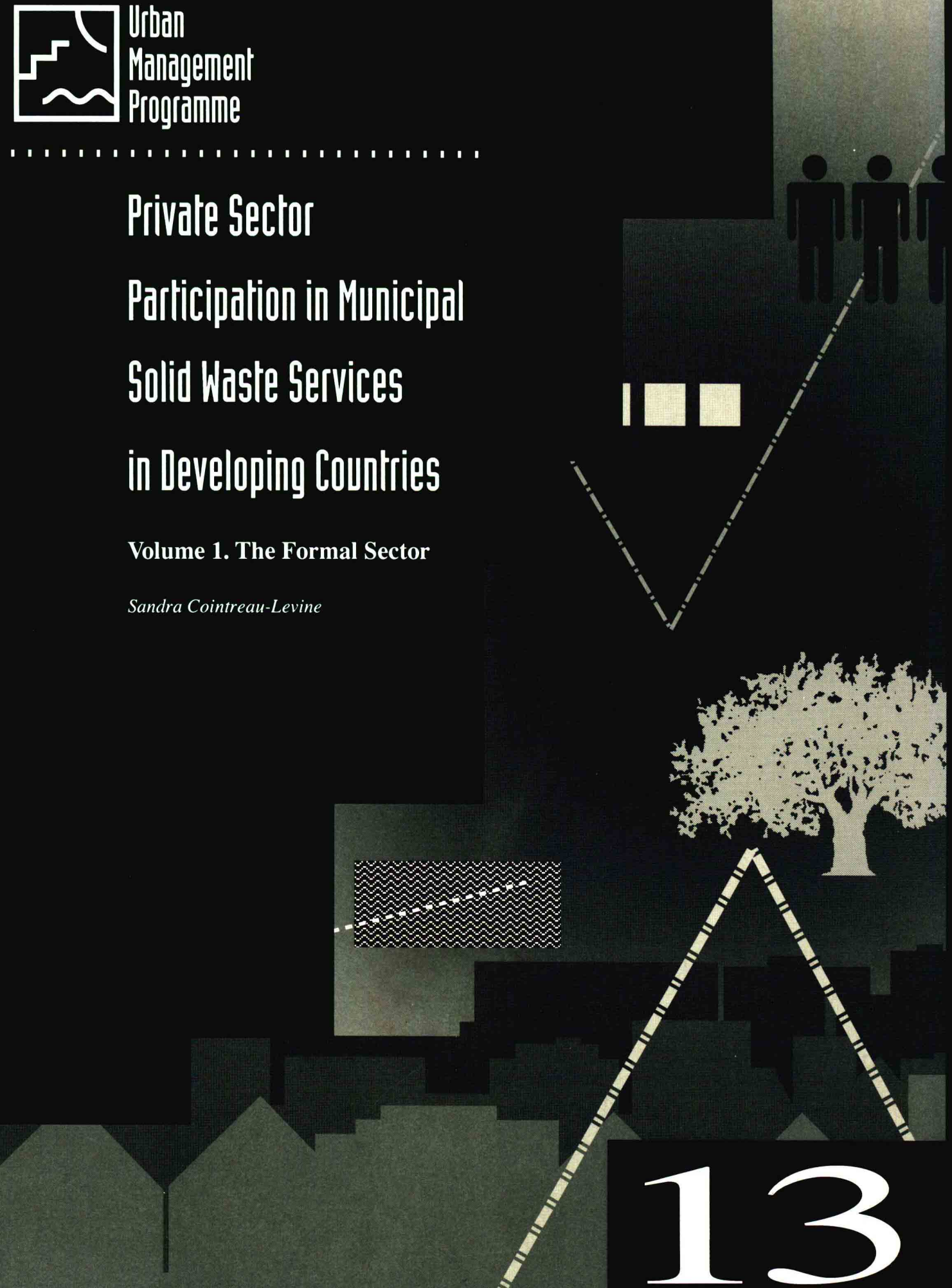
Urban Management Programme

Private Sector Participation in Municipal Solid Waste Services in Developing Countries

Volume 1. The Formal Sector

Sandra Cointreau-Levine



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URBAN MANAGEMENT PROGRAMME DISCUSSION PAPER

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Private Sector Participation in Municipal Solid Waste Services in Developing Countries

