to Question E.20**
- Don't believe that the service will be reliable b – **Now go to Question E.19**
- Don't consider the service important enough to pay for c – **Now go to Question E.19**
- Believe that general taxes should cover the cost of this service d – **Now go to Question E.19**
- Other e – Please explain
 – **Now go to Question E.19**

E.19 If you are not willing to pay for a collection service and government cannot afford to subsidize it for you, would you be willing to dispose of your wastes according one of the "do-it-yourself" systems described below, so that you do not pollute your neighborhood?

- Separation of recyclable materials and composting of kitchen wastes in your yard or garden. a – **Now go to Section F**
- Separation of recyclable materials and burial of kitchen wastes in your yard or garden. b – **Now go to Section F**
- No c
- Don't know d

E.20 If you are not able to afford to pay for the full cost of the collection method that you initially selected, would you consider an alternative method that offers a lower level of service or more effort on your part? Which of the following alternatives would be most acceptable to you? (More than one answer can be checked.)

- Selection of a method that has a lower cost a – **Now return to Question E.1**
- Walking a longer distance to empty or place your container b
- Less frequent collection of waste c
- Participation as a volunteer in community efforts to help with collection d
- Participation as a volunteer in community efforts to regularly clean up uncollected waste e
- Other cost-saving suggestions f Please describe
- None of these g – **Now go to Section F**
- Don't know h

E.21 If you have said that you are willing to pay for a collection service, whom would you prefer to provide the service to you?

- The local government a
- A private company b
- There is no difference c
- Don't know d

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

- To a government fee collector a
- To a fee collector working for a private company b
- To a neighborhood leader c
- They are all equally suitable d
- Don't know e

F. Demand Assessment

“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).”

F.1 What is your age? Under 24 a 25 to 34 b 35 to 44 c
45 to 54 d 55 to 64 e Over 65 f

F.2 What is your level of education (number of years of school)? years

F.3 What is the level of education of the most educated member of your household (or establishment)? years at school

F.4 (If a household) How many children under 15 years of age are in your household?

F.5 (If a household) How many people in your household contribute to the household income? people

F.6 (If a household) What is the occupation of the principle income earner in the household?

- Self-employed as laborer a
- Self-employed as trader b
- Self-employed as consultant or professional c
- Employee of a private company d
- Employee of government (public sector) e
- Retired f
- Other g
- Don't know h

F.7 (If an establishment) What is the principle commercial activity of this establishment?

- | | | |
|---|--------------------------|-------------------------|
| Trading in goods | <input type="checkbox"/> | a |
| Trading in produce, meat, poultry or fish | <input type="checkbox"/> | b |
| Professional services | <input type="checkbox"/> | c |
| Manufacturing, food preparation | <input type="checkbox"/> | d |
| Repair, maintenance | <input type="checkbox"/> | e |
| Inn or Hotel | <input type="checkbox"/> | f |
| Restaurant, café, bar | <input type="checkbox"/> | g |
| Bank | <input type="checkbox"/> | h |
| Other | <input type="checkbox"/> | i Please describe |

“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.

F.8 If there is need to seek your advice further, may we contact you again?”

- | | | |
|------------|--------------------------|---|
| Yes | <input type="checkbox"/> | a |
| No | <input type="checkbox"/> | b |
| Don't know | <input type="checkbox"/> | c |

Annex A10: CHECKLIST OF ISSUES TO BE COVERED IN DIFFERENT TYPES OF MSWM AGREEMENTS

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Annex A10: CHECKLIST OF ISSUES TO BE COVERED IN DIFFERENT TYPES OF MSWM AGREEMENTS

by Prasad Gopalan

A 10.1 Preamble

A 10.1.1 Introduction to Annex A10

This Annex provides guidelines for developing arrangements for different types of agreements for the collection, transfer and disposal of municipal solid wastes by the private sector. Some examples of actual contracts and agreements are available in electronic format in Part V.

The intended uses of this Annex are:

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

This Annex considers private sector participation in the following municipal solid waste services:

- collection,
- transfer and
- disposal

This Annex provides guidelines for preparing the following types of basic contractual arrangements for each of these three municipal solid waste services:

- Collection – *service contract*, franchise.
- Transfer – service contract, *management contract*, build-operate-transfer (BOT) concession
- Disposal – service contract, management contract, build-operate-transfer (BOT) concession

There are three main areas that are considered in the preparation of agreements. The first is concerned with the different issues that need to be addressed under each type of contractual arrangement. The second aspect concerns the risks that should be shared and minimized. The third section provides typical contractual clauses that need to be included in each type of contractual arrangement.

This Annex assumes that the municipality has analyzed the need for private sector arrangements for MSWM services and has broad-based support for the program from all the relevant stakeholders. This Annex also assumes that the basic legal and regulatory statutes of the country allow the entry of private sector operators into this sector. Finally, the Annex assumes that the arrangements for generating income to pay for the services delivered are also feasible, and are generally accepted by the stakeholders.

A 10.1.2 Checklist of minimum issues to be covered in the agreement and regulatory documents

For each of the contractual arrangements for the municipal solid waste management (MSWM) services mentioned above, this Annex addresses the following key issues:

- a) The parties to the agreements.
- b) The objectives and scope of the technical services under the contractual arrangement.
- c) The objectives and scope of the financial requirements under the contractual agreement.
- d) The duration of the agreement and the scope for renegotiation, early termination, annulment, or abrogation of the agreement.
- e) The rights and obligations of the private sector counterpart (contractor, franchisee or concessionaire).
- f) The rights and obligations of the *grantor*.
- g) National, state and local regulatory requirements and consents or *permits*.
- h) Identification and management of key risks.
- i) Performance measurement, monitoring, and payment.
- j) Ownership and use of assets.
- k) Dispute resolution and arbitration.

A 10.2 Agreements for waste collection services

A 10.2.1 Parties to the agreement

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

a. Grantor

The grantor of the agreement 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. Since the delivery of solid waste services is generally a local responsibility, it is very uncommon for national governments to enter into such agreements, except in small countries or countries with a low degree of decentralization of powers. If national or local regulations confer overlapping or joint responsibility for MSWM services to several agencies, then the grantor may consist of several organizations. Regulatory agencies should be party to the agreement if local law requires it in order to be able to enforce regulations on the contractor/franchisee. The key issue is to identify the particular agency (or agencies) which is vested with the power to grant agreements to the private sector for the MSWM service(s) in question.

If the agreement requires the transfer or leasing of the assets of multiple agencies to the contractor/franchisee, or use of them by the contractor/franchisee, then it may be relevant to include all the appropriate parties as co-grantors of the agreement.

b. Authority and legal standing of the grantor

The grantor of the agreement should have the legal powers to sign agreements with the private sector. The representatives of the grantor during the execution of the work covered by the agreement should also be clearly identified in the agreement. For example, an *apex agency* can represent several parties, or an independent auditor may represent the grantor to audit the financial statements of the contractor/franchisee to ascertain their accuracy. In addition, the chain of authority and legal responsibilities should be clearly defined if the original granting agency (that is party to the agreement) is dissolved, or if its powers to execute MSWM agreements are abrogated, or if it becomes bankrupt. Also, the role of a guarantor for the grantor, if required, should be investigated.

Such an agreement must be legally binding in order to allow the allocation of powers and responsibilities to the parties to the agreement, to form the basis for future dispute resolutions, arbitration, and negotiations, and to be able to offer security for obtaining 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 legal conditions may vary widely from country to country, it is highly recommended that local legal counsel be consulted well in advance of the preparation of an agreement.

c. Contractor/franchisee

The type of private sector entity that is party to the agreement should be clearly identified. (It might be a *joint venture*, a local company, a partnership, a limited partnership, a micro- or a small-scale enterprise, a community-based organization, or a trust). Registration requirements for the contractor/franchisee should also be clearly outlined so that the contractor/franchisee 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 formation of the *sponsor company*. The type of company involved in the agreement dictates its legal standing and it may, therefore, be subject to specific legal requirements. The legal standing of the private contractor/franchisee also affects his tax position, his ability to declare bankruptcy, his operation (management) and control (board), as well as his 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 agreement, 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 required to support the contractor/franchisee. In addition, the ownership arrangements between the different entities that form the private sector counterpart should be clearly identified, and conflict resolution mechanisms between the shareholders defined to the satisfaction of the grantor. Moreover, the relationship between the contractor/franchisee and all other parties supporting the contractor/franchisee 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

When they assign monopoly powers to the contractor/franchisee - 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 private sector counterpart in the public interest. These regulatory issues form the background to a contractual arrangement and should be clearly stated in the agreement. They include:

- The opportunities for competition between private sector entities in the solid waste sector at specific stages of contractual engagements (i.e., RFQ, RFP, and bidding).
- The identity of agencies that will have regulatory powers on specific issues pertaining to the delivery of services under the solid waste agreement, such as:
 - the agency responsible for tariff setting and agreements and for hearing requests for re-assessments of fees,
 - the agency responsible for monitoring the agreement,
 - the pollution control agency,
 - the ministry of environment,
 - the ministry of labor, the ministry of finance, and
 - the department of transportation.
- Funding of regulatory activities - whether the contractor/franchisee or the grantor should pay for all permit administration, regulatory inspections, hearings, and other services delivered by the regulator(s) over the duration of the agreement.
- Limits to regulatory authority should be addressed. If there are overlapping responsibilities in the regulatory field, the agreement should clearly specify which regulatory authority has the leading role in order to minimize confusion and conflicts. Provisions for interpretation and arbitration should be included in the agreement, to resolve disputes when conflicts in regulatory provisions occur.
- The various regulatory responsibilities should also be integrated in preparation for transferring certain solid waste services to the private sector. (This could include the integration or harmonization of regulations pertaining to economics, public health, environment, occupational safety, etc.)
- In the procedures for regulating the contractor/franchisee it will be necessary to balance a number of factors, including
 - the need for cost-effective service,
 - any scope for efficiency improvements in operations,
 - the need for investments in the sector, and

- the opportunity for the contractor/franchisee to make a reasonable rate of return so that the work is seen as an attractive proposition by the private sector.

A 10.2.2 Object and scope of agreement

The collection agreement could be structured as a service contract wherein the contractor provides the collection services in the specified area(s) for a periodic fee to be paid by the grantor of the contract.

Another option for structuring the relationship could be to frame the agreement as a franchise wherein the franchisee gets monopoly rights for a specified period to deliver collection services in a specific zone, and charges the generators directly for the service. In return for granting the monopoly rights to the franchisee, 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 agreements are almost identical in the manner in which services are delivered. The following sections consider the preparation 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 a collection service agreement

- Description of the service zone, service requirements in the collection zone, and the distribution of operational responsibilities between the service provider and other players (households, NGOs, etc.). Limits on service requirements.
- Scope for exclusivity in the zonal area of operation for the duration of the agreement. Scope for operation in more than one zone of service.
- Scope for amendments to the agreement to reflect dynamic service requirements in the zone of service, including scope for increasing the level of service.

b. Obligations of the provider of the collection service

The general and supplementary conditions of the agreement, together with the technical specifications, specify the obligations of the service provider. For solid waste collection, the specifications should address the following issues:

- The quality and type of service:
 - Coverage (defined using a street map of sufficient detail of the zone of service and the zoning map, the distribution of the types of establishments in the zone, road details, traffic patterns, and population densities).
 - Frequency and method (communal, block, curbside etc.) of the collection service as well as the routes of collection vehicles.
 - Required standard of cleanliness of the collection zone.
 - Types of wastes to be collected, including (if needed) provisions for handling construction and demolition debris, hazardous and healthcare wastes, and other special wastes.
 - The interface with **downstream** solid waste operations, which might include transfer, transport and disposal.

- The provision of materials, supervision, labor, equipment and other utilities and facilities for carrying out the services entailed under the agreement. Use of publicly- or privately-owned assets by the service provider. Valuation and transfer of assets at the beginning and at the end of the contract/franchise period.
- Recycling activities.
- The required types and minimum numbers of collection vehicles and containers to be used, and the required condition of this 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 the participation of residents and other users.
- 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 the case of the use of subcontractors, or in the case of franchise payments to local government), insurances, taxes and tolls, permits, acquisition of rights-of way, and indemnification requirements.
- Reporting requirements and inspection.
- Payment to the contractor for routine and emergency services, payment of franchise fee (if applicable) to the grantor, payment to the grantor or a third party for disposal. Modes of payment for service contract (payment by grantor) or franchise (direct user fees).
- Financing requirements and controls.

In relation to these considerations, the grantor may retain rights and responsibilities for some of the following activities:

- Inspection of the quality of work performed by the service provider.
- Inspection of the working conditions of personnel, and condition of **plant** (e.g., workshops and garages), equipment, and machinery.
- Approval or refusal of the use of sub-contractors.
- Obtaining and paying for permits and rights-of-way for the work.
- Public education and promotion of public participation.
- Ensuring timely payment for services as a consequence of the legal duty of the grantor for ensuring services.
- Preventing illegal/unauthorized dumping.
- Establishing service levels based on willingness to pay.
- Approval of limits on and modifications to insurance, bonds, letters of credit, as well as minimum wage requirements.
- Undertaking **downstream** waste management activities (including transfer, transport, and disposal) and specifying contractor/franchisee's interface with these activities.

- Authorizing the use by the service provider of the grantor's equipment, plant and personnel.
- Financing capital equipment.
- Making subsidy payments to contractor or franchisee for services rendered.
- Paying for services delivered (for service contracts).

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

A 10.2.3 Specific issues in a collection agreement

The previous section mentioned some obligations of the contractor/franchisee and the grantor in a collection agreement. This section expands upon some of the important aspects of these obligations. The types of collection agreement discussed here are service contracts or franchises for exclusive service zones.

a. Payment issues

In a collection contract, the responsibility for assessing and collecting the fees for a collection service is with the grantor of the contract (typically the municipality). In the case of a franchise agreement, the franchisee collects the fees.

In the first case (the service contract mode), the grantor (municipality) levies and collects revenue - preferably a **direct user charge** based on the willingness and the ability of the generators to pay for the services. The grantor collects the fee from the generators by billing them either directly at monthly intervals (or at any other regular interval) or through the statutory powers vested with the grantor. The grantor then pays the contractor a fee on a monthly (or on any other periodic) basis. Often this fee is based on measurements or estimates of waste quantities delivered to transfer stations or disposal facilities. (There are cases where weighing the collected waste has proved to be an unsuitable basis for the payment to the contractor and so an alternative basis has been sought. In such cases contractors' employees artificially increased the weights measured at **weighbridges** by adding water or dense debris to the collected waste or arranging for colleagues to stand on the weighbridge with the truck.)

In the second case (franchise mode), the franchisee is given the authority to collect fees directly from the generators based on fee agreements negotiated between the generators and the franchisee. These agreements are negotiated at the beginning of the franchisee's involvement. In this case, the grantor may also offer targeted subsidies based on certain criteria (for example, when the franchisee's audited costs for delivering the specified service exceed revenues, or when certain cus-

tomers are unable to pay for the services). In the case of a franchise, the franchisee is also required to pay a fraction of his monthly (or any other periodic) receipts as a franchise fee to the grantor to defray the costs of monitoring the franchisee.

In both cases, the grantor can use its legal powers through **liens** or penalties to deal with generators who do not pay for the services even though they are able to do so. The timing of the billing process and procedures for dealing with generators who refuse to pay should also be clearly outlined in the agreement 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 (as discussed in Annex A9). In addition to the above, the following pricing issues deserve attention:

- There should be a clearly defined procedure for assessing the level of the **differentiated base user fee** level (for franchises), or collection fee per unit weight of waste (for service contracts). The structures 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, as the basis for compensating the contractor/franchisee for the distances covered. In addition, where appropriate, the fees for hauling waste to transfer stations and directly to the disposal site should both be assessed.
- The processes and timing for
 - adjusting prices according to local economic conditions (e.g. price inflation or exchange rates),
 - changing cost structures due to changing micro- and macroeconomic conditions (such as costs of financing, prices of fuel, labor, etc.), and
 - incorporating improvements in operational efficiencies, should form a part of the tariff structure agreement.
- It may be beneficial to implement various different fee scales for generators depending upon the quantity of waste generated, the demand and the ability to pay for the service, in order to meet the overall operating cost recovery targets. (This arrangement is referred to as **cross subsidization** - subsidies (increased fees) being paid by some generators to help those less able to pay.) However, in some cases, there are legal restrictions on service price discrimination, prohibiting cross subsidies.
- The procedure for setting tariffs for new generators.
- Agreements on pricing for emergency or special operations.
- Long-term agreements on tipping fees (for either transfer or direct disposal by the collection contractor/franchisee), and corresponding requirements for payment of disposal charges.
- Compensation for extra, unforeseen costs incurred by the contractor/franchisee due to unexpected changes in the operating conditions, and the mechanism by which these costs can be recovered from generators. Such unforesee-

able costs may result from changes in byelaws or ordinances, increased transport distances to new disposal facilities, and changes in demand. Conditions that will trigger such requests for compensation should be identified in the agreement, if possible.

- Incorporation of costs of, or revenues from, recycling activities into the tariff structure.
- Assistance that will be available to the franchisee when he is unable to recover his operating costs through the direct levy of user charges. (This might include assistance in prosecuting generators who refuse to pay their fees.)
- The tariff structure should include provision for the taxes that the contractor/franchisee is liable to pay and for *depreciation* of assets.
- Provisions for handling delays in payments, including penalty assessments. (This should apply to payments that are to be made by either party.)
- Payment conditions that apply if agreement extensions are offered or if agreements are abrogated or terminated before expiry.
- The procedure for revising the franchise tariffs or requesting increased payments from the grantor.
- Provisions for auditing the contractor/franchisee's costs and capital base should be included for verification purposes. Mutually agreeable payment request procedures should be addressed in the agreement, along with the requirements for the documentation (certification) that should accompany each request for payment.
- Handling charges associated with foreign exchange transactions.
- Costs pertaining to licenses, patents, permits, etc. should be included within the tariff structure if they are part of the responsibility of the contractor or franchisee.

b. Customer education and customer relations

The agreement should contain provisions for either the contractor/franchisee or the grantor to educate the generators (as well as laborers involved in pre-collection, if appropriate) to place their waste in an acceptable way (in bins or bags, bundled, or in communal bins) at a designated place and at the scheduled time. In addition, the agreement should also include arrangements for circulation of information bulletins to generators about the types of waste that can be accepted for collection, definition of hazardous wastes, recycling procedures, source separation of wastes, and waste reduction. The educational package should also contain information on legal action and assessment of penalties in relation to the failure of generators to follow the prescribed codes. The agreement should specify provisions for reporting and preventing *clandestine* and unauthorized dumping of wastes by generators. The agreement should include provisions for education of generators about the billing and collection practices, specified standards of service, and complaints procedures relating to poor performance of the contractor or franchisee. In addition to service-related education, the agreement should also promote the raising of more general awareness regarding public health and cleanliness.

The agreement should address the need for either the grantor or the contractor/franchisee to solicit and receive public complaints and suggestions concerning the collection operations. The agreement should also specify proper procedures for responding to complaints and customer suggestions.

c. Renegotiations of agreements

Renegotiations of agreements may be needed for a variety of reasons. Often renegotiations take place when conditions change in ways which have not been explicitly referred to in the agreement and which affect either the quality or coverage of the service, or tariff levels. The important issues that are relevant to agreement renegotiations are outlined below:

- In the case of a major expansion of the scope of service under the agreement, the grantor may renegotiate the original agreement with the contractor/franchisee or open up the extension of service to fresh tenders. Provision for such renegotiations and the need to interface with a new contractor/franchisee should be addressed in the original agreement.
- The procedure for renegotiations, the frequency of renegotiations, and the limits on such negotiations during the validity of the agreement, should be clearly specified.
- Towards the end of the period covered by an agreement, the option of a negotiated extension may be considered by the grantor if it has been satisfied with the service. However, if the work is opened for new tenders, the current service provider should be encouraged to provide as much information about the work as possible so that other potential bidders are not disadvantaged - the playing field for potential bidders should be as level as possible.

d. Duration of agreement

- The agreements should be of sufficient duration to make them "bankable" – that is, they should be for a long enough period that the contractor/franchisee will be able to repay the loans that he has taken out to purchase equipment for the work. This increases the attractiveness of the work to private sector participants.
- There should be provisions within the agreements for the grantor to vary the duration of the agreement and the mechanism to do so should be clearly specified in the agreement. In particular, scope for extending the agreement should be included at the grantor's discretion and such scope for the grantor to amend the conditions of the initial agreement should be stated in the agreement. In addition, the way in which unforeseeable circumstances might trigger an extension of duration of the agreement should also be specified. Such circumstances could include force majeure events as well as other causes of operational delays beyond the control of the private sector partner or the grantor.
- In the case of delays in:
 - obtaining permits,
 - *procurement*,
 - the selection of the contractor/franchisee, or
 - the start of work after the award of the agreement,

the agreement should contain adequate provision for adjustment as a result of these delays if they impinge on the overall duration of the agreement. If either party to the agreement is responsible for delays, *liquidated damage* assessment and payment issues must be specified.

- Whenever applicable, a detailed schedule, with clearly identified milestones, should form a part of the overall agreement. If the schedule depends upon the occurrence of certain events (such as the acquisition of special consent or permits, or the connection to electricity or water supplies), then these events should be clearly identified.
- The possibility of early termination of the agreement, together with the conditions that would trigger early termination, should be clearly identified. The steps leading up to an early termination should also be clearly stated.

e. Key (or major) risks and management of key risks

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

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

e.1 Operating risks – issues for consideration

- Ensuring that the prime contractor/franchisee has adequate liability insurance cover (to enable payment of claims against the contractor/franchisee during the operational phase). Approved sub-contractors or approved assignees should also have sufficient cover for the entire duration of their involvement.
- Sanctions and penalties for non-compliance with standards and regulations relating to health and safety, traffic, environmental protection, etc.
- Response to improvements in productivity (or the lack of improvement), assessment of productivity improvements, and inclusion of a system of pricing based on productivity.
- Bankruptcy and non-performance of the contractor/franchisee, and non-performance of the grantor. Managing incidents of non-performance that are due to events or circumstances beyond the control of either the contractor/franchisee or the grantor.
- Definitions of benchmarks or criteria (such as measures of performance) that allow comparison with the performances of service providers which are engaged in similar work - in order to monitor operations more effectively.
- Guarantees by the grantor (or other counterparts) regarding the availability of, and charges for, services, equipment and facilities to be furnished by the grantor under the

terms of the agreement. Examples of such items are trucks, electrical power, and office facilities.

- Guarantees by the grantor relating to the interface between *downstream* operations (such as disposal) and contractor/franchisee responsible for collection. Agreements and guarantees on tipping fees for waste delivered to transfer stations or directly to a disposal site.
- Handling complaints.
- Continuation of service and arrangements for taking over operations from the contractor/franchisee in case of default by the contractor/franchisee.

e.2 Revenue and financial risks – issues for consideration

- Distinguishing between capital expenditure and recurrent expenditure on operations and maintenance. Proper recording of such costs.
- Reliability of cash flows from user fees or taxes. In the case of contracts, the risk that some of the revenue from user fees or taxes will be diverted for other purposes, or be insufficient to meet the grantor's obligations. For franchisees this means a significant failure by generators to pay the fees due to the franchisee.
- Acceptability to the public of tariffs and quality of service. (What is acceptable? Who decides what is acceptable?)
- Government support for the revenues to be received by the contractor or franchisee
 - Revenue guarantees;
 - Administration of subsidy payments;
 - Short-term equity or debt infusion to help contractors/franchisees who are experiencing short-term operating cash flow problems;
 - Privileged tax status for contractor/franchisee and accelerated *depreciation* allowances;
 - Reductions in import duty for equipment to be used in the work;
 - Assurances on the availability of foreign exchange;
 - Assurances on long-term interest rate levels (or a mechanism for increasing fees to compensate for increased borrowing costs);
 - Guarantee of minimum rates of return or minimum tariff revenues;
 - Assurance of a monopoly for the franchisee in the designated service zone;
 - Coverage for the franchisee to compensate for a shortfall in revenue due to non-payment of user fees;
 - Grants, loans, and letters or lines of credit.
- Legal and regulatory changes required to allow government to extend any of these forms of support to the contractor/franchisee.
- Guarantees to creditors that government will comply with assurances.
- If supplementary revenues (over and above the tariff revenues) are required for servicing debt, what guarantees are available from government that the additional revenue will be made available to the contractor?
- Agreements between creditors on their priority regarding access to tariff revenues. Revenue distribution arrange-

ments to pay for debt servicing, foreign exchange, operation and maintenance of equipment, tariff stabilization, and capital/operating reserve fund. Establishment of a debt service reserve fund, if required.

- Minimum debt service coverage ratios and the ability and mechanism to maintain these requirements by modifying the tariff agreements.
- Level of sanctions and *liquidated damages* that should be paid in the event that the contractor/franchisee is unable to carry out his obligations. These obligations include provision of an uninterrupted service at a specified standard, compliance with environmental laws and health and safety standards, cooperation with pre-collection and recycling agencies, and reporting requirements.
- Penalty clauses affecting the contractor/franchisee including terms of payment, interest payments for lateness, conditions in which the payment of a penalty might be waived or postponed (e.g., bankruptcy).
- Design of subsidy payments - including monitoring of subsidy payments by the grantor, establishment of a separate subsidy account managed by an independent agent, and system of disbursement of subsidy upon proof of service.
- Financing of household collection bins through loans to residents by grantor or contractor/franchisee. Payment for bins by increases in tariffs.
- Payment of franchise fee to grantor/government.

e.3 Regulatory risks — issues for consideration

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

e.4 Political risks — issues for consideration

- Stability of the political regime of the country, state or local authority.
- Availability of political risk guarantees from export credit agencies.
- Availability of private guarantees as cover for political risk.

f. Performance measurement and monitoring

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

The monitoring of the performance of the work of the contractor/franchisee is aided by the definition of performance

targets. The assessment of actual performance against these targets depends on information supplied by the contractor/franchisee and the capacity of the regulator (usually the grantor) to monitor the agreement. Such monitoring allows the grantor of the agreement to establish accountability and ensure a cost-effective waste collection service. Effective performance monitoring requires the information and activities that are suggested in the following list:

- Financial data, which should be independently verified and certified. Arrangements to enable the employment of an independent financial auditor to certify financial records. The rights (if any) of the general public to inspect these records.
- Data on the number and condition of physical assets (vehicles, equipment, depots etc.), including provisions and requirements for independent auditing. Arrangements to enable the employment of an independent technical auditor to approve such records. The rights (if any) of the general public to inspect these records.
- Information relating to the use of subcontractors, including information regarding how any subcontractor has been selected (such as a description of the competitive bidding processes for the *procurement* of services from subcontractors). Information related to payments to subcontractors for their services.
- If any aspect of the agreement has been assigned to a third party, all relevant documentation concerning the third party.
- Operations data to enable comparative assessment of collection performance, such as productivity of workers, vehicle downtimes, complaints and the responses to the complaints, and costs.
- Itemized and audited cost information/certification to explain and agree the basis for the setting of the collection tariff. Employment of an independent auditor by the grantor to check cost information that is used to justify a modification to the tariff structure.
- Reporting requirements for the end of the agreement period. (The agreement might be concluded, extended or renegotiated.)
- Technical information for reporting on collection agreements, including:
 - The weight of solid waste reaching the disposal site and/or transfer stations;
 - The level of service - types of waste collected, areas serviced, number and types of generators in the collection zone, frequency of collection, number and types of waste storage units used (communal containers, individual bins, etc.), types and number of collection vehicles, and labor employed;
 - The quality of the waste collection service, including a summary of the complaints and action taken in response to complaints;
 - Labor and equipment productivity. Records of maintenance and of the condition of equipment;
 - Emergency and/or special services performed;
 - Initiatives directed towards public information dissemination and customer education.

- Financial information for reporting on collection agreements including:
 - Cost accounting for individual collection tasks and activities, including projection of costs (and divergences from previous projections, when applicable);
 - User charges collected or requests for reimbursement for services rendered (either according to the tariff agreement, or with an explanation of the deviation from the tariff agreement) as well as for subsidizing the franchisee for shortfalls in cost recovery (according to subsidy arrangements in the agreement);
 - Financial computations for the calculation of tariffs or user fees, including projections;
 - Documentation relating to requests for incentive payments, if incentives are included in the agreement;
 - Calculations for franchise fee, if required by the agreement;
 - Income and cash flow statements - both current statements and past trends;
 - Financial statements and projections of the financial status of the contractor/franchisee, and of any subcontractor or third party to whom responsibility for any part of the work has been assigned. These statements should be provided at an appropriate frequency and in a format acceptable to the grantor;
 - Cases of non-payment of fees, including historical records of non-payments and associated penalties, and identification of the individuals so that the grantor can take appropriate action.

g. Consents

Some or all of the following consents may be required in order to provide the required service. These consents may be described as permission, permits or licenses, and vary according to what legislation is in place. Possible examples are: consents regarding capital mobilization, labor (foreign labor as well as requirements on use of existing workforce by contractor/franchisee, and wage rates), type of equipment used for collection, environmental consents, waste disposal consents, transportation consents, importation consents (for import of equipment) and other legal consents that may cover collection activities.

The onus for applying for and obtaining these consents could rest with either the contractor/franchisee or the grantor. The roles and responsibilities in this connection of the grantor and the contractor/franchisee should be clearly identified in the agreement. If the contractor/franchisee is responsible for obtaining the consents, the degree of assistance that he may expect from the grantor should be clearly specified.

The risk of delays to the work that might be caused by the processes of obtaining these consents should be clearly addressed in the agreement, together with recommendations for managing this risk. In addition, the duration of the validity of such consents should be sufficient to minimize the risks

from adverse modification of these consents during the course of the agreement. If the consents do not cover the entire agreement period, the responsibility for renewing the consents needs to be assigned.

h. Dispute resolution

The mechanism for resolving disputes should be stated in the agreement. Common mechanisms are arbitration, court proceedings, and an expert panel. The responsibility for resolving any dispute should rest with both parties to the agreement. The agreement should include provisions that would ensure that the judgement (usually the payment of awards or penalties) that resolves any dispute can be enforced, whether on the grantor or on the contractor/franchisee. The legal framework governing the dispute resolution procedure and the responsibility for undertaking work during the dispute period need to be clearly stated in the agreement.

A 10.3 Transfer stations – concessions

A 10.3.1 Introduction

Transfer stations can be designed and constructed by contractors and operated by the private sector on the basis of management or service contracts, or they may be implemented and operated under a concession agreement. The latter arrangement is considered in this section. Concession agreements may include some or all of the following elements:- design, construction, ownership, operation and transfer of ownership to the grantor.

A 10.3.2 Feasibility study

The decision on whether to include transfer stations in a waste management system, and the design and location of any transfer stations, requires an objective evaluation of alternatives and careful planning. Therefore, a detailed feasibility analysis or conceptual plan should be undertaken before deciding to include transfer. Such an analysis or plan is typically carried out by the grantor of the contract and should, at the very least, include consideration of the following issues:

- Historical and projected waste characteristics and volumes, and waste flow issues;
- The economics of transfer in comparison with direct hauling of the wastes to the disposal site by the collection vehicles;
- The scope for waste reduction and resource recovery to reduce the volumes to be handled;
- Possible methods of inspecting the incoming wastes to eliminate or minimize the quantities of hazardous and other unsuitable wastes that should be managed in another way;
- Siting, in the context of the location of existing and proposed disposal sites;
- Design of the transfer station and selection of the equipment and methods;

- Siting, considering public acceptance of the transfer station and its method of usage;
- Sizing of transfer operations and facilities;
- Regulatory and environmental requirements.

A 10.3.3 Obligations of concessionaire

The general and supplementary conditions of a concession agreement, together with the technical specifications, should specify the obligations of the concessionaire. The results of the feasibility study should form the basis for the preparation of the detailed contractual specifications. Although agreements should be tailored to fit local conditions, the following issues provide a framework for structuring the contractual obligations:

Technical specifications, quality and type of service

- Pre-construction activities, including attendance at relevant public and regulatory meetings organized by the grantor in connection with the location, design and operation of the transfer station.
- Pre-design services, including site surveys, hydrogeological investigations and **environmental impact assessments**.
- Determination of the types of wastes that will be accepted for transfer, and the anticipated waste characteristics and volumes.
- Obligation of the concessionaire to meet applicable facility design standards, and obtain all requisite statutory and non-statutory permits and approvals prior to construction. Design services should consider the following aspects:
 - Appropriate site plan and layout, with adequate traffic flow and control measures focussing on efficiency, safety and convenience; the areas should be based on an analysis of traffic flow patterns and consider delays and queuing requirements at peak times;
 - Number and type of unloading bays to accommodate peak traffic and waste flows as well as the types of collection and transfer vehicles;
 - Weighing facilities for assessing charges based on incoming loads;
 - **Drop-off** stations for recyclables, self-hauled wastes, household hazardous wastes, **white goods**, and tires;
 - Fueling arrangements, and provision of adequate vehicle parking and maintenance facilities, including truck washing facilities;
 - The possibility of enclosing the operations of unloading the incoming vehicles and filling the transfer vehicles;
 - Office buildings and facilities for staff and drivers;
 - Scope for future expansion.
- Transfer equipment for moving waste material unloaded from arriving vehicles.
- Vehicles and mobile plant, including transfer trailers and other equipment used at the transfer station.
- Facilities for recycling at the transfer station.
- Preparation of cost estimates as part of the design work.
- Use of qualified, independent consultants to certify and approve the design, and the construction cost estimates.
- Provision of materials, labor, supervision, equipment, utilities and other facilities needed to meet requirements.
- Construction of facilities using approved and generally accepted standards of materials, plant, equipment and construction methods.
- Construction verification and certification by independent consultants to ensure that the site has been constructed according to the approved design.
- Conformance of the design, construction and operations to relevant local, state and national laws, ordinances, codes and regulations.
- Ownership of assets and use of assets by the concessionaire.
- Compliance with labor laws and hiring requirements.
- **Performance** and **payment bonds**, patents, guarantees, warranties, insurance, taxes, and duties.
- Indemnification of the grantor in case of errors or omissions in the design, construction or operation of the facility.
- An operations and maintenance manual should be prepared by the contractor and approved by all relevant statutory and non-statutory authorities. This manual should set the standards of the daily operations at the facility and should address the following issues, in addition to those prescribed by applicable local laws and regulations:
 - Personnel issues, including staffing and training requirements and procedures;
 - Management information systems;
 - Use of approved sub-contractors;
 - Equipment requirements;
 - Maintenance of equipment and other assets;
 - Wet weather operations;
 - Transfer station operations, including duties of:
 - The **weighbridge**/gate attendant,
 - The tipping floor supervisor, and
 - Transfer truck operators;
 - Environmental requirements, health and safety monitoring; fire prevention and control; accident reports;
 - Emergency preparedness, action plans and operations;
 - Site access, traffic **routing** and monitoring;
 - Waste unloading procedures;
 - Inspection of incoming loads;
 - Litter, dust, odor, vector and noise control; general housekeeping;
 - Recycling activities;
 - Instrumentation for weighbridge;
 - Site meetings;
 - Billing, collection of payments and record-keeping;
 - Site surveillance, security and communications.

As in the case of the landfill concession agreement, the grantor may retain rights to carry out specific activities in conjunction with the allocation of duties under a concession agreement.

A 10.4 Landfills – BOT concessions

A 10.4.1 Introduction

A traditional BOT 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 landfill and other associated assets is transferred to the public authority (the grantor of the concession). A BOT agreement is usually envisioned when there is a need for new facilities and there is a need for external financing to meet this need.

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

A 10.4.2 Parties to the agreement

The parties to a concession agreement comprise the grantor of the concession (the public sector agency or agencies) and the private sector counterpart (concessionaire). This section describes the issues that determine who the grantor and concessionaire may be.

a. Grantor

The grantor of the agreement 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. Since the delivery of solid waste services is generally a local responsibility, it is very uncommon for national governments to enter into agreements, except in small countries or countries with a low degree of decentralization of powers. If national or local regulations confer overlapping or joint responsibility for MSWM services to several agencies, then the grantor may consist of several organizations. Regulatory agencies should be party to the agreement if local law requires it in order to be able to enforce regulations on the concessionaire. The key issue is to identify the particular agency (or agencies) which is vested with the power to grant concessions to the private sector for the MSWM service which is being considered.

If the agreement requires the transfer or leasing of the assets of multiple agencies to the concessionaire, or use of them by the concessionaire, then it may be relevant to include all the appropriate parties as co-grantors of the agreement.

b. Authority and Legal Standing of Grantor

The grantor of the agreement should have the legal powers to sign agreements with the private sector. The representa-

tives of the grantor during the execution of the work covered by the agreement should also be clearly identified in the agreement. For example, an independent auditor may represent the grantor to audit the financial statements of the concessionaire to ascertain their accuracy. Moreover, the chain of authority and legal responsibilities should be clearly defined in case the original granting agency (that is party to the agreement) is dissolved, or if its powers to execute MSWM agreements are abrogated, or if it becomes bankrupt. Also, the role of a guarantor for the grantor, if required, should be investigated.

Such an agreement must be legally binding in order to allow the allocation of powers and responsibilities to the parties to the agreement, to form the basis for future dispute resolution, arbitration, and negotiation, and to be able to offer security for obtaining 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 legal conditions vary widely from country to country, it is highly recommended that local legal counsel be consulted well in advance of the preparation of an agreement.

c. Concessionaire

The type of private sector entity that is party to the agreement should be clearly identified. (It might be a **joint venture**, a local company, a partnership, a limited partnership, a microenterprise or a small enterprise, a community-based organization, or a trust.) Registration requirements for the concessionaire should also be clearly stated so that the concessionaire and the grantor are clear about the relevant legal statutes. Also, any restrictions on foreign ownership and foreign representation on the management or the board should also be reflected in the formation of the sponsor company. The type of company involved in the agreement dictates the legal standing of the entity and may, therefore, be subject to specific legal requirements. The legal standing of the concessionaire also affects his tax position, his ability to declare bankruptcy, his operation (management) and control (board), as well as his 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 agreement, 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 concessionaire. In addition, the ownership arrangements between the different entities that form the private sector counterpart should be clearly identified and conflict resolution mechanisms between the shareholders defined to the satisfaction of the grantor. Moreover, the relationship between the concessionaire and all other parties supporting the

concessionaire must be clear. (These supporting parties include the lenders, shareholders, key personnel, construction companies, design consultants, operating companies, insurers, guarantors, and export credit agencies.)

d. Regulatory Provisions

If monopoly rights for disposal services are granted for a long period, there is a need for regulation of the concessionaire in the public interest. The potential environmental impacts from landfill operations require the institution and enforcement of environmental standards and regulations. Such regulatory provisions form the background to a BOT agreement for landfills. In addition, the following key regulatory issues should also be addressed to enable successful private sector entry into disposal operations:

- The scope for, and promotion of, competition in the solid waste disposal sector.
- Allocating responsibility for cost over-runs and adjudicating the apportionment of responsibility for such over-runs during construction.
- Identifying the agencies that will have regulatory powers on specific issues pertaining to the delivery of services under the solid waste agreement, such as:
 - the agency responsible for setting tipping fees and hearing requests for modification of the tariff structure;
 - the pollution control agency;
 - the ministry or department of the environment;
 - the ministry of labor;
 - the ministry of finance, and
 - the department of transportation.
- Funding of regulatory activities - whether the concessionaire or the grantor should pay for all *permit* administration, regulatory inspections, and other services delivered by the regulator over the duration of the agreement.
- Limits to regulatory authority should be addressed. If there are overlapping responsibilities in the regulatory field, the agreement should clearly specify which regulatory authority has the leading role in order to minimize confusion and conflicts. Provisions for interpretation and arbitration should be included in the agreement, to resolve disputes when conflicts in regulatory provisions occur.
- The various regulatory responsibilities should also be integrated before awarding the concession for the solid waste services. (This could include the integration of regulations pertaining to economics, public health, environment, occupational safety, etc.)
- The measures for regulating the concessionaire will need to balance a number of factors, including:
 - 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 concessionaire, so that the work is seen to be an attractive proposition for the private sector. There should be a mechanism to ensure that the income received by the concessionaire keeps ahead of increases in costs.

A10.4.3 Object and scope of the BOT concession

a. Scope of BOT concession

The following aspects should be considered in the formulation of a concession agreement for landfilling of solid waste:

- The scope for exclusivity of operation over the duration of the agreement. (This restricts the setting up of competing operations and alternative disposal routes.)
- The scope for the BOT operator to undertake other activities. (For instance, may 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?)
- The scope for the BOT operator, if the grantor wishes, to operate the disposal service at existing facilities during the construction of the new facilities that are the subject of the concession agreement. If the grantor wishes that the existing facilities be developed and upgraded by the BOT concessionaire, then the requirements for the improvements should be identified.
- The scope for amendments to the agreement to accommodate changes in operations, including the scope for increasing or decreasing the volumes of waste accepted for disposal, perhaps by allowing acceptance of wastes from outside areas, or changing the types of waste that can be accepted.
- Imposition of conditions, requirements or restrictions on the BOT concessionaire by the grantor to improve ancillary conditions and infrastructure. This might include the improvement of access roads to the landfill site, assistance to informal recycling workers at the landfill, or local environmental improvements.
- Requirements relating to the interfaces with other current waste management operations, including collection and transport, and resource recovery processes.
- Requirements for closure and *aftercare* of the landfill by the BOT concessionaire - especially the long-term control of the environmental impacts of landfill leachate and gas migration (and allocation of liability for improper control).
- The design of the disposal facility as an integral part of the agreement.
- Requirements for the phasing of work, such as – improvements to existing operations, design (if required under agreement), obtaining *permits*, construction, operation, maintenance, closure, and *aftercare*.
- Availability of land for the operation, the financial arrangements for the transfer of land to the concessionaire, and the adequacy of the selected site for disposal operations.
- Allocation of responsibility for raising the finances for capital investment, as well as revenues for operations and maintenance expenditure.

b. Obligations of the BOT concessionaire

The general and supplementary conditions of the agreement, together with the technical specifications, specify the obligations of the concessionaire. Although the obligations of a

concessionaire 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

- Types of wastes that will be accepted for disposal, anticipated quantities of wastes to be accepted, and projected changes in composition and quantities.
 - Importation of acceptable wastes from outside the intended service zone.
 - Provision of a system to measure and record weights of waste material entering the site.
 - Pre-design services including site and access road surveys, assessment of hydrogeology and geotechnical subsurface conditions, and environmental impact assessments.
 - Obligations of the concessionaire to meet applicable design quality standards and to obtain 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;
 - Areas for waste reception and recycling, site roads;
 - Closure;
 - Landfill gas management system, including evaluation of feasibility of use of gas for power or heat generation;
 - Stormwater management system;
 - Settlement and stability analyses;
 - Leachate collection and treatment and/or recycling systems;
 - Office buildings for landfill operations staff and storage facilities.
 - Preparation of an estimate of the construction cost as part of the design process.
 - Use of qualified, approved independent consultants to certify and approve the design and the cost estimates.
 - Preparation of an operations and maintenance manual by the concessionaire, to be approved by all relevant statutory and non-statutory authorities. This manual for the landfill should address the following issues in addition to those prescribed by local laws and regulations:
 - site security;
 - personnel issues, including staffing and training requirements;
 - requirements for subcontractors (needing approval by the grantor);
 - equipment requirements;
 - maintenance of equipment and other assets;
 - wet weather operations;
 - disposal sequence - for the filling of the cells;
 - 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;
 - inspection of incoming waste to ensure that no unacceptable wastes are landfilled;
 - landfilling special wastes;
 - daily construction of *lifts*, daily cover, periodic cover;
 - stormwater management, 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 or recyclers;
 - measurement of the density of the compacted wastes;
 - fire prevention and control;
 - gas well construction and venting requirements;
 - requirements for power (and/or heat) generation;
 - operations and maintenance record-keeping requirements;
 - instrumentation and site topographic surveys;
 - closure and post-closure activities and requirements;
 - site meetings, and
 - procedures for unloading waste vehicles.
 - Pre-construction activities include the attendance of the concessionaire at relevant public hearings that the grantor may hold in order to present and discuss landfill siting, design, and operations.
 - Construction of the landfill according to an approved design. Use of approved and generally acceptable standards of plant, equipment and construction methods.
 - Use of independent consultants to inspect and verify that the construction work has been according to the approved design. Certification of proper completion of the works according to specifications by independent consultants.
 - Provision of materials, labor, supervision, equipment and other utilities and facilities for carrying out the work to meet the requirements of the permits.
 - Recycling activities at the landfill - provision of separate sorting and recycling staging areas, perhaps accommodating existing recycling workers by retraining them for integration into the operations at the landfill.
 - Compliance of all activities (design, construction, operation, closure and aftercare) with relevant local, state, and national laws, ordinances, codes and regulations.
 - Ownership of the assets and the use of the assets by the concessionaire.
 - Issues pertaining to minimum wages and transfer of staff from the grantor's workforce.
 - Issues pertaining to performance and payment bonds, patents, guarantees and warranties, insurances, taxes, duties, permits, acquisition of rights-of-way, and indemnification of the grantor in case of errors or omissions in design, construction and operation of the disposal facility.
- According to the allocation of duties under the agreement, the grantor may retain rights to carry out some or all of the following activities:

- To approve, or allow an independent consultant to approve, the design and construction methods proposed by the concessionaire with or without modifications.
- Making available adequate land of suitable quality for the construction of a landfill for the intended planning horizon - generally at least ten years for disposal.
- Inspection of the quality of the work performed by the concessionaire.
- Inspection of the working conditions of personnel, and condition of facilities (workshops and garages), equipment, and machinery.
- To conduct or permit independent, periodic monitoring of the quality of surface and underground water.
- To approve or reject the use of sub-contractors or independent consultants.
- Obtaining permits and rights-of-way for the concessionaire.
- Public relations.
- Approval of limits and modifications to insurance, bonds, letters of credit, guarantees, indemnification requirements, and minimum wage requirements.
- Assuming a proportion of the potential long-term liability for the landfill operations.
- Assuming a proportion of the costs of closure and after-care.
- Coordinating with *upstream* waste management activities or specifying the concessionaire's interface with these activities.
- Authorizing the concessionaire to use equipment and plant owned by the grantor, and seconding staff to the concessionaire.
- Financing capital investments; ownership of assets (in the case of an operation services contract). Regulation of recurring capital investments and improvements.
- Allocation of responsibilities regarding planning, coordinating, supervising, and implementing capital investment programs.
- Fair handling of the *depreciation* of capital assets in order to ensure proper compensation to the concessionaire (if the financing responsibilities rest on the concessionaire) for the duration of the concession.
- Requirements pertaining to competitive procurement for goods and services by the concessionaire under the concession (such as the maximum value of procurements that can be made without competitive tendering being required, and conditions under which *sole-sourcing* is allowable.).
- Mechanism of disbursement of funds by the grantor if the grantor finances capital investments during the life of the concession (by extending advances, payment upon receipt of independently approved monthly invoices that indicate project progress, etc.).
- Mechanism to fund closure costs, long-term monitoring and aftercare expenses (such as by establishing special escrow accounts established by concessionaire or grantor).

b. Equity participation in the agreement

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

- Criteria for debt to equity ratios and minimum level of equity investment that the project sponsor must have. Possibility for transfer 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 creditors and the return on shareholder's equity (if a minimum return is specified in the agreement).
- Bond holder covenants pertaining to shareholders agreement that prevents the liquidation of shares for a specified period of time (to mitigate the risk of bankruptcy, mainly during the period of the concession agreement when no revenue is being generated - such as the construction period). Alternatively, guarantees against such events may be obtained.
- Allocation of seniority for cash flow rights and control rights amongst the various equity holders.

c. Obligations of the grantor

In addition to the services identified in the preceding section, the grantor's obligation under the agreement may include the following:

- Supply of a guaranteed minimum quantity of waste and of specified type (perhaps based on definitions of sources) for the duration of the agreement. Making the necessary arrangements with upstream activities (such as the waste collection contractor, if there is one) for delivering the waste to the location that is prescribed in the agreement.
- Preliminary characterization of the solid waste to be received at the disposal facility and arrangements for accommodating any significant changes in the nature of the waste.

As with any private sector participation, a balance should be struck between the need for the grantor to monitor and enforce the agreement in the public interest and the incentive for the concessionaire to operate the disposal service efficiently without the excessive costs associated with undue interference from the grantor.

A 10.4.4 Specific issues in a landfill BOT concession

a. Responsibility and requirements for capital investments

Under a BOT agreement, 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 agreement are listed below:

- Assignment of responsibilities for, and modes of, financing capital and operating investments over the life of the agreement. (Options include financing by the concessionaire, retained earnings from tipping fees, access to public authority financing through grants, etc.) Obligations pertaining to capital investments at the disposal facility during the life of the agreement.

- Arrangements for mutually acceptable procedures for monitoring the nature of the wastes.
- Mechanisms for payment and guaranteeing the revenues of the BOT concessionaire. If the concessionaire is paid according to the amount of waste that is disposed of at the site, a minimum income can be guaranteed by a *put-or-pay* agreement (which undertakes to pay a minimum fee even if the fee – calculated according to the waste quantity delivered - is less).
- Ownership of the waste and assuming proportions of short-term and long-term liabilities arising from past and future disposal operations.
- Assisting the concessionaire in obtaining connections to utilities (such as water, electricity and telephones).

d. Payment issues

Payment within a BOT agreement for disposal of solid waste can be arranged in various ways.

- Payment for the design and construction phases of the work may be based on certificates of progress made in work under the agreement. The critical factor that determines the success of this mode is the participation of a credible, independent consultant to certify and approve the payment requests and *change orders* from the concessionaire.
- Another, more common, arrangement for payment in BOT agreements is for capital investments to be integrated into the operating payment schedule as a fixed component of a two part charge once the landfill starts operation.

Payment issues pertaining to the long-term operation phase of the concession require special attention because of the dependence on projections for estimating future costs and levels of service. The mechanisms for paying the tipping fees could be as follows:

- If the collection service is provided by the private sector, then the collection company passes on the tipping costs (plus a small administration fee) to the grantor as part of their agreement.
- If the public authority (grantor) provides the collection service, then the payment for tipping costs is made directly by the grantor based on the agreed tipping fee structure.

Additional issues pertaining to payments and tariff setting include that:

- The procedure for structuring the tipping fee should be clear and transparent. Components for capital costs and operating costs (which may be variable) should be included in the fee schedule. Is the disposal fee structure based on a reasonable rate of return on useful and usable capital works? If so, who decides what is useful and usable? Properly audited cost statements should form the basis of the fee schedule.
- The procedure, timing, and frequency for reviewing and, if necessary, adjusting the tipping fees should be specified in the concession agreement. Changes in the tipping fee might be necessary because of inflation or deflation,

changes in the costs of service elements (such fuel, labor, utilities and supplies), changes in operating efficiency, changes in debt service levels and taxes, and other factors. Moreover, the proportional influence of each of these costs in the adjustment formulae should be specified. Local cost inflation indices are very useful for this purpose.

- Events that would trigger a revision of the tipping fee structure should be clearly identified.
- Special rates for large and small generators who take their own waste directly to the landfill (at separately negotiated rates and fee structures).
- If waste from areas outside the jurisdiction of the grantor may be accepted for disposal, consideration should be given to the payment of royalty or *host fee* to the grantor for accepting such wastes at the landfill.
- Assessment of tipping fees for special wastes including liquid wastes, bulky wastes and construction debris.
- Mechanism for inclusion of depreciation expenses and taxes into the tipping fee structure.
- Inclusion of new capital expenditures incurred during the period of the concession agreement into the tipping fee structure.
- Guarantees on the minimum tonnage of the waste delivered to the site by the grantor since the quantity of waste received at the landfill affects the operating revenues of the concessionaire and hence the profitability of the work.
- The mechanism and frequency of adjustments to the tipping fee as a result of foreign exchange rate fluctuations on specific cost components; specification of the index of foreign exchange to be used.
- Payment of penalties (for any failure by the concessionaire to meet performance obligations) should be clearly and separately specified.
- Procedures for appealing to the appropriate regulatory body for tipping fee adjustments should be clearly set out in the agreement.

e. Customer education and public relations

The education of drivers of waste collection or transport vehicles can have a beneficial and important impact on landfill operations. It is therefore desirable that the concessionaire should have the opportunity to train the drivers in proper driving and unloading practices at the disposal site. It is also important to educate the collection personnel so that they know what types of waste are acceptable at the landfill. This education of the collection personnel may be the responsibility of either the concessionaire or the grantor, or both.

As part of the customer relations efforts, the BOT concessionaire should publish the tipping fee structure, indicating the period of its validity. This allows transparency in the assessment of fees and enhances the concessionaire's credibility. The methods of payment of tipping charges should also be clear.

The BOT concessionaire should also continuously assist the grantor in promoting safe and effective disposal of solid waste as well as in increasing public acceptance of the

waste disposal methods. Various methods can be used to win public support, including press releases and publications on issues such as the operational safety of the landfill, its cost-effectiveness, and its environmental benefits.

f. Renegotiations of the agreement

- Renegotiations of an agreement may be needed for a variety of reasons. Often renegotiations take place when conditions change in ways that have not been explicitly referred to in the agreement, and which affect either the quality of the service or the charges.
- If there is a major expansion of the work under the concession agreement, the grantor may renegotiate the original agreement with the concessionaire or open up the new aspects of the work to fresh tenders. Provision for such renegotiation and the relationship with any new concessionaire should be addressed in the agreement.
- The procedure for renegotiation, the frequency of renegotiation, and the limits on such negotiations during the period of the agreement, should be clearly specified.
- Towards the end of the period covered by an agreement, the option of a negotiated extension may be considered by the grantor if it is satisfied with the service provided by the concessionaire. However, if the work is opened for new tenders, the current service provider should be encouraged to make available as much information as possible so that other potential bidders are not disadvantaged – the playing field for tendering should be kept as level as possible.

g. Duration of the BOT concession

The duration of the BOT concession is an important factor in making it attractive for competitive tendering. The key issues associated with agreement duration are as follows:

- The agreements should be of sufficient duration to make them “bankable”; that is, the tipping fee structure should be adequately designed so that the concessionaire can repay loans, service debts and provide a return on equity (when the concessionaire takes on the financing risk).
- There should be provisions within the agreement for varying the duration of the agreement and making corresponding changes to the original agreement conditions. In addition, the way in which unforeseeable circumstances might trigger an extension of the duration of the agreement should also be specified. Such circumstances could include *force majeure* events as well as other causes of operational delays beyond the control of the concessionaire or the grantor, and delays caused by the grantor.
- If the design and construction phases are included in the overall agreement duration, consideration should be given regarding how construction and design delays will be handled.
- Are adequate agreement conditions included to address the situation at the expiry of the agreement? These issues include the valuation and transfer of assets to the owner, re-tendering of the agreement, and questions on allocation

of liability for environmental damages that may become apparent only in the future, although they are caused by past or current operations.

- The option of transferring assets after construction and initial operation back to the grantor so that the grantor enters into a long-term operations contract (BTO concession).

h. Key risks and management of these risks

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

In a BOT concession 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 discussed below:

h.1. Construction risks— issues for consideration

Construction of a landfill is a complex task that 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 during the life of the site. Conditions that arise during construction may be different from what was expected at the design stage. In this situation, 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 a BOT project:

- Accountability for delays in construction and cost overruns. Ability to structure a fixed price turnkey construction agreement to place construction risks with the concessionaire, including cost overruns and delays. Responsibility for financing cost overruns and conditions in which such financing might be available.
- Appropriateness of construction agreement specifications to the task of construction, including the schedule and milestones for construction activities. Policy on variations to specifications and *change orders*.
- Responsibilities for obtaining permits and planning approvals.
- Warranties and guarantees for construction works and equipment.
- Responsibilities for land acquisition and the selection of a site that is suitable for constructing a cost-effective disposal facility. Timing issues pertaining to the access to, and acquisition of, land for site investigation and construction. Securing the appropriate land use permits or agreements and variances.
- Ability and rights of the grantor, creditors, and regulatory agencies to monitor the construction. Use of approved independent consultants to inspect and certify construction methods.

- Testing and approval of equipment, construction work, etc.
- Responsibilities for, and the durations of, pre-construction activities and their impact on the construction schedule. Such activities include geotechnical and hydrogeological surveys, site surveys, environmental impact assessments, and public notification and consultation.
- Responsibilities for providing or accessing utility services (electricity, water and telephone) for the landfill (during and after construction).
- Conditions under which sub-contractors can be employed, and regarding the assignment of all, or a proportion of, the financing and construction work to a subcontractor.
- Assistance from government in offering financial support for construction. The conditions for such financial support and the conditions for disbursement of funds should be clear. This might involve the maintenance of a separate fund account, the management of the fund by an independent agency or trust, and disbursement in advance or against certified periodic invoices.
- Assumption of liability for the performance and completion of work undertaken by the concessionaire, sub-contractors, equipment suppliers, etc. Requirement of performance bonds for ensuring that the work is done, and *liquidated damages* cover 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 the BOT concessionaire, with independent access for the grantor if repair and maintenance of the facilities must be paid for.
- Issues pertaining to new construction, and the mechanism for financing this construction during the operation phase of the landfill. Grantor support, if any, for new construction.
- The extent to which competitive bidding is required for the procurement of equipment, supplies and sub-contractor services.
- Clauses pertaining to insurance cover, *hold harmless* agreements, minimum wage schedules, labor use, *equal opportunity* and other legal mandates, during the construction period.

h.2. Operating risks — issues for consideration

- Ensuring adequate liability cover for concessionaire as well as for approved sub-contractors or approved assignees.
- Sanctions and penalties for non-compliance with standards and regulations concerned with health and safety, traffic, environment, etc.
- Bankruptcy and non-performance of the concessionaire, as well as the non-performance of the grantor. (Preparations for such possibilities may include training the grantor's staff to operate the landfill so that they can take over operations if the concessionaire fails to perform satisfactorily.)
- Non-performance of the concessionaire as a result of events beyond the control of either the concessionaire or the grantor.
- Definitions of benchmarks or criteria (such as measures of performance) that allow comparison of the performances of different landfill operators.

- Guarantees from the grantor regarding the supply and costs of services, plant and equipment to be furnished by the grantor under the terms of the agreement (Examples might be electricity, office facilities, and road-making plant.).
- Guarantees from the grantor relating to the interface between upstream operations (mainly waste haulage) with the disposal concessionaire. Agreements and guarantees on the fee structure and the quantities of wastes to be brought for disposal.
- Requirement for a dedicated operating fund.
- Responsibility for expansion of the landfill during the duration of the agreement.
- *Force majeure* risks – negotiations between the parties to allocate these risks to the party which is best able to assimilate and manage these risks. If agreements on allocation are not possible, responsibility for coverage by insurance should be addressed.
- The closure and aftercare requirements of the landfill, including management of long-term leachate and gas migration from the waste. (In this case “long-term” means beyond the life of the BOT agreement.)

h.3 Revenue and financial risks — issues for consideration

- Distinguishing between capital expenditure and recurrent expenditure on operations and maintenance. This represents an important first step in the assessment of costs and tipping fee structures. Capital investments include new investments that are made during the period of validity of the operations agreement, such as those associated with the staged expansion of the landfill.
- Determining the existing and usable capital base of the concessionaire (with which to assess rates of return for tipping fee setting). Determination of tipping fee for wastes brought from outside the jurisdiction of the grantor.
- Reliability of cash flows from tipping fees (including the risks that some customers will not pay or will delay making their payments).
- Reasonableness of tariffs and quality of service. (Do the customers regard the tariffs as acceptable? Are they satisfied with the condition of site roads and driving surfaces?)
- Government support for the financial situation of the concessionaire:
 - Minimum revenue or guarantees of minimum rates of return;
 - Administration of subsidy payments;
 - Short-term equity or debt infusion to help the concessionaire if he is experiencing a short-term operating cash flow problem;
 - Privileged tax status for the concessionaire 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 mechanisms for passing on higher costs to upstream customers);
 - Assurances of a monopoly position in providing disposal services;

- Cover for losses resulting from non-payment of charges by users of the landfill, and
- Grants, loans, letters or lines of credit.
- Legal and regulatory changes required to enable government to extend any of these forms of support to the concessionaire.
- Guarantees for project creditors that government will comply with assurances.
- If supplementary revenues (over and above the revenues from tipping fees) are required to service debts, guarantees from government may be available to make additional revenue available to the concessionaire.
- Agreements between creditors on their priority regarding access to tariff revenues. Revenue distribution arrangements to pay for debt servicing, foreign exchange, operation 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 the opportunity for maintaining these requirements by modifying the tariff agreements.
- Level of sanctions and liquidated damages that should be paid in the event of inability of the concessionaire to carry out his obligations. These obligations include operating in conformity with environmental laws, health and safety standards, providing an uninterrupted service, maintaining service quality standards, and reporting requirements.
- Penalty clauses affecting the concessionaire including terms of payment, interest payments for lateness, as well as the conditions in which the regulator may waive or extend the period for payment of a penalty (such as concessionaire's financial distress or bankruptcy).
- Design of subsidy payments - including monitoring of subsidy payments by the grantor, establishment of a separate subsidy account managed by an independent agent, and the system of disbursement of subsidy upon proof of performance.
- Payment of royalty or other fee to grantor or other government agency.
- Establishment of an escrow account for contingencies, closure, and aftercare expenses.

h.4. Regulatory risks — issues for consideration

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

h.5. Political risks — issues for consideration

- Stability of the political regime of the country, state or local authority.
- Availability of political risk guarantees from export credit agencies.

- Availability of private guarantees as cover against political risk.

i. Performance measurement and monitoring

BOT agreements for disposal operations typically specify the scope of services, the outputs and the quality of such outputs required from the concessionaire in delivering the service, the broad regulations within which the concessionaire needs to function, and the rules for assessing the price for the service delivered. Once these conditions are specified, the concessionaire is allowed to use his technical and financial ingenuity to operate most effectively and provide a service that is satisfactory to the customers.

The monitoring of the performance of the work of the concessionaire is aided by the definition of performance targets. The assessment of actual performance against these targets depends on information supplied by the concessionaire and the capacity of the regulator (usually the grantor) to monitor the agreement. Such monitoring allows the grantor of the agreement to establish accountability and ensure a cost-effective waste disposal service. Effective performance monitoring requires the information and activities that are suggested in the following list:

- Financial data, which should be independently verified and certified. Arrangements to enable the employment of an independent financial auditor to certify financial records. The rights (if any) of the general public to inspect these records.
- Data on the number and condition of physical assets (equipment, depots etc.), including provisions and requirements for independent auditing. Arrangements to enable the employment of an independent consultant to approve such records. The rights (if any) of the general public to inspect these records.
- Information relating to the use of subcontractors, including information regarding how any subcontractor has been selected (such as a description of the competitive bidding processes for the procurement of services from subcontractors). Information related to payments to subcontractors for their services.
- If any aspect of the agreement has been assigned to a third party, all relevant documentation concerning the third party.
- Itemized and audited cost information/certification for justifying the tipping fee structure (and confirming payment, if necessary by the grantor). Employment of an independent auditor by the grantor to check cost information that is used to justify any modification to the structure of charges.
- Reporting requirements for the end of the agreement period. (The agreement may be either concluded, extended or renegotiated.)
- Technical information for reporting on BOT agreements for disposal include:
 - The weight of solid waste reaching the disposal site;
 - Operational data, including types of waste disposed,

number and types of customers (waste haulers) served, method of landfill operation, quantity and type of daily and intermediate cover used, types of equipment and number of each type which is used, details of workforce, design and quantities for final cover, closure and restoration, and postclosure monitoring (or aftercare);

- Quality of waste disposal operations, including complaints and action taken in response to complaints, any incidents of pollution, flowrate and composition of landfill leachate, and methods used to manage and monitor leachate and landfill gas;
 - Labor and equipment productivity. Maintenance records and records from inspections of equipment;
 - Emergency or special measures undertaken. Construction works to be undertaken for expanding the landfill within the period of the BOT agreement;
 - Resource recovery program results;
 - Initiatives directed towards dissemination of information and public education.
- Financial information for reporting on BOT agreements for disposal includes:
- Cost accounting for individual disposal tasks and activities, including projection of costs (and divergences from previous projections, when applicable);
 - Billing records for tipping fees and identification of shortfalls in cost recovery by concessionaire (in accordance with the contractual subsidy agreement);
 - Calculations for setting tipping fees, including projections;
 - Royalty or host fee payments and related computations, if such fees (for waste accepted from outside the service area) are included in the agreement;
 - Income and cash flow statements – both current statements and past trends;
 - Financial statements and projections of the financial status of the concessionaire, and of any subcontractor or third party to whom responsibility for any part of the work has been assigned. These statements should be provided at an appropriate frequency and in a format acceptable to the grantor;
 - Cases of non-payment of fees, including historical records of non-payments and associated penalties, and identification of the individuals so that the grantor can take appropriate action;
 - Capital investments needed during the period of the agreement for extending the landfill.

j. Transfer of assets to or from the BOT concessionaire

Under a BOT agreement, existing assets (such as land and disposal equipment) may be transferred from the BOT concessionaire to the grantor. If the assets are not transferred during the agreement period, they will be transferred back to the grantor upon expiry of the agreement, according to the conditions of the BOT agreement. The conditions for such asset transfers to and from the concessionaire at the

beginning and the end of the BOT agreement should be clearly addressed in the concession documents. The following issues need close attention in relation to the transfer of assets:

- At the beginning of the agreement, the ownership of (i.e., the legal title to) the assets should be clearly stated 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 number and nature of the assets should be clearly set out in the agreement. Before the agreement is issued, the condition of each of the assets should be assessed objectively and independently to estimate their true values. If inspections or inquiries conducted by the concessionaire or his financial partners prior to bidding on the agreement reveal conditions different than reported in the previous assessment, procedures for ascertaining the baseline conditions of the assets (on which a bid would be based) need to be clearly defined. Also, criteria for selling assets (such as unusable or unnecessary assets), and the use of the proceeds of such sales, should be defined in the agreement.
- The obligations and rights relating to making improvements and additions to the transferred assets should be outlined clearly in the agreement under an asset management plan.
- If capital additions are made during the period of the BOT agreement, the ability of the concessionaire to pledge them as security for loans should be addressed (and also the scope for the grantor to remedy the claims if the agreement is abrogated before expiry).
- The BOT arrangement may operate in a "sale-leaseback" mode (that is, the concessionaire sells the assets as soon as they are constructed and commissioned to the satisfaction of the grantor and leases them back to operate them on a long-term basis) or a simple lease mode. In both cases the scope for pledging the assets as security for loans should be addressed.
- At the end of the BOT agreement, the mechanism for transferring the assets back to the grantor must be clearly defined.

k. Consents

The agreement should refer to any necessary consents, permits or *licenses*, such as regarding capital mobilization, labor (including wage rates, the use of foreign labor, and requirements on the concessionaire to use the existing workforce), and the types of equipment that may be used for disposal.

Environmental consents, health and safety consents, waste disposal consents, waste importation consents, transportation consents, consents for importing 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 concessionaire or the grantor. These roles and responsibilities of the grantor and the concessionaire should be clearly identified in the agreement. If the concessionaire is responsible for obtaining the consents, the form and degree of the assistance that should be provided by the grantor should be clearly specified. The agreement should also state the roles and responsibilities of the concessionaire and the grantor if there are delays in obtaining the required approvals.

Risks of delays in obtaining these consents should be clearly addressed in the agreement together with recommendations on managing such risks. The duration of the validity of such consents should be sufficient to minimize the risk that modification of these consents might have adverse effects during the course of the agreement. If the consents

do not cover the entire period of the agreement, the responsibility for renewing or extending the consents needs to be addressed.

1. Dispute resolution

The agreement should specify procedures that are to be used for resolving disputes. These procedures might include arbitration, court proceedings, or an expert panel. The responsibility for resolving disputes should rest with both the entities that are party to the agreement. The agreement should ensure that it will be possible to enforce judgements, awards or penalties made according to the prescribed procedures on either party, according the decision that is reached. The law and the applicable legal framework governing the dispute resolution procedure need to be identified in the agreement. Responsibility for progress of work during the dispute period should be clearly allocated within the agreement.

Annex A11: LIST OF REFERENCES

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Web sites

The American Public Works Association:
<http://www.pubworks.org/>

IP3 The Institute for Public-Private Partnerships:
<http://www.ip3.org>

International Union of Local Government Authorities:
<http://www.iula.org/>

International Council for Local Environmental Initiatives:
<http://www.iclei.org/member.htm>

SKAT The Swiss Centre for Development Cooperation in Technology and Management:
<http://www.skat.ch>

USAID local government projects in Eastern Europe:
http://www.info.usaid.gov/regions/eni/local_gov

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 this should be done. The information in this book is not just theory; it is based on a wide range of case studies and examples from the Author's extensive international experience.

This *Pack* consists of five separate parts, divided up for the convenience of the users.

Part I, the **Executive Overview**, introduces the *Pack*, touching on highlights of the other Parts and directing the reader to more detailed discussions in the subsequent parts.

Part II, the **Guidance Note**, contains the arguments for private sector participation, reviews the options, explains the issues that must be considered, and suggests the steps leading to implementation of its recommendations. There are frequent references to experiences and lessons learned in Africa, Asia, and America.

Part III - the **tools** - provides lists of criteria, checklists, sample terms of reference and questionnaire forms that will be of great assistance to municipal managers and consultants who are preparing to involve the private sector.

Part IV is a comprehensive **word list** that will help many readers to identify the precise meanings of the technical terms found in this *Pack*.

Part V provides valuable **sample contracts and agreements** for both collection and disposal operations, allowing the reader to benefit from the experience of many cities and avoid making the mistakes that are often made when contractual agreements are initially drawn up. It also contains questionnaire forms so that they can quickly be adapted and used. The documents are provided on a CD-Rom.

Many readers will initially wish that this *Pack* had been produced some years ago, but when they discover the depth and breadth of the up-to-date experience that it contains, they will realize it has been worth waiting for. If it had been produced earlier it would not have had the benefit of many lessons that have recently been learned around the world.

Guidance Pack

Private sector participation in municipal solid waste management



Part IV

List of Terms and Definitions

Compiled by Adrian Coad

Definitions of some technical terms and clarifications of the way certain words are used in this Guidance Pack.

Words that appear in this list are generally written in *italics* the first time that they appear in a particular chapter in the Guidance Note.



SIKAT

Guidance Pack

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LIST OF TERMS AND DEFINITIONS

This includes a wide range of words for which dictionaries may not be a suitable source of help, because

- some of the words are technical terms which may not be found in most dictionaries;
- some words have several meanings, and this list explains how the words are used in this Pack;
- some words are used in different ways by different writers or in different countries, and this list explains the meaning given to particular words in this publication. (An example is the term "Public/private partnership", which many people use in a general way for all forms of private sector participation, but which has a more precise meaning in this Pack.)

It is anticipated that the readers of this Pack will come from many backgrounds – both in terms of formal education and mother tongue. No reader will need to refer to all definitions, but it is expected that most readers will benefit by consulting some of them.

After some definitions are references to sections in Part II where there is more information to help understanding of the

particular word or term. The explanations of some terms are much more than definitions, providing also perhaps some background information or an indication of importance.

The first time a word in this list is mentioned in each chapter of the Guidance Note, it is written in *italics*, so that the reader knows that a definition is available.

Following the definitions of words there is a short list of *abbreviations* with brief explanations of what they stand for.

This word list is provided as a separate document so that it can be used conveniently with either Part II or Part III. It will also be of some help in understanding the documents in Part V.

Definitions followed by the initials "ERM" are based on definitions in the word list of the World Bank/SDC *Planning Guide for Strategic Municipal Solid Waste Management in Major Cities in Low-income Countries* (ERM, 1998). Some definitions have been kindly provided by Prasad Gopalan of the International Finance Corporation.

WORD LIST

accountability

In general this word refers to the basic principle that the manager responsible for a service such as MSWM should have the authority to control all of the necessary functions of the organization. In return should take the responsibility for ensuring that the organization operates in a satisfactory and cost effective manner. (ERM)

In this pack the main emphasis is on the second aspect. Private sector service providers should sense that they are accountable to the people whose waste they collect and to the local government agency that has engaged or licensed them. The companies know that if they fail to provide the required service in the required way, there will be negative consequences. Such accountability results from a well prepared contractual agreement, from effective enforcement of the terms of the agreement, and from the understanding that there will be financial penalties if expectations are not met.

Many microenterprises draw their workforces from the communities that are served. The quality of the services they provide may benefit from the accountability that the laborers feel towards their neighbors who expect a fair and satisfactory service.

The public sector agency responsible for the service should also feel accountable to both the public and the elected representatives for the way it oversees the service. The accountability of the agency is increased if it is aware that it will be challenged if it does not ensure satisfactory standards.

acre

A measurement of area. 1 acre is 0.405 hectares and 1 hectare is 2.47 acres

affordability

Ability of an individual or a community to pay for the MSWM services as proposed. (ERM) A proposal is said to be affordable if it requires an individual expenditure below a certain percentage of the average or minimum wage. (See also *willingness to pay*)

- aftercare** This refers to the work that needs to be done to a sanitary landfill after it has been closed. (See also **closure**.) For perhaps twenty to thirty years after the closure of a landfill containing mixed municipal waste, the wastes in the landfill continue to produce leachate (polluted water) and gas, and the wastes settle or subside as a result of decomposition and compaction of the waste. Aftercare involves monitoring the “postclosure” effects of the landfill on the environment, and the elevation and topography of the cover over the waste, and taking any action that is necessary.
- amortization** This is the paying of a loan for a capital expenditure by regular (monthly) payments. These regular payments include a component of repayment of the capital sum (the principal) and a component to cover the interest.
- apex agency** Generally, this is the agency at a higher level which would be responsible for a collection of agencies. For example, an apex agency could be the ministry of urban development which could collectively negotiate for a group of smaller urban local bodies which need waste collection services. (Prasad Gopalan)
- arm roll** This is a type of mechanism used on a truck to enable it to pick up, empty and put down a large container that can be used to carry solid waste or other materials. The containers may be described as **roll-on containers**, and they typically have capacities between 6 m³ and 30 m³. Other terms for the same type of lifting mechanism are **hook lift** and **roll-on-roll-off**. The concept is illustrated in the following figure.

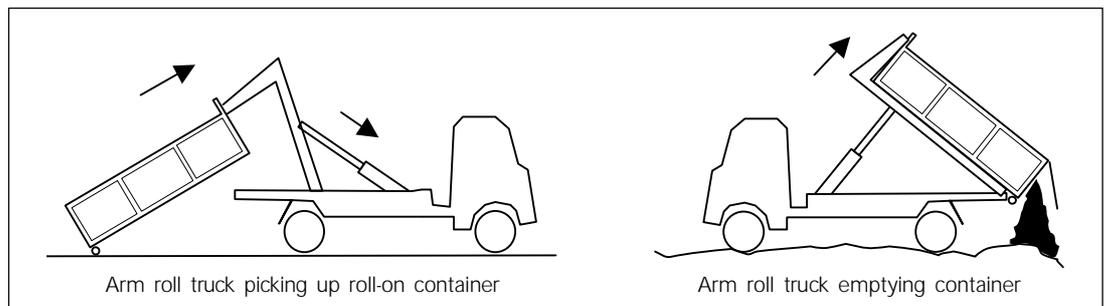


Figure IV-1 Arm roll truck

- arm's length company** An expression used in UK to refer to a company that is owned by a local authority but is at some distance (“arm’s length”) from the client and regulatory functions of the local authority in terms of its accounts, its management and staff, and, preferably, the location of its offices.
- attenuation** In the context of the management of leachate at a sanitary landfill, **natural attenuation** refers to natural treatment processes improving the quality of leachate as it filters down through the soil. Many waste management engineers regard this as a suitable strategy for leachate management when the flow is slow, the soil suitable for providing treatment, and the time taken for the treated leachate to reach groundwater resources is very long. The alternative approach is (i) to select a site where no leachate can escape into the soil, and collect and treat the leachate in a wastewater treatment system, or (ii) where the soil is not capable of preventing the movement of leachate, the site must be **lined**, and the leachate collected and treated.
- attrition** In the sense that this word is used in this publication, it refers to the reduction of the size of a workforce. Natural attrition is the reduction of the workforce without dismissing employees. Natural attrition relies on older staff retiring and others leaving voluntarily, to take up employment elsewhere.
- autonomy** An organization has autonomy if it has the authority and responsibility for all six organizational functions required to function effectively. (These six functions are planning, operations, commercial, financial, administrative support and monitoring.) Improving autonomy enhances accountability and responsibility for quality of performance. (ERM)

- availability** When applied to equipment or vehicles it means the percentage of time that the item is in a condition such that it can perform the work for which it is intended, and not required for any maintenance or testing purpose that would prevent it from being used for this work.
- bid bond** The corporate surety bond or a certified check drawn on a national bank, in the amount specified in the Instruction to Bidders, submitted with the bid as a guarantee that the bidder will, if called upon to do so, accept and enter into the Contract. *(Source NSWMA, see Part V)*
- bioaerosol** An aerosol is a collection of fine droplets of a liquid. The droplets are so small that they can stay suspended in the air for sufficient time that they can be inhaled (breathed in). If there are microorganisms within the droplets, infection can be transmitted by inhaling the aerosol. A bioaerosol contains living organisms (such as bacteria and fungi) within the droplets.
- block collection system** A reasonably low-cost method of collecting solid waste from houses. A vehicle stops at each block, or at street corners, and sounds its horn or plays an electronic tune (jingle), or someone rings a bell. At this signal someone from each neighboring household should come to the vehicle, bringing the solid waste so that it can be tipped directly into the vehicle. With this system there is no storage of waste in the street (a common cause of complaint) and the team of laborers with each truck can be small – one or two. However the system is not suitable if there are houses where there are no residents at home at the time that the truck comes, so the hours of working may be limited to one or two hours in the morning and a few hours in the evening. In some places the residents may not like to keep their waste on their property until the next time that the truck comes. The timing of the service must be very regular. (This system should not be confused with the house-to-house collection method in which a collection laborer rings a bell to ask the residents to have their waste ready for collection at their front gate.)
- body** The body of a refuse collection truck is the tray, box or lifting device that is fitted onto a truck chassis, as shown in the following sketch.

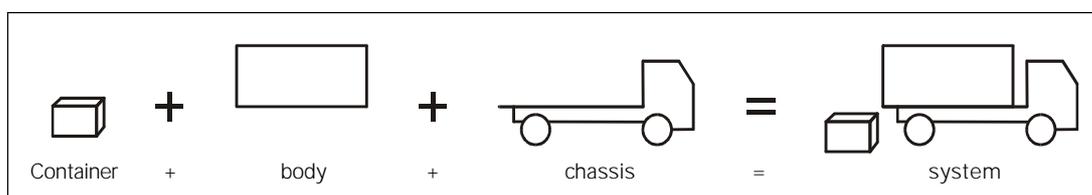


Figure IV-2 Sketch indicating the meaning of truck "body" and collection vehicle system.

- buffer** In the context of a waste disposal or treatment facility, a buffer is a strip of unused land around the facility to separate it from the surroundings. The buffer serves to reduce the impact of the site or reduce pollution from the site that reaches the surrounding land users. The buffer may be left in its original state or planted with trees or shrubs.
- bundling** Bundling is the joining or grouping together of enterprises or operations, often for purposes of financial or management efficiency.
- byelaw** Refers to subordinate municipal legislation, applicable and enforceable only within the legal borders of the municipality. Byelaws or municipal ordinances cannot be contradictory to national legislation. (ERM)
- cadastral information** This refers to information that has been collected from land surveys or scale maps of the urban area. Information is collected about the location, shape and dimensions of every plot of land, and perhaps also about the sizes and number of storeys of the buildings on the land.
- calorific value** The quantity of heat generated when unit mass of a material undergoes complete combustion under certain specified conditions. It is expressed in terms of kiloJoules (kJ) or kilocalories (kcal) per kilogram for solid or liquid materials. (ERM). (1000 kcal/kg is equivalent to 4200 kJ/kg. The

higher (or “gross”) calorific value is for dry waste and the lower (or “net”) value includes the effect of the moisture in the waste.) It is vital to assess very thoroughly the lower calorific value of wastes before considering incineration, since it is not possible to incinerate the wastes of many developing countries without using large quantities of extra fuel (such as oil or gas). Determining reliable calorific values needs carefully designed field studies to obtain representative composition and moisture content data.

- capacity building** Improving and building the technical and managerial skills and resources within an organization. (ERM) This could include training in technical, managerial and administrative fields, the provision of extra staff, the development of computer software and administrative procedures, and new personnel management policies.
- capital cost** Investment cost. Includes items such as land, site development, infrastructure, plant and equipment, and license costs. (ERM)
- cartel** A cartel is an unofficial association of potential contractors or suppliers. The purpose of this association is to fix prices (of bids in this case) at levels that are higher than they would be under conditions of real competition. (See also **collusion**.)
- cell** Most modern methods of operating sanitary landfills divide the total area of the landfill into cells, such that one cell is filled before another cell is used. Each cell is usually separated from the rest of the site by a bund or wall made of soil or inert waste. By filling a landfill one cell at a time, water pollution can be reduced and operations can be supervised more effectively. Sometimes two cells are operated simultaneously, one being for a special type of waste (such as waste from hospitals).
- centroid** The centroid is analogous to the center of gravity. It is the mathematical center of a body which may have an irregular shape, and so it can be used as a reference point to represent an area. In the context of this publication, it is a point in an urban area that is used to represent the distance of that area (i.e. all the distances from different parts of the area) from an external reference point, such as a transfer station or disposal facility.
- change orders** In a construction contract, the construction contractor often works according to designs that were prepared by another organization. Often, during the construction process, it becomes apparent that the design should be modified in some way. The contractor is instructed to make these modifications by means of a “change order” or “variation order”. These modifications often result in extra work and expense for the building contractor, so he files claims asking the client for an extra payment to compensate for the extra work (that was originally unforeseen and that was not caused by any fault in his work.) Change orders are also used to add to the scope of services to be rendered beyond what was originally envisioned in the contract. (See disposal contracts, Part V.)
- chassis** (pronounced “shassee”) The wheels, motor, transmission and frame of a truck onto which a wide range of bodies can be fitted. See **body**.
- clandestine** Secret or unannounced. When waste must be transported a long distance to the disposal site, a driver may prefer to unload the waste at an unauthorized place that is nearer than the disposal site, in order to save time and effort. This is clandestine dumping because it is done without the knowledge of officials. If a contractor must pay a significant fee for disposal of waste at the official site, he may prefer to save money by unloading the waste secretly at an unauthorized point – clandestine disposal. Such clandestine dumping can cause serious pollution and degradation of land.
- closure** The procedure a landfill operator must follow when a landfill reaches its legal capacity for municipal solid waste disposal. It includes ceasing acceptance of municipal solid waste and placing a cap of soil on the landfill site, and landscaping.
- collection points** Places set aside for the transfer of waste from small vehicles (such as handcarts, tricycles and carts pulled by animals) to large vehicles. The incoming loads are generally less than one cubic meter in volume.

- collusion*** Potential contractors (which should be rivals, each developing a separate bid in secret) agreeing together on the prices they will bid so that the prices are higher than they would be under conditions of real competition. Such practices are unethical and usually illegal. (See also ***cartel***)
- comfort letter*** A comfort letter is a document originating with the private sector firm (sponsor) and which forms a part of the contract documents. It indicates to the grantor the willingness of the sponsor to undertake certain desirable actions. For example, a contractor could provide a comfort letter indicating that there would not be any changes in management of the company or its technical partner. Alternatively a letter of comfort could be written to demonstrate access to equipment or key personnel who may be important to the contractual relationship sometime in the future. It is the "comfort" of the grantor that is of concern, and anything to satisfy the grantor's "level of comfort" is considered as a comfort letter. They are relevant to all types of contractual agreement. (Prasad Gopalan)
- commercialization*** This is the changing of a government organization so that it acquires some of the characteristics of a private commercial enterprise. Government agencies for solid waste management are restructured into quasi-private enterprises with some degree of government oversight, but with the management freedom to operate at optimum efficiency and generate revenues exclusively for their own use. Commercialization seeks to graft many of the strengths of the private sector onto a decentralized government organization. Various forms of commercialization, with varying degrees of autonomy, include private corporations, public corporations, semi-private corporations, and public authorities.
- Commercialization reduces government control over decision making. If the public organization has been fully commercialized, the only government ownership may be the shares and the only influence may be the Board appointments.
- Commercialization involves changing the financial arrangements of the solid waste organization, including creation of segregated accounts and separate revenue streams. As part of the commercialization process, the public solid waste organization is typically changed in its organizational structure so that has more autonomy and accountability. (See section 4.2.1)
- communal collection*** A system for waste collection in which individuals bring their municipal solid waste directly to a central point, from where it is collected. (ERM)
- communal storage*** A storage facility or location that is shared by a number of households. Communal containers are provided by the municipal authorities. (In the Indian Subcontinent the terms "community storage" or "community bins" are used because "communal" is used to refer to religious groupings.)
- compactor truck*** This is a vehicle that is specially designed for collecting low density solid wastes. There are several different types, but they are all designed to lift and compress wastes so that the body of the truck is filled with the full weight of wastes that the truck is designed to carry. These trucks have not been successful in many lower-income countries because the wastes are denser and so the trucks may be seriously overloaded (causing problems for the chassis and the roads), and also because of maintenance problems, and rapid corrosion caused by wet and abrasive wastes. A photograph of a compactor truck is shown as Photograph 2 in Part I. A detailed discussion about the suitability of compactor trucks in low- and middle-income countries is given in a book published by the United Nations Centre for Human Settlements (Habitat) entitled "Refuse Collection Vehicles for Developing Countries" ISBN 92-1-131066-0, and available from UNCHS, P O Box 30030, Nairobi, Kenya.
- concession agreement*** Refers to a concession awarded by a municipality (or other grantor) to a private company, via competitive tendering, to design, build and operate (DBO) a facility for treatment and disposal of municipal solid wastes. Variations include build, own and operate (BOO) when the finance is provided by the private sector company, and build, own and transfer (BOT) when the ownership transfers at an agreed date to the grantor. Such agreements provide for the municipality to pay a gate-fee for each tonne of waste delivered. (ERM) (See Box 4.2.)
- (Additional comments by Sandra Cointreau-Levine follow:) Concession agreements are commonly long-term agreements wherein the private firm builds and makes a significant portion of the

capital investment for a new facility. However, concession also means that a company is given the opportunity to make revenue from handling some aspect of the solid waste. That is why compost mining operations and billing operations could be referred to as concessions. The differences in usage are exacerbated by the French use of the term “franchise” in a manner which is different from the English usage.

However, to avoid confusion, in this publication the term “concession” will be used to refer to large DBOT or BOO projects which involve the construction of facilities. (Sandra Cointreau-Levine)

- concessionaire** A private company that has won a concession to provide a service by means of a facility, and has signed a concession agreement. This term may refer to the company as a whole or to the owner of the company. The pronoun “he” is used to refer to the owner of the company that has the concession, on the understanding that the owner could equally be male or female.
- consumables** Consumables are relatively small items that are required at relatively frequent and regular intervals. In the field of vehicle maintenance, oil filters, oil, tires and clutch plates could be described as consumables, whereas gearboxes would not be. Plastic bags for holding waste, and brooms could be classed as consumables, but a handcart would not be.
- contestability** Contestability is the degree to which it is easy for a contractor/franchisee to take up a contract/franchise or to stop working in this field. In a highly contestable situation there are no barriers to entry and no extra costs involved in beginning or ending contract work. For example, collection of solid waste using open trucks is highly contestable since any contractor with a few trucks (which may have previously been used for other purposes) can start working on waste collection without incurring significant costs. If he decides later to stop collecting waste, there is no financial loss because the trucks can be redeployed on other work. Similarly, if specialized waste collection trucks are used, but it is easy for a contractor to buy and sell them, the contestability is high. If there is a high degree of contestability, then it is realistic to expect competition since it is easy for a number of private companies or government agencies to join the bidding. If contestability is low there may be very few companies that are able to bid, and a monopoly situation may result. In the context of the Guidance Note, contestability is characterized by the opportunity for competition and comparisons between public and private sector operations. (See Box 1.1 and Section 3.6.)
- contiguity** See *economies of contiguity*.
- contract** As much as possible, this word is used only in the context of a contractual relationship (including service and management contracts) in which a contractor is paid for a service directly by the grantor. When franchises or concessions might also be included, the more inclusive word “agreement” is generally used. In this Pack **contractual** is used in a slightly different sense as defined below. (See Section 4.2.3.)
- contract documents** The Request for Bids, Instructions to Bidders, Contractor’s Proposal, Contract Specifications, the Contract, Performance Bond or Letter of Credit and any addenda or changes to the foregoing documents agreed to by the grantor and the contractor. (Source NSWMA, see Part V)
- contractor** As for **contract** above, in this publication, this word is used to refer to private sector operators who have an agreement with the grantor that the fee for the work will be paid directly by the grantor. The pronoun “he” is used to refer to a contractor, on the understanding that the owner of the contracting company could equally be male or female.
- contractual** In this publication, this word is used in a more general way than **contract** and **contractor**. It is applied to all types of agreement, including franchises and concessions, as well as for management and service contracts, and is used to emphasize that the agreement is legally binding on both parties.
- controlled landfills** The two extremes of land disposal are open dumping (with no measures to minimise environmental pollution) and sanitary landfilling (which employs modern techniques to minimise all forms of nuisance and pollution). However there are many possible operating techniques between

these two extremes. Rushbrook (1999) suggests that open dumps can first be upgraded to controlled landfills, then to engineered landfills, and finally to sanitary landfills. According to his definitions a controlled landfill uses some of the operating practices of sanitary landfilling – controlling the area where the wastes are placed and covering the wastes with soil each day, but there are no measures for containing or treating leachate.

- co-opetition** is a new business philosophy that combines the advantages of competition with cooperation. (See Box 3.3 in Section 3.6.)
- corporatization** Corporatization refers to making the entity commercialized, which means having income relative to expenditures and a customer-based orientation. The corporatized entity is like a corporation, but is not a corporation. (Sandra Cointreau-Levine)
- cost recovery** Recovering the cost of municipal solid waste management, or other municipal services, from the users. Cost recovery may be by *direct* or *indirect* charges. (ERM)
- cover** In the context of landfilling, “cover” refers to a layer of soil or inert waste which is laid over the waste for various purposes. “Daily cover” is placed at the end of each working day, to reduce windblown litter, smells and numbers of flies, birds and rats. It also provides a surface for vehicles to drive on. As part of the closure process, “final cover” is used to prevent water from seeping down into the waste and go give a sufficient depth of soil so that vegetation can be planted.
- coverage** (or service coverage) is the percentage of generators who receive the particular service or the percentage of waste generated in a city, district or zone that is actually collected. So “60% coverage” could mean that 60% of the residents have a waste collection service or that 60% of the waste of the area concerned is collected.
- cross subsidies** One of the criteria for sustainability is often said to be that the income from user fees should cover the expenses of providing the service. The ability to pay for the service varies considerably within an urban area – residents who have very low incomes may not be able to pay their share, whereas prosperous residents or large commercial generators may be able to pay much more than their share of the costs. A system of cross-subsidization requires prosperous residents or commercial generators to pay more than their share, so that low-income residents can pay less than their share. The excess paid by prosperous or larger generators subsidizes the poor.
- curbside collection** Method of collecting domestic solid waste in which the householder is responsible for putting the waste (in a container) outside his property at the curb- or roadside at specified times for collection. The container should generally be kept within the property.
- debt service** Debt service on investment refers to the costs incurred by borrowing money. Most of this cost is interest on the sum borrowed, but there may also be other charges such as insurance premiums, not related to the items purchased with the borrowed money, but purely related to the loan itself.
- debt service coverage ratio** This is a standard financial term - and it means the ratio of the cash flows to the debt service obligations (interest and principal repayments) of a company over a period of time. (Prasad Gopalan)
- density** This term is commonly used in two senses in solid waste management.
- (1) The density of a housing area refers to the number of people living in one hectare or one square kilometre. Solid waste management problems are usually greater in high-density areas because the roads are generally smaller, and there is less space for storing wastes, either on the streets or within the yards of houses.
 - (2) The density of solid waste refers to the weight of one cubic meter of the waste. A high-density waste may have high proportions of soil, vegetable matter and moisture, whereas a low-density waste might be mostly plastic and paper packaging, with a low moisture content. The density of the waste has an important influence on the selection of methods for collecting the waste.

<i>depreciation</i>	Capital costs (of assets such as trucks or buildings) are spread over several years (the economic life of the asset). The value of the asset is reduced or depreciated each year so that it is zero when the asset is considered to have reached the end of its useful life. Depreciation provisions are 'costs' and not 'expenditures' of an investment. They do not involve cash outlays but are a measure of the annual value (or cost) of physical assets used up in the provision of the service. They must therefore be taken into account when assessing the full cost of providing the service. This is one of the principal differences between the largely cash-based accounting systems sometimes used and the accruals based accounting system. (ERM) Governments often define a standard period of time over which a particular type of asset should be depreciated; for vehicles this period is often five years.
<i>differentiated base user fee level</i>	It would be possible to match the magnitude of the user fee to the ability or willingness to pay for services. Since different segments of a population could place differing values on a specific service (say waste collection) the need to differentiate the fees may arise. (Prasad Gopalan).
<i>direct user charge</i>	<p>(1) Proportional: The user of the service is charged for the use of the service, related directly to the extent of use. Direct charges are used widely for the collection of commercial and industrial wastes (for example, an industry might be charged according to the number of containers taken away and emptied, or according to the weight of waste collected. Direct charges are not often used for the collection of household wastes (ERM)</p> <p>(2) Flat rate: A charge that is to be paid for a particular service (such as waste management) that is distinct from charges or fees that are for other services. The customer/generator is informed of the amount that is being charged for solid waste management.</p> <p>Definitions of direct charges and indirect charges vary. In this Pack, direct user charges can be collected with utility bills or separately, as discussed in Section 5.16. (The alternative method of revenue generation is to collect a general municipal tax to pay for a number of services. In this case the allocation to solid waste management is uncertain, depending on the priorities of the political leaders.)</p>
<i>discharge location</i>	The place where a vehicle (which is used to collect or transport waste) unloads its waste. It is usually a transfer point or station, or a treatment, recycling or disposal facility.
<i>disposal, (dispose)</i>	1. The final placement of MSW that is not salvaged or recycled. 2. The process of finally disposing solid waste in a landfill. (ERM) There is some difference of opinion as to whether composting and incineration are disposal processes, since both produce residues that are subsequently landfilled.
<i>down, downtime</i>	When used to describe the condition of mechanical equipment the word "down" means "not functional", "damaged", "in need of repair" or "undergoing maintenance or repair". "Downtime" is the time when the equipment cannot be used.
<i>downstream operations</i>	This term is based on the comparison of the movement of solid waste with the flow of a river. The waste is considered to flow from the generation stage (through pre-collection) to collection and transportation, through possibly transfer, sorting or processing, to final disposal. If collection is being considered (for example), downstream operations would refer to the stages of transfer, processing, sorting and disposal. (See also <i>upstream activities</i> .)
<i>drop-off station</i>	Where car ownership is common, it is desirable to provide facilities where householders can bring their wastes (especially bulky items) in their own cars. Such facilities may be provided for householders to bring materials that can be recycled. Other arrangements may be made for householders to bring unwanted items that are classed as hazardous (such as old paint, waste oil, and unwanted household and garden chemicals). Usually there is no charge to domestic generators bringing their own wastes. All such facilities can be referred to as "drop-off stations" or "drop-off centers"
<i>dustbin</i>	This is a container having a capacity of 60 to 90 liters which is specially designed for the household storage of domestic solid waste. It has handles and a lid, and may be made of plastic (usually PVC) or galvanized steel.

economies of contiguity This refers to the physical layout of a collection route. A collection route is contiguous if it includes all the sources of waste along that route. This is not the case when there are several collection agencies collecting from the same street under a private subscription (or open competition) arrangement, because in such a case one truck may collect waste from a house, then drive past several houses which are served by other companies. As a result each truck collects from only some of the houses in the street. Such an arrangement is not economical because it involves wasted time - travelling past houses where the waste is not collected -, and extra travelling – driving for more kilometers to fill the truck. This arrangement is said to lack economies of contiguity, and this lack is one of the main disadvantages of private subscription.

economies of scale Reductions in the unit cost of the production of a commodity or the delivery of a service resulting from production or delivery on an increasing scale. This is illustrated in the Figure VI-3.

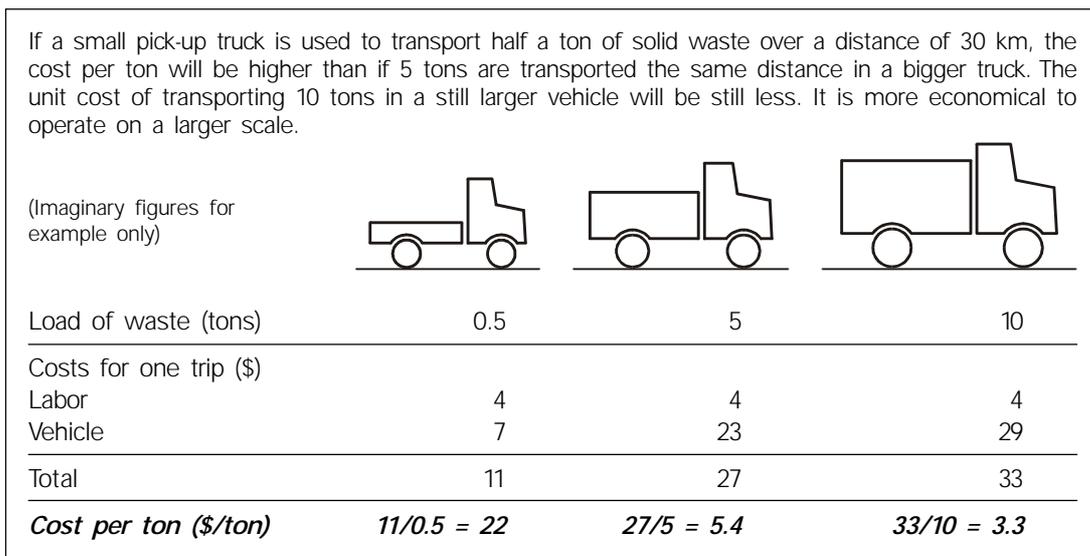


Figure IV-3 Example of economies of scale - long-distance transportation of waste (From Haan, 1998)

effectiveness The effectiveness of a service means the extent to which the objectives of the service have been met in practice. For example, a street sweeping service is effective if the streets are clean. (ERM)

efficiency A service is efficient if the available resources are used in the best possible way. (ERM)

environmental impact assessment (EIA) An environmental analysis prepared to determine whether and how an action (such as a proposed development project) would significantly affect the environment. It may also include the mitigation measures required to reduce the impacts to an acceptable level. (ERM)

equal opportunity This refers to legislation and concern that there should be no discrimination in awarding contractual opportunities or employment, in working conditions or in ensuring rights, that is based on gender, ethnic background, religion, political affiliation, or other factors not connected with the ability to perform the required function.

equitable collection zones When preparations are being made for the private sector to become involved in collection of solid waste, it is preferable to arrange the work so that there will be some competition between the various contractors, and between contractors and the municipal workforce. This requires that the area receiving the collection service be divided into a number of zones, such that several contractors bid for each zone. To allow comparison between the contractors working in the different zones the zones should be **equitable** – that is, equivalent or similar. If the zones are equivalent and the collection crews are facing similar circumstances in each, it is easier to compare their performance in a fair and useful way.

<i>firm</i>	This word means the same as “company” in the sense that a private firm is the same as a private company.
<i>fleet</i>	Although conventionally the word “fleet” is used to describe a group of ships, it is also applied to a group of vehicles. So the phrase “municipal collection fleet” means all of the trucks that are owned by the municipality and used to collect solid waste.
<i>flow control</i>	This refers to the control of the flow or movement of solid waste, usually in the sense of directing a specified daily quantity of solid waste to a particular treatment or disposal facility so that the facility is economically utilized. For example, a concession contract for the operation of a composting plant may guarantee that the waste collection agency will deliver a minimum daily tonnage of solid waste to the plant, so that the plant can always operate at full capacity. See also <i>Take or pay</i> and Section 5.5.
<i>feasibility study</i>	1. Analysis of the practicability of a proposal. The feasibility study usually recommends the selection of a cost-effective alternative. 2. A small-scale investigation of a problem to ascertain whether a proposed research approach is likely to provide useful data. (ERM)
<i>feet, foot</i>	A measurement of length: 1 ft is 0.305 metres and one metre is 3.28 ft.
<i>force majeure</i>	A term widely used in contractual agreements to refer to events or situations which are outside the control of either party and that cannot be anticipated. Examples of such events are wars and earthquakes, but it might also include the refusal of a request to renew a permit, a decision of a court, or changes of laws. (The definitions sections of some of the contracts in Part V give further information on this term.)
<i>franchise</i>	In MSWM terms, it refers to the method and agreement by which a Municipality awards, via competitive tendering, a monopoly to a private company to deliver a particular service, in a defined area and for a fixed period. Generally the private company provides a performance bond to the municipality and pays a franchise fee to cover costs of monitoring service provision. (ERM, modified)
<i>franchisee</i>	A private company which has won a franchise to provide a service, and has signed a franchise agreement. This term may refer to the company as a whole or to the owner of the company. The pronoun “he” is used to refer to the owner of a company that has a franchise, on the understanding that the owner could equally be male or female.
<i>generator</i>	Any person or organization whose actions or processes generate municipal solid waste. (ERM) This term may be used in some situations instead of terms like <i>customer, consumer, user</i> or <i>beneficiary</i> . Waste is generated when a person decides that an item is of no further use or value and places it in a container or at a location from where he hopes it will be removed. A generator is not the same as a producer, since the producer of waste is considered to be the person or organization that manufactures the items that are later considered to be waste.
<i>government</i>	In this Guidance Pack this word is used to refer to the public sector in general, and includes local government (municipalities and city administrations), regional (provincial or state) government and national government.
<i>grantor</i>	The individual, party or organization that offers a contract and signs as provider. The grantor may also be referred to as the “client” or “employer”. In the case of solid waste management, the grantor is often the municipal organization that has legal responsibility for ensuring that a solid waste collection and disposal service is provided. In the case of contracting, the grantor pays the contractor, but this is not the case under a franchise agreement.
<i>haul distance</i>	The distance over which the wastes must be transported - either from (a) the last pick-up point of the collection vehicle or from (b) the transfer station - to the disposal site. (ERM)
<i>hauler</i>	The company that transports solid waste to a transfer station or disposal site.

<i>hazardous waste</i>	Waste generated during production, or other activities by society, that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of the four characteristics – ignitability, corrosivity, reactivity or toxicity. (ERM) See also “healthcare wastes”.
<i>healthcare wastes</i>	These are wastes arising from the practice of medicine, including dentistry, alternative medicine (such as acupuncture), medical laboratories, home treatment and veterinary practices. Most healthcare wastes are no more hazardous than domestic wastes, but some can be very dangerous. It is important to remember that healthcare wastes do not only come from large hospitals, but also from small clinics and nursing homes, and even individual dwellings.
<i>hold harmless agreement</i>	An agreement to indemnify and protect (i.e. to save harmless) the grantor against any claims for financial compensation and to reimburse any expenses associated with any claims, damages, losses or expenses arising from or resulting from any injury, sickness, disease, death, or damage to, or destruction of, property, these claims etc. being attributable to the performance of the work or to an act or omission of the contractor. (Prasad Gopalan, modified)
<i>host fee</i>	This is an extra fee paid for receiving waste that is brought from outside the area of the local authority that is responsible for the disposal facility. In the case of a landfill that is operated as a concession, the operator usually pays a fee to the grantor for each ton of waste received, but pays extra for wastes received from outside the area of jurisdiction of the grantor. This extra payment is known as the host fee. (The concessionaire can maximize his profits by accepting as much waste as possible, but communities around landfills usually oppose waste being brought in from other communities. The host fee is a mechanism for reducing the incentive for the concessionaire to attract a large quantity of waste from other areas, and also for sharing any benefits from such waste with the receiving community.)
<i>informal sector</i>	The part of an economy that is characterized by private, usually small-scale, labor-intensive, largely unregulated and unregistered manufacturing or provision of services. In municipal solid waste management it refers to recycling activities (waste picking or scavenging). (ERM)
<i>intermunicipal</i>	An intermunicipal agreement involves – or is between – a number of distinct municipal administrations which have joined together for a particular project. An example is a disposal facility which is designed to serve a number of towns in a region in order to be large enough to benefit from economies of scale. The agreement defining responsibilities and rights regarding this facility is an intermunicipal agreement.
<i>iterative</i>	This refers to a process of design or decision-making where feedback inputs are received over a period of time and this feedback is used to design and make successive changes. Each step or iteration may alone be small, but each results in a significant development or modification so that the cumulative impact can be great. The word also includes the concept of gradually converging on the required result.
<i>joint venture</i>	This is the joining together of two or more different bodies for a specific enterprise. It may comprise a government body working with a private company (Box 4.1 in Section 4.2) or a combination of a local company with a foreign firm (Section 5.1).
<i>kickback</i>	Unofficial payment or bribe paid by a contractor to one or more individual(s) in the grantor organization for the purpose of obtaining payments that are due to the contractor, or to obtain these payments more promptly.
<i>laid out</i>	A housing or residential area is said to be “laid out” if the sizes and locations of the plots (on which the dwellings are built), and the roads serving them, were planned before construction was started, and adhered to during the construction of the dwellings. Some common words that imply the <i>opposite</i> to “laid out” are: “spontaneous”, “unplanned” and “squatter”.
<i>landfill</i>	Generally used to mean the same as <i>sanitary landfill</i> , though it may be used to indicate any disposal site where waste is deposited on land, rather than specifying the standard of the operation.

<i>layoff</i>	A colloquial expression for the firing, dismissing or retrenchment of employees in order to reduce the size of the workforce.
<i>leachate</i>	Leachate is polluted water which has become contaminated by its contact with solid waste in a landfill. It also includes water which has come from the waste itself - moisture that was in the waste when it was landfilled and water that is formed by decomposition processes within the mass of the waste. It is generally much more polluting than domestic or industrial wastewater, and a high concentration of ammonia is often a particular problem. It is usually black or dark brown in color, and sometimes has an oily appearance.
<i>letter of credit</i>	A written undertaking by a financial institution on behalf of the applicant (the Contractor) to pay the beneficiary (the City) for non-performance in amounts and under conditions as may be specified in the agreement. (Source: NSWMA see Part V)
<i>level of service</i>	See <i>service level</i>
<i>level playing field</i>	This is a picture of a situation in which competitors can compete on a fair basis, without either side having an unfair or unearned advantage. (Cartoon 2 in Section 3.4 shows the opposite - a steeply sloping games field where it is much easier for one team to get the ball (downhill) to the goal in which they are trying to score, than for the other team to get the ball uphill.) Competitors in a tendering competition could have an unfair advantage if they can successfully plan to ignore some of the requirements of the work, or if they have better information with which to plan their bid. In such cases the award of a tender could be based on knowledge not freely available or plans to provide an inadequate service, and so the competition would be unfair to reputable companies without access to inside knowledge. If a company feels that it suffers from a serious unfair advantage, it will be reluctant to participate in a tender competition.
<i>licensing</i>	This refers to the granting of permission for a private sector company to provide a service. Before a company is given a license it should be required to prove that it has the financial, human and physical resources to undertake the work. A company may be refused a license if it has been convicted in court of a financial or environmental offence. See Section 5.17.
<i>lien</i>	The legal right to hold another's property until a claim is met.
<i>lift</i>	This is a term used in landfilling to describe a depth of waste – either the depth of waste that is laid in one day or the depth that is laid before the operations are diverted to another cell.
<i>lined</i>	A lined sanitary landfill is one that has an impervious layer between the waste and the natural ground, so that no leachate can escape from the site. The leachate that is produced is collected and treated in a wastewater treatment plant. There are three major types of liner – (1) impervious soil (clay) which is carefully laid, (2) one or more layers of special, thick plastic sheeting very carefully joined, or (3) layers of high quality asphalt.
<i>liquidated damages</i>	This refers to compensation payments that are specified in a contract and payable if the contractor fails to provide a required service or facility in the specified way or at the specified time.
<i>low-income countries</i>	In the context of this publication, “low-income” refers to cities in low-income and lower-middle income countries as defined by the World Bank. The term “low-income country” is used to replace the term “developing country”. According to the World Bank Atlas classification system, low-income countries are those with a GNP per capita equal to or less than \$695 (in 1993 dollars). In comparison, lower-middle income countries have a GNP per capita between \$696 and \$2785, upper-middle income countries \$2786 to \$8625 and high-income countries have a GNP per capita equal to or more than \$8626. (ERM)
<i>managed competition</i>	Direct competition between municipal solid waste departments and private sector service companies for a publicly tendered service contract. (See Section 3.6.3).

<i>management contract</i>	A contract which engages expertise to direct manpower employed by the grantor and to use resources owned by the grantor. Management decisions are made by the contractor. The grantor pays only for management input. (For comparison see <i>service contract</i> .)
<i>market forces</i>	In many ways the enthusiasm for privatization has come from the belief that the desire to maximize profit is the best motivation for ensuring improvements in service provision and efficiency, provided that this takes place in an economic environment which is as free as possible from government intervention. If fair competition is allowed, the market (in other words, the preferences of consumers) will ensure that the best service or product generates the best financial return and so high standards are rewarded. These influences of competition in a relatively unregulated environment can be called market forces.
<i>metropolitan area</i>	A politically defined urban area set up for planning or administrative purposes that may combine several jurisdictions (municipalities or cities). (ERM)
<i>microenterprise</i>	A business, often family-based or a cooperative, that usually employs fewer than ten people and may operate <i>informally</i> . (ERM, modified) In Latin America a more restrictive definition is used; it includes the mechanism by which the enterprise is set up, as discussed in Box 4.3 in Section 4.3.
<i>mil</i>	A measurement of very small lengths, so in this context it is used to measure the thickness of plastic sheet or film. 1000 mils equal one inch. For example, a 60 mil HDPE liner is 1.5 mm thick.
<i>mile</i>	A measurement of length. One mile is 1.61 kilometres and one kilometre is 0.62 miles.
<i>mitigation, mitigative measures</i>	Mitigative measures are actions that are taken to reduce undesirable impacts, often on the environment. (ERM) These measures may be the installation of equipment (for example, to clean gases from an incinerator or filters to control odor) or modification to operational procedures (such as not accepting certain types of waste at a landfill or not operating on very windy days because of the scattering of paper and plastic.) Mitigative measures may also include design features (such the addition of an earth bund to hide operations from sight or reduce noise levels).
<i>monitoring</i>	Periodic or continuous surveillance or testing to determine the level of compliance with statutory requirements. (ERM)
<i>municipal solid waste (MSW)</i>	Includes non-hazardous solid wastes generated in households, commercial and business establishments and institutions, and non-hazardous industrial process wastes, agricultural wastes and sewage sludge. In practice, specific definitions vary from place to place. (ERM) A further discussion is given in (Schübeler 1996).
<i>municipal solid waste management (MSWM)</i>	“Management” refers to all activities that aim to minimize the impacts of municipal solid wastes on public health and the environment, including definition, characterization and measurement, storage, collection, transport, transfer, separation and resource recovery, processing and disposal. (See Schübeler, 1996)
<i>novation</i>	A novation clause in a contract refers to the situation when the contractor sells his company. Such a clause allows the new ownership to assume the rights and duties of the contract and releases the previous ownership from all obligation and liability. The new ownership would then be solely liable for any work and/or claims attendant to this agreement. A novation clause is not typical in a residential solid waste collection contract. However, since the sale of a business is not an unusual occurrence, it may be advantageous to provide a provision that lets the contractor out of the contract upon selling his business as a going concern to another entity. A novation is not an assignment of rights or a delegation of duties. The effect of a novation is that one of the original parties is discharged from the contract with the newcomer taking his place. A novation, as a discharge, relieves the removed party of future liability to perform a duty. (Information from NSWMA, see Part V)

NIMBY Acronym for “Not In My Back Yard”; an expression of resident opposition to the siting of a municipal solid waste management facility, because the particular location proposed is too close to their residence.

odometer This is a measurement indicator in cars and trucks to show the driver how many miles or kilometers the vehicle has covered since it was manufactured. The distance covered is important because it indicates when the vehicle needs regular servicing (such as oil changes) and can be used to monitor the use of fuel.

open burning The practice of setting fire to piles of waste at open dumps. Whilst it has the advantages of reducing the volume of the waste, reducing the content of biodegradable organics and reducing the presence of flies, it causes unacceptable air pollution and so should not be practiced as a means of disposal of municipal waste.

open competition Free competition between service providers. The Municipality generally compiles a register or issues licenses to companies considered competent to provide MSW collection, recycling or disposal services. These companies are then free to compete for contracts with individual householders and commercial establishments for MSW collection, recycling or disposal. Also known as “private subscription”. (See Box 4.2.)

open dump A site where solid waste is deposited in a careless, unplanned or unscientific way, with little or no concern for the environment nor for controlling the breeding of insects and rodents. The results can include water pollution, windblown litter, smoke and smell, hazards to the public, and the degradation of large areas of land.

open tipper A common type of truck that can be used for carrying a wide variety of loads. It has no roof or cover over the body that carries the load (open) and it unloads by inclining the body (tipper).

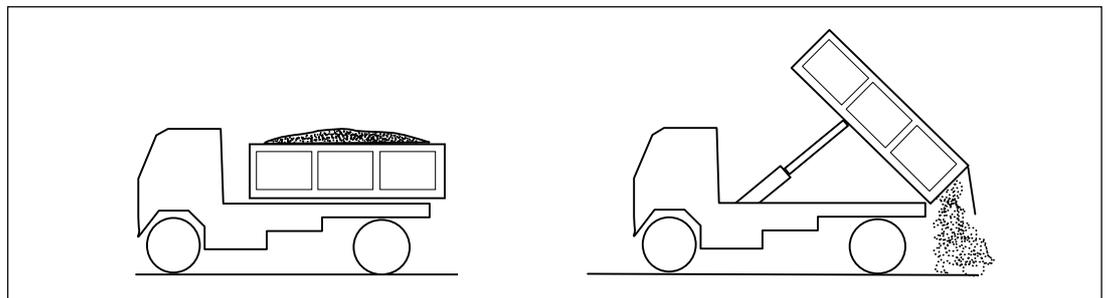


Figure IV-4 An open tipper truck

operating costs These costs are the day-to-day expenses of an operation. They include items such as labor, fuel, materials, chemicals, utilities, repairs and maintenance, and insurance. (ERM)

opportunity cost The opportunity cost of capital to be invested in a particular project is the income that that money could generate if it were used in another way, such as earning interest or being invested elsewhere. It is therefore the income that cannot be earned if the money is used for the project under consideration.

overlays (Annex A7) These are maps of a particular area drawn to the same scale on transparent paper or plastic film. Apart from the basic layout of streets, each map shows different features. (One might show population density, another the layout of the storm drains, a third areas that are prone to flooding.) By laying certain combinations of these overlays together, it is possible to see particular combinations of parameters and so answer questions related to spatial planning and operation of municipal services. The same can be achieved using GIS systems.

oversight Management oversight is used here to mean management inputs – always supervision, and often leadership, direction and control.

<i>payment bond</i>	Payment bonds are frequently required from a contractor who is to provide a public service such as the collection of residential waste. The purpose of such bonds is to afford a measure of protection to the laborers and other employees who deal with the contractor in performing his duties under this contract. These bonds are usually executed separately by a surety though their provisions for guaranteeing payment can be written in as terms of the performance bond. (Source: NSWMA; see Part V)
<i>performance bond</i>	A performance bond guarantees the faithful performance of the contractor's duties and obligations as provided for by the terms of the contract. It is a corporate surety bond that guarantees compensation to the grantor in the event that it must assume the obligations and/or duties of the contractor in order to continue the service as defined by the Contract's Specifications. The bond is used to cover costs incurred by the City should the Contractor fail to render service, forcing the City to deliver service itself or to contract with another hauler for the same service. A letter of credit guarantees the faithful performance of the Contractor's duties in a similar manner. (Source: NSWMA; see Part V)
<i>performance indicator</i>	Quantitative data related to service delivery, such as number of employees, length of streets or total tonnes of solid waste collected.
<i>performance measures</i>	The result of processing performance indicators, generally by relating them to either time or costs. Performance measures are the principal tool for performance monitoring. Examples include cost per tonne of solid waste disposed, and the length of streets swept per hour.
<i>performance monitoring</i>	Measuring the performance of a service on an on-going basis, in order to encourage the efficient use of available resources.
<i>permit</i>	An authorization, license or equivalent control document issued by a governmental body or an approved state agency in connection with the use of a facility. The permit indicates that the issuing agency is satisfied that the design, construction and proposed operating procedures will not cause unacceptable environmental pollution or other undesirable effect. The permit may also reflect the confidence of the issuing authority that the company concerned and the responsible staff are competent and capable to operate the facility. The legislation that requires the issuance of permits states that certain types of facility may not be operated without a permit and that failure to operate the facility in an acceptable way can lead to the loss of the permit. Permits may be required for the operation of transfer stations, recycling and treatment facilities and sanitary landfills. (In some countries this type of permit may be called a license, but in this publication the term "permit" is used for fixed facilities and "license" is used for companies wishing to offer a service.) See Section 6.6.
<i>permitting</i>	Although this word has the general meaning of "allowing"; it is used in a narrower sense in this publication to refer to the process of granting a permit in fulfillment of legal requirements.
<i>pickup truck</i>	A utility vehicle smaller than a truck but larger than a car, with an open load-carrying body at the rear. When used for carrying refuse, such trucks are usually fitted with higher mesh walls to increase their capacity.
<i>pilot test</i>	A trial run of a planned program conducted on a small scale to forecast the likely success or effectiveness of the planned program. Changes may be made to the program depending on the results of the pilot study. (ERM, modified) The pilot test may be used to collect data that will be needed for comparison with alternatives or for full-scale implementation.
<i>plant</i>	Though this word also means an item of vegetation, it is used here to refer to equipment – usually mechanical equipment – excluding vehicles that are used to transport people and materials on roads. Examples of plant used at disposal sites are bulldozers, pumps and lighting equipment.
<i>power tiller</i>	(Also known as a hand tractor or a two-wheeled tractor.) A small, motorized vehicle often used by farmers for pulling small trailers and other agricultural uses, as illustrated in Figure IV-5, and in Photograph 5.9.

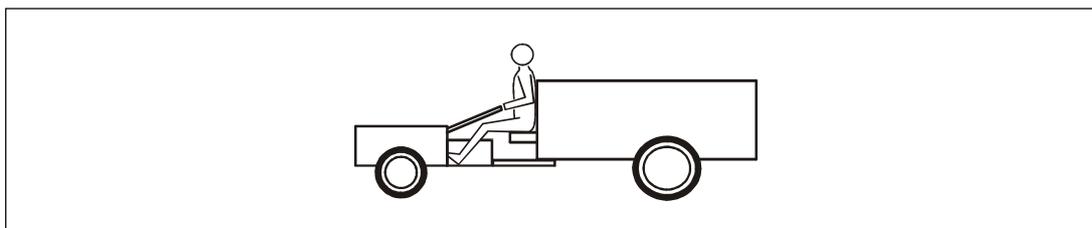


Figure IV-5 Power tiller

pre-collection

(also known as “primary collection”) The first stage in a collection and transport process that involves two or more stages before the waste arrives at the treatment or disposal point. Often pre-collection involves the collection of wastes from house to house using a handcart or animal-powered cart, and depositing them at a transfer point (from where they are picked up and taken away by a truck which provides secondary collection).

private sector

The part of the economy in which economic activity is carried out by private enterprise as distinct from the public sector. (ERM)

private sector participation

A partnership between the public and private sectors which allows the private sector to participate in service delivery. This term is preferred in the context of municipal solid waste management to “privatization” which implies that the public sector is no longer responsible for ensuring provision of the service. (ERM) Sometimes the term “public-private partnership” is used to mean private sector participation, but it is not used in this way in this publication, because it has a more precise meaning (see Section 4.2.2, Box 4.1).

private subscription

See ***open competition***. In the Guidance Note (Part II) this term is preferred to ***open competition*** for collection services since it stresses the individual relationship between each generator and the providers of the collection service.

privatization

Sometimes this word is used in a narrow sense to refer to the process of transferring the provision of an existing service or ownership of facility from government to the private sector. In this Guidance Pack ***privatization*** is used to refer to public sector participation in a general sense, without indicating that government reduces its responsibility for ensuring the provision or standards of the service.

procurement

In this Pack it usually refers to the process of finding and selecting a private sector service provider, and making the contractual arrangements for the service to be provided. In some cases it is used to refer to the purchasing of specific items, such as spare parts.

productivity

A measure of the output of (or useful work done by) a laborer or machine in a particular time. The productivity of a street sweeper could be expressed as the weight of waste collected by that laborer in one hour. The productivity of a waste collection vehicle could be expressed as the weight or volume of waste that it collects in one day.

public awareness and education

Public awareness and education campaigns can take many shapes and forms. Just a few examples are information leaflets, public hearings, radio programs, advertisements, lectures and school curriculum conventions. (ERM) Often public awareness campaigns have simple and clear goals, such as to change the habit or attitude of the public on a particular issue, or to encourage compliance with the requirements of a new collection system.

public consultation

This is the process of informing interested members of the public about plans for projects (in this case related to the storage, collection, transfer, treatment and disposal of solid wastes), and asking for their comments, ideas, reactions and preferences. In this way people who are not professionally involved can also take part in the decision-making process. The term “interested members of the public” generally means residents who live nearby, local businesses, or others who use land near any of the proposed sites (perhaps for recreational purposes), and NGOs with environmental concerns.

<i>public good</i>	This refers to commodities or services whose benefits are not depleted by additional users and for which it is generally difficult, if not impossible, to exclude people from its benefits, even if they are unwilling to pay for it. People that use public goods without paying for them are called "free riders". Municipal solid waste management exhibits the characteristics of a public good, and therefore it follows that the municipality (or another form of local government) has the overall responsibility for solid waste services. (See Section 2.1.)
<i>public/private partnership</i>	A joint venture established by government with the private sector to which each party contributes assets and resources, and each party assumes certain risks and responsibilities as defined in contractual agreements. While this term is sometimes used broadly to mean all public/private arrangements, it is a legally defined term in some countries (such as Indonesia) to mean a joint venture.
<i>pulmonary</i>	Related to or concerning the lungs. Waste management workers are exposed to airborne fungus (and other) microorganisms which can affect their breathing.
<i>put-or-pay agreement</i>	See <i>take-or-pay</i>
<i>recurrent costs</i>	<p>The costs incurred in operating municipal solid waste management services. They can include: direct operational expenditures, such as expenditure on wages, fuel, and maintenance; provisions (accrued expenses) for liabilities such as employee pension obligations and insurance payments; regular recurrent cash outlays, such as debt repayment and service charges (capital and interest); and a provision (depreciation) for recovering the value of the capital assets progressively used up in delivering the service. (ERM)</p> <p>It is important to note in this context that costs that the private sector must include as recurrent cost (roughly all the items mentioned above) may not be considered as recurrent costs by local government. For example, all capital expenditures of local government may be funded from another source (distinct from the source of recurrent expenditure), and so interest and loan repayments may not be included as recurrent costs for local government. Insurance may not be included. It is even possible that pension contributions will not be regarded as a recurrent cost for the solid waste collection service, because they are paid by another department. For these reasons the number of items included in recurrent costs by the private sector is often much more than for the public sector, and so the private sector may appear to have higher running costs.</p>
<i>recyclables</i>	Components in municipal solid waste that still have useful physical and / or chemical properties after serving their original purpose and that can therefore be reused, or re-manufactured into other products. (ERM, modified)
<i>redundancy</i>	<p>The reason given for dismissal from employment when the particular type of employees are no longer needed in previous numbers. In the context of this Pack, the public sector staff who are dismissed may have become redundant because the work has been taken over by the private sector, or because improvements in efficiency have reduced the requirement for employees.</p> <p>A <i>redundancy</i> can also mean a case of someone who is dismissed for this reason.</p>
<i>refuse</i>	(noun, accent on first syllable) Another term for municipal solid waste.
<i>regional</i>	For the purposes of this Pack, this refers to a geographical area within a nation that includes several adjacent local administrations or municipalities. One example of a regional area is a large metropolitan area that includes several municipalities, and in which it is necessary for economic reasons to share a facility such as a sanitary landfill. (The word is often used to mean several adjacent nations, but it is not used in this sense in this publication.)
<i>regulation</i>	Generally used for secondary national legislation; i.e. detailed instructions to implement a more general law. (ERM)
<i>respondents</i>	People who provide information and opinions for a questionnaire survey.

<i>restrictive labor practices</i>	This refers to actions or tasks that public sector laborers are not expected to undertake, usually as a result of strikes and pressure from labor unions. Restrictions may have been put onto certain tasks for health and safety reasons, or because they were unpopular with the workforce. Examples may be the handling of certain types of loads, the requirement that a truck driver must always be accompanied by an assistant, or the right of the crew of one collection truck to refuse to help the crew of another that is having difficulties. Private sector workers generally have much fewer of these restrictive practices, and so are able to operate more flexibly and to achieve higher productivities. The lack of restriction on working practices in the private sector is itself one of the key potential advantages of private sector participation.
<i>revenue</i>	Income, especially of large amount from any source (ERM).
<i>roll-on container</i>	See <i>arm roll</i> . A large container designed so that one can be loaded onto the back of a truck.
<i>routing</i>	The detailed assignment of MSW collection vehicles and labor to collection routes such that collection efficiency is maximized. (ERM) Routing often includes the actual route that a vehicle should take to minimize either the distance that it covers or the time that is taken to complete the collection assignment.
<i>sanction</i>	A penalty imposed as a result of a failure to act according to the requirements of a contractual agreement. This penalty often takes the form of a cash payment or deduction from the fee payable, but may take other forms.
<i>sanitary landfill</i>	A site where municipal solid waste is disposed to land in a satisfactory way. The site is located to minimize water pollution from runoff and leaching and other environmental nuisance. Solid waste is spread in thin layers, compacted and covered with a fresh layer of soil each day to minimize pest, aesthetic and disease problems, and air and water pollution. (ERM, modified) When no more waste is to be deposited there, the site is restored by covering it with a thicker layer of soil and planting grass or a similar ground cover. Sanitary landfills require monitoring and aftercare for many years after they are closed to allow for settlement of the waste and to prevent pollution of water resources.
<i>secondary materials</i>	1. Materials that have been manufactured and used at least once and are to be used again. 2. Secondary materials (e.g. paper, glass, metals, etc.) obtained from municipal solid waste by the process of reuse, recycling, and / or recovery carried out at the municipal solid waste treatment / processing facilities (ERM).
<i>segregated account</i>	It is a common municipal practice to pay all income into one general municipal account from which costs are paid according to political decisions. In such a system there is no motivation for leaders of sections or departments to try to raise the money that is needed to operate the services for which they are responsible. In contrast, a <i>segregated account</i> is reserved for one particular service or department. Income that is generated in connection with the service is paid only into that (segregated) account, and expenditure related to the service must be paid from that (segregated) account. The manager of the service should have full control of payments made from that account. The records for that account show the true income and expenditure related only to the particular service or department.
<i>septage</i>	This is sludge (a liquid with a high content of solids) which is pumped out of the bottom of septic tanks. Septic tanks are used to treat wastewater from individual buildings or small numbers of houses. Septage can be mixed with the organic components of solid waste in the composting process.
<i>service contract</i>	The grantor selects the company which receives the contract, based on qualifications and competitive bidding, and pays the private company for providing a service. The equipment needed for providing the service may be provided by the contractor or leased from the grantor.
<i>service level</i>	This refers to the quantity, frequency and quality of the municipal solid waste collection service. (ERM, modified). Generators may wish to pay more for a higher service level, such as a more convenient collection method or a more frequent service. (Also <i>level of service</i>)

severance pay

A large lump-sum payment made to employees who have permanent or indefinite employment status and who are required to leave their jobs before they have reached retirement age.

side loading truck

Also known as “side loader” and other names. This is a truck designed for carrying dense wastes in an enclosed body, so that if the openings are closed, the waste is not blown out of the body when the truck is moving fast. The openings are closed by shutters which slide up and down. The body tips to unload. It is usually difficult to load these trucks so that the body is completely full, so care must be taken when estimating the volume of waste in such trucks. Figure IV-6 shows the concept of these trucks.

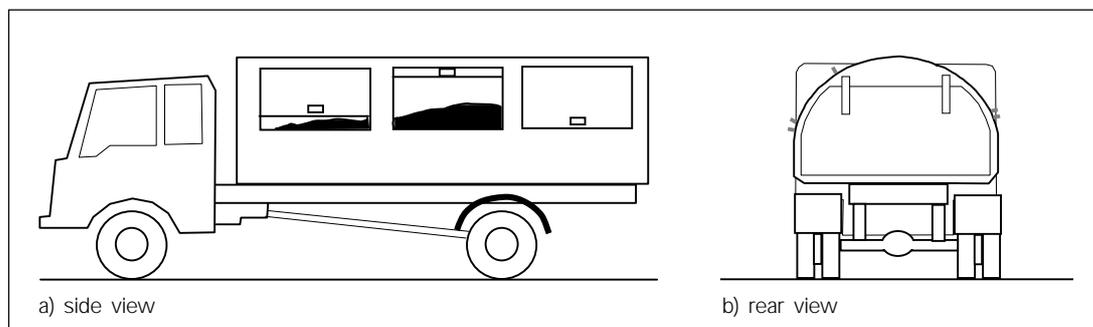


Figure IV-6 The side loading refuse truck

site screening

When a site is being chosen (for example, for a sanitary landfill) it is normal to identify a number of sites and then, as part of a selection process, **screen** them by asking a number of questions about each. Sites that are satisfactory in terms of these questions are considered to have passed this screening process and will be subjected to more detailed investigations. (“Screening” can also refer to a wall made of netting to catch paper and plastic, and to a wall (of soil or trees) that is used to hide the operations of a site from people living or passing nearby, but this word is not used in this sense in Part II.)

siting

The process of choosing a location for a sanitary landfill or a facility for treating or processing solid waste. (Also known as site selection.) (ERM)

skip

A large steel container (of capacity between 2 and 10 m³) which can be used for transporting municipal solid waste and construction and demolition wastes. The container is picked up by a “skip lift” truck with a hoisting mechanism, by means of chains attached to the container. The hoisting mechanism can also tip the container to empty it. These trucks are also known as “container hoist” and “dumper placer” trucks.

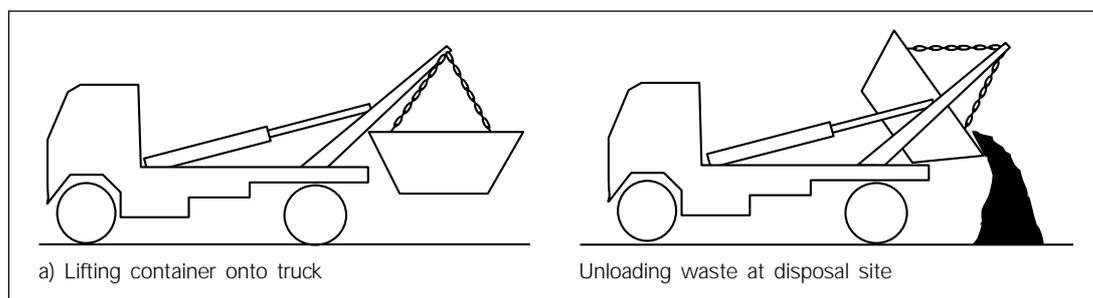


Figure IV-7 The concept of the skip lift truck

sole sourcing

In certain situations, to address a very urgent or unique situation (urgent situations are usually capped by a \$-limit), public agencies are allowed to procure services or equipment from certain vendors who are usually pre-qualified - not necessarily based on competitive bids but on types of services provided. For example, if a vehicle workshop needs a new gearbox (costing less than the ceiling of \$10,000) to repair a vehicle that is urgently needed - instead of going through a bidding system, the agency could immediately order it from a vendor it has already prequalified. (Based on definition from Prasad Gopalan.)

<i>span of management</i>	This is concerned with the ratio of supervisors to subordinates (in other words, the number of employees that are the responsibility of one person on the next level up in the organization chart). If the span of management is too large, the supervisor is not able to monitor adequately all the employees for which he or she is responsible. If the span of management is too small, the supervision overhead cost is high, and the total wages bill is more than it needs to be.
<i>sponsor company</i>	If a private sector actor forms a new company to handle the services under the contractual agreement, then the agreement would be between the company and the grantor. This company would be the sponsor company. If there is more than one sponsor, then the <i>key sponsor</i> could be either the party with: (a) control of the private sector entity (i.e. having the majority shareholding), or (b) the expertise to provide the services envisioned under the contractual agreement. Usually the key (or principal) sponsor(s) would be the one(s) involved in negotiating the contractual provisions and closing the transaction with the grantor. (Prasad Gopalan)
<i>stakeholder</i>	Person, group or institution with interests (often financial) in a project or program. (ERM)
<i>step-in rights</i>	If a company fails to provide the service according to the contractual agreement, the grantor may have the right to displace the company and start providing the service itself, or arrange for another company to provide the service. The legal conditions relating to such a displacement are known as the "step-in rights" and may include the circumstances under which the grantor may do this, and the associated financial conditions and penalties.
<i>storage</i>	(1) Temporary holding of MSW pending collection, transport, treatment or disposal (2) Containers (bins, sacks) and waste piles used for the above purpose. (ERM, modified)
<i>sump tank</i>	The reference in Annex A2 refers to a tank under the loading hopper of a compactor truck. When solid waste with a high moisture content is compressed in the body of a compactor truck, juices are squeezed out of the waste. Some compactor trucks are fitted with sump tanks to collect these juices so that they do not flow onto the road.
<i>take or pay</i>	This refers to a clause that may be found in a concession agreement for a treatment or disposal operation in which the grantor undertakes to pay a specified total tipping fee to the concessionaire, even if the quantity of waste that is delivered is less than the quantity specified in the concession agreement and on which the agreed daily tipping fee is based. (See also <i>put-or-pay</i>) For example, consider the case in which a concession agreement specifies that 10 000 tons of waste will be delivered each month to a sanitary landfill at a charge of \$ 15 per ton (resulting in a monthly fee of \$ 150 000). If only 9000 tons is delivered; the charge payable to the landfill operator would be (9000 x \$ 15 =) \$ 135 000 if there is no "take-or-pay" agreement, but if there is one, the charge to be paid to the landfill operator would be \$ 150 000, based on the minimum guaranteed monthly tonnage.
<i>termination</i>	(1) This word is used in this Pack in connection with the employment of individuals to refer to the dismissing of employees or the termination of their contracts of employment. As it is used here, the reason for termination of employment is usually that the size of the workforce needs to be reduced – in other words <i>layoffs</i> , retrenchment or redundancy, (though the term can also be used for dismissal for poor performance or unsatisfactory conduct). (2) <i>Termination</i> is also used to refer to the cancellation or revoking of a contract in the event that one of the parties does not meet its obligations, if such a provision for cancellation has been included in the terms of the contract.
<i>time-and-motion</i>	This is the study of work practices in typical conditions. It concerns the method by which a task is performed, the time taken to perform the task, and the output achieved. Data from time-and-motion studies can be used to compare the rate at which laborers are working, to compare different vehicles, crew sizes and systems, and to design new arrangements for solid waste collection. Work study (involving method study and work measurement) is a similar concept.
<i>tipping</i>	This refers to the unloading of waste at a disposal facility. It is the action of the transporter of the waste, not of the operator of the facility.

<i>tipping fee</i>	A fee for unloading solid waste at a transfer station, treatment or recycling facility, or landfill. (ERM) 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. The term "gate fee" has the same meaning. (See also <i>user fee</i>)
<i>transfer</i>	This is a word that is used in many ways. <ol style="list-style-type: none"> (1) <i>Transfer</i> is used to refer to the transporting of solid waste from a transfer station to a disposal or treatment facility (such a landfill or a composting plant). When it is used in this sense it is used alone or together with the word <i>vehicles</i>. When it has this meaning it is shown in italics in Part II. (2) When used together with words such as <i>facility, station, point, and depot</i> it refers to the moving waste from one vehicle to another, as indicated in the following paragraphs.) (3) When used in the plural (<i>transfers</i>) it refers to sums of money that are sent from one government office to another. (4) In connection with concession agreements it refers to the ownership of facilities passing from a private company (the concessionaire) to the government grantor. (5) In connection with privatization, it refers to assets becoming considered as belonging to the private sector, having previously been in the public sector. (6) In connection with workers or employees, it refers to employees leaving government service and becoming employees of a private company.
<i>transfer point</i>	A designated point, often at the edge of a neighborhood, where small collection vehicles (such as handcarts) transfer municipal solid waste to larger vehicles for transport to a transfer station, recycling center or landfill site. <i>Transfer depot</i> (in Section 5.7) has the same meaning.
<i>transfer station</i>	A facility at which municipal solid waste from collection vehicles is consolidated into loads that are transported by larger trucks or other means to more distant landfill sites.
<i>transfer system</i>	A two-stage system for collecting solid waste in which waste collected in pre-collection vehicles (such as handcarts) is unloaded from these pre-collection vehicles at a transfer point or station and loaded into larger transfer vehicles that take the waste to the disposal site.
<i>transfer vehicle</i>	This is a vehicle with a large capacity which is used to transport solid waste from a transfer station to a disposal facility. Terms with similar meanings are <i>bulk refuse carrier</i> and <i>bulk transporter</i> .
<i>transparency</i>	A method of conducting affairs in which the criteria for making decisions are clearly specified and these criteria are clearly employed in any decision-making process. It follows that there is no secrecy regarding the reasons for the making of any decision. In the context of this Pack, the decisions for which <i>transparency</i> is of particular importance are the selection of private sector companies to provide services. <i>Transparency</i> is also desirable in connection with the management of public funds, so that the reasons for allocation of funds are clear to the public and so that there is no suggestion of corruption.
<i>unit cost</i>	The unit cost is the total cost divided by the number of tons or the number of cubic metres. For example, the unit cost of collection is the cost of collecting one ton or one cubic metre of waste. The calculation should include all costs, including amortization of capital costs, social benefits and overheads. Financial comparisons of different systems should compare unit costs.
<i>upstream activities</i>	By comparing the movement of solid waste (through the stages of solid waste management) to a river, <i>upstream activities</i> refer to those that take place earlier. For example, if disposal is being considered, upstream activities could be transport, transfer, processing or collection. (See also <i>downstream operations</i>)
<i>user charges</i>	Payment for a service by the users of that service. They are a preferred means of raising new revenue because they can be presented and justified to the public on the grounds that they are required for, and will be used in, the provision of an important public service such as municipal solid waste management. (ERM) (See also <i>direct user charges, user fee, tipping fee</i>)

<i>user fee</i>	User fees in solid waste management 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), whereas the term “tipping fees” refers to payments made a transfer, treatment or disposal site.
<i>utilities</i>	The exact meaning is organizations that provide services such as drinking water, drainage, electricity and telephone communications, but this word is often used to refer to the services themselves. “Paying for utilities” therefore refers to paying bills for electricity consumption etc.
<i>vector</i>	This refers to insects or animals by which diseases are spread. In solid waste disposal, the vectors of most concern are flies, mosquitoes, rats and birds.
<i>vigilance</i>	This word suggests watchfulness, and in the context of this publication it refers to supervision of the actions of others to make sure that they are performed according to requirements. <i>Vigilance</i> can also refer to looking out for corrupt or illegal practices with the aim of preventing them from taking place.
<i>weighbridge</i>	Also known as a truck scale. An installation for measuring the weight of a vehicle with and without its load, in order to determine the weight of the load.
<i>white goods</i>	This is a general term for household appliances such as refrigerators, cookers, and washing machines that have an outer shell made of steel plate (which is usually painted white).
<i>wildlife species</i>	There is growing concern that man's activities are reducing the numbers of different types of plants and animals that are found in nature. The continuous growth of farms and urban areas leaves less and less land (habitat) for plants and animals that have been in that area for perhaps thousands of years, but are considered by many to have no immediate economic importance. These original types of plants and animals are termed “wildlife species”.
<i>willingness to pay</i>	This signifies that an individual or community is prepared to contribute regularly a specified sum of money for a particular benefit. It is different from <i>ability to pay</i> in that a citizen may be unwilling to pay a required fee (even if able to do so) if (s)he feels that the organization to be paid should not be supported because it is inadequate (for example, unreliable or corrupt) or that the service to be provided is unnecessary or unsuitable.
<i>win-win</i>	In the world of sport most games are “win-lose” – one side wins and the other loses. A <i>win-win</i> situation is one in which both or all parties involved benefit and are pleased with the outcome.
<i>working face</i>	The working face of a sanitary landfill is the place where the waste is actually being deposited, leveled and compacted. The location of the working face moves within a cell during each day as more waste is added.
<i>yard collection</i>	This method of collection of domestic solid waste does not require the householders to carry their wastes outside their premises for collection. In yard collection the collection laborers enter the yards of the properties and either take the containers out to the collection vehicle to empty them, or transfer the waste into containers that they carry with them. This access through the property gate is not possible for reasons of culture or security in many situations.
<i>zone of service</i>	The geographical area that is the subject of a contract or agreement. For example, for a sweeping contract it would be area that the contract requires to be swept. In the case of solid waste collection it could also be referred to as a collection zone.

ABBREVIATIONS

BOO	Build, own and operate: A form of concession arrangement
BOT	Build operate and transfer: A form of concession agreement
BTO	Build, transfer, operate: A form of concession agreement in which ownership of the facility is transferred soon after it is constructed, but the concessionaire continues to operate the facility.
DBOT	Design, build operate and transfer: A form of concession arrangement in which the ownership of the facility is sooner or later transferred to the grantor
GIS	Geographical information system Computer hardware and software, coupled with extensive information of locations, services, land use etc, so that it is possible to generate maps of an area, and to select the features and parameters that are to be shown on particular maps. The effect is the same as overlaying several transparent sheets, as discussed in Annex A7. The amount of work required to collect and enter the data is great, so it would probably not be worthwhile to set up a GIS system solely for the purpose of the study that is described in Annex A7.
GTZ	Gesellschaft für technische Zusammenarbeit – the German agency for technical cooperation. This agency has extensive experience in projects involving solid waste management.
HDPE	High density polyethylene: A type of plastic (polymer) from which landfill liners are made.
MSW	Municipal solid waste: See definition in list above.
MSWM	Municipal solid waste management: See definition in list above.
O&M	Operation and maintenance: The ongoing use of a vehicle or item of machinery. Operation refers to putting the item to the use for which it was designed, and maintenance refers to all activities related to keeping it in a condition that enables it to be used for the intended purpose, or restoring it to such a condition.
PSP	Private sector participation: This refers to any arrangement which includes, in any way, the involvement of private companies in a service or activity that is, could be, or has been provided by government (national, provincial or local). It could also be extended to the involvement of community-based groups that are not registered as commercial companies. (See Private sector participation in the definitions section.)
RFP	Request for proposals
RFQ	Request for qualifications
RLC	Rear loading compactor truck: A vehicle specially designed for collecting low-density solid waste. Waste is put into a hopper at the rear of the vehicle, from where it is pushed into the storage part of the truck body. The waste is compacted so that it occupies less volume, allowing a heavier load to be carried by the truck. See Photograph 2 in Part I.
SDC	The Swiss Agency for Development and Cooperation. The address for Urban Development issues is Fachdienst IBU, Freiburgstrasse 130, CH - 3003 Bern, Switzerland.
SKAT	The Swiss Centre for Development Cooperation in Technology and Management, Vadianstrasse 42, CH - 9000, St.Gallen, Switzerland
SWM	Solid waste management: Like “MSWM” above, but with the possibility of including all types of solid wastes (most often adding construction and demolition debris and hazardous industrial waste).
UMP	The Urban Management Program: The address is the Technical Cooperation Division, UNCHS (Habitat), P O Box 30030, Nairobi, Kenya.
VAT	Value added tax - a tax which may be levied on goods and services.

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 this should be done. The information in this book is not just theory; it is based on a wide range of case studies and examples from the Author's extensive international experience.

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Guidance Pack

Private sector participation in municipal solid waste management



Part V

Sample Contracts and other Documents



SIKAT

Tools from Part III and examples of agreements
for collection and disposal, all on a compact disc.

Guidance Pack

*Private sector participation
in municipal solid waste management*

Part V

*Sample Contracts
and other Documents*

*Tools from Part III and examples of agreements
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SAMPLE CONTRACTS AND OTHER DOCUMENTS

A number of contractual documents and some of the tools from Part III have been loaded onto the attached CD-ROM. The documents have been saved in **WORD** for Windows 6.0/95 format, for an A4 sized page. They are described briefly below.

Documents from Part III (:Tools)

Filename	Description
Q-serv.doc	<p>Sample questionnaire on existing solid waste management services</p> <p>Annex A6 from Part III. This can be used for structuring discussions with service providers to collect comprehensive information on current resources and practices. Alternatively it can be given to city officials for them to complete.</p>
ToR-Zon.doc	<p>Terms of reference for a zoning study</p> <p>Annex A7 from Part III. This sets out in practical terms how the zones for waste collection contracts can be determined. It is included here because it could be useful when engaging consultants to do this work.</p>
ToR-IFP.doc	<p>Terms of reference for an institutional, financial and privatization study</p> <p>Annex A8 from Part III. The Guidance Note (Part II) clearly shows that there are many different ways in which the private sector can become involved in solid waste management. These terms of reference define the scope of work of consultants who are engaged to collect the information needed to determine the best ways in which the private sector could participate.</p>
Q-DA&WtP.doc	<p>Demand assessment and willingness to pay survey</p> <p>for solid waste collection and disposal services; Annex A9 from Part III. To be used for evaluating the demand for improved solid waste management services, and determining the level of service that residents and other generators would be prepared to pay for.</p>

Waste collection agreements (:Collectn)

Filename	Description
NSWMA.doc	<p>Model Municipal Contract Model Contract Documents for Residential Solid Waste Collection and Disposal, Technical Bulletin # 85-7, November 1985</p> <p>This document has been made available by kind permission of Mr. Allen Blakey, Director, Public Affairs, National Solid Wastes Management Association. It is a general pattern for contracts for collection of solid wastes and has many useful explanatory comments at many points throughout the document. As such it is recommended as the first step in the study of these collection contracts.</p>

[SC-Lcoll.doc](#)

Sample contract or franchise agreement for sweeping or waste collection

prepared by Sandra Cointreau-Levine.

This document is based on an actual contract and was developed to show how agreements can be made for small collection zones so that small companies are able to take part. It can be adapted to suit either contracts or franchises.

[St-Lucia.doc](#)

Solid waste collection, St Lucia

This is a service contract for solid waste collection on the island of St Lucia in the Caribbean, and has been kindly made available by Ms Alison King-Joseph, General Manager of the St Lucia Solid Waste Management Authority. The contract is for a period of five years, with provision for reviewing the fee at yearly intervals. Companies and joint ventures with more than 50% St Lucian ownership were invited to tender. There was a concern to encourage smaller companies to tender.

[Sunnyval.doc](#)

Restated Agreement between the City of Sunnyvale and Bay Counties Waste Services, Inc. for collection of solid waste

This is a contract for solid waste collection which was executed by the City of Sunnyvale (California, USA) in 1997. It is actually a consolidation of an earlier agreement (1991) and a number of amendments, so it is clearly an agreement that has been tried and proved in practice. The total period of the contract is 20 years. The contract is referred to as a "Franchise Agreement" but fees for regular services are collected by the grantor – the contractor bills generators only for some special "on call" services. Collections of recyclable materials are also included in the contract. It has kindly been made available in electronic format by Mr. Tim Kirby, Solid Waste Specialist, City of Sunnyvale.

Waste disposal agreements (:Disposal)

Filename

Description

[Charles.doc](#)

Agreement for Use and Support of a Solid Waste Disposal System

This is a concession agreement for a large (over three thousand tons per day) sanitary landfill in the eastern United States. It has been made available by John F. Miniclier, Jr., P.E., Director of Public Works, Charles City County, Virginia. The concession agreement was signed in May 1988 and is for a period of forty years, or twenty years after the closure of the site, whichever is more. The agreement includes the management and closure of existing disposal sites, and the transfer of ownership of the site from the concessionaire to the grantor for the active life of the site. Some addenda to the agreement are also included.

[Ciceron.doc](#)

Short Term Operations at Ciceron Solid Waste Disposal Site

This is a service contract for interim operation of a controlled landfill in St Lucia, an island in the Caribbean, pending the preparation of a sanitary landfill. (A controlled landfill is operated according to best practice but does not have the site design features of a sanitary landfill.) The contract has been made available by the General Manager of the St Lucia Solid Waste Management Authority. The work under the contract was due to start in August 1998, and the initial duration of the contract was six months, to be extended until the long-term strategy for waste disposal was finalized. Initially, no tipping fees were to be charged. The quantity of waste received was to be estimated in volume terms.

Filename	Description
DSWA-193.doc	<p><i>Operation of Cell 2 of SSWF-1 Sanitary Landfill in Delaware, USA</i></p> <p>This and the next two documents have been kindly provided by the N. C. Vasuki, PE., DEE, Chief Executive Officer of the Delaware Solid Waste Authority, Dover, Delaware 19903-0455 USA.</p> <p>This agreement concerns a contract to operate one cell of a large sanitary landfill – Cell 2 of the Southern Solid Waste Facility – 1, belonging to the Delaware Solid Waste Authority. The contractor was paid by the owner according to the tonnage landfilled and the bid price per ton of waste landfilled. The site received about 100,000 tones of waste per year. The contract was written to last for up to five years and the price per ton was to be increased every two years. The contract is dated 1989.</p> <p>The contract included landfilling of waste until the capacity of the cell was reached, the closure of the site, including capping with soil and vegetation, and the installation of gas vents and recharge wells. The contractor was responsible for carrying out this work to the satisfaction of the Authority, but not for further works after these works had been approved. The Authority kept its own Landfill Manager on the Site for directing the work of the contractor on certain issues. Some items and materials were provided by the Authority, some work was done by the Contractor on the basis of reimbursement for time and materials, but most costs were to be included in the cost per ton bid price.</p>
DWSA-288.doc	<p><i>Engineering Services Agreement for Design and Construction Inspection</i></p> <p>The facility to be designed was part of a sanitary landfill with an area of 24 acres (10 hectares) known as Cell 3 of a the “Southern Solid Waste Management Center”</p> <p>The contract was for the design, including closure and post-closure works, preparation of cost estimates, preparation of an operations manual, support to the Client during the tendering process, and supervision of the construction. The document includes the Agreement itself, the arrangements for payment of the consultants and the description of the services to be performed by the consultants, but it does not include the proposed project schedule or the cost estimates.</p>
DSWA-332.doc	<p><i>Construction of Cell 3 Disposal Area</i></p> <p>This is an example of an agreement and related documents. It comprises the documents that require signature, including the Agreement itself, the Performance/Payment Bond, the Hold Harmless Agreement and the Certificate of Insurance. These documents are in relation to the construction of part of a sanitary landfill, but they include no technical details.</p>
Note	<p>This selection does not cover all the possible types of agreement. The Environment Protection Department of the Hong Kong Special Administrative Region, China, has developed successful DBO contracts for sanitary landfills.</p>

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