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The Urban Management Programme (UMP) represents a major approach by the United Nations family of organizations, together with external support agencies (ESAs), to strengthen the contribution that cities and towns in developing countries make toward economic growth, social development, and the alleviation of poverty. The program seeks to develop and promote appropriate policies and tools for municipal finance and administration, land management, infrastructure management, environmental management, and poverty alleviation. Through a capacity building component, the UMP plans to establish an effective partnership with national, regional, and global networks and ESAs in applied research, dissemination of information, and experiences of best practices and promising options.

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FOREWORD

This discussion paper has been prepared for the urban environment and the municipal finance and administration components of the joint UNDP/UNCHS/World Bank—Urban Management Programme (UMP). It analyzes the participation of the formal private sector in the delivery of municipal solid waste services in developing countries and recommends a decisionmaking framework. Future case study and tool papers are planned on the topics of private sector participation, including informal sector collection and recycling, and model contracts for provision of collection, cleansing, disposal, and transfer services.

The UMP represents a major approach by the UN family of organizations, together with external support agencies (ESAs), to strengthen the contribution that cities and towns in developing countries make toward economic growth, social development, and the alleviation of poverty. The program seeks to develop and promote appropriate policies and tools for municipal finance and administration, land management, infrastructure management, environmental management, and poverty alleviation. Through a capacity building component, the UMP plans to establish an effective partnership with national, regional, and global networks and ESAs in applied research, dissemination of information, and experiences of best practices and promising options.

This paper is one in a series of discussion papers that has been used, in combination with case studies and research, to develop an overall report on formulating environmental strategies for cities. Other papers in the series cover regulatory and economic instruments for waste management and pollution control, land use considerations in urban environmental management, energy/environmental linkages in the urban sector, and rapid urban environmental assessment. Each paper provides background information on key urban development and environment linkages and/or suggest elements of an environmental management strategy for cities in the developing world. In addition, research reports have been prepared on the following topics: health impacts of urban environmental problems, economic spillover effects of urban environmental problems, the application of remote sensing and geographic information systems to urban environmental planning, privatization of municipal solid waste services, and local management of wastes from small-scale and cottage industries. Finally, case studies on priority urban environmental problems have been prepared for Accra, Curitiba, Jakarta, Katowice, Sao Paulo, the Singrauli region of India, Tianjin, and Tunis.

This paper is also part of the municipal finance and administration component which is intended to address three questions: 1) how to mobilize resources to finance the delivery of urban services; 2) how to improve the financial management of those resources; and 3) how to organize municipal institutions to promote greater efficiency and responsiveness in urban service delivery. Work during the initial phase of the Urban Management Programme has focused on the first of these questions—focusing specifically on local tax reform, intergovernmental transfers, and local access to long-term credit. Case studies and background papers on the latter questions—documenting issues in local financial management and the organization of municipal government—have also been prepared.

Phase 2 of the UMP (1992-96) is concerned with capacity building at both the country and regional levels and with facilitating national and municipal dialogues on policy and program options. It emphasizes a participatory structure that draws on the strengths of developing country experts and expedites the dissemination of that expertise at the local, national, regional, and global levels.

Through its regional offices in Africa, the Arab States, Asia and the Pacific, and Latin America and the Caribbean, the UMP seeks to strengthen urban management by harnessing the skills and strategies of regional experts, communities, and organizations in the private sector.

Regional coordinators use these networks to address the five program themes in two ways:

- **City and country consultations.** The UMP brings together national and local authorities, private-sector networks, community representatives, and other actors to discuss specific problems within the UMP's subject areas and to propose reasoned solutions. Consultations are held at the request of a country or city, and often provide a forum for discussion of a cross-section of issues.

- **Technical cooperation.** To sustain follow-up to the consultations, the UMP uses its regional networks of expertise to provide technical advice and cooperation.

Through its nucleus team in Nairobi and Washington, D.C., the UMP supports its regional programs and networks by synthesizing lessons learned, conducting state-of-the-art research, and supporting dissemination of program related materials.

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ABSTRACT

Municipal solid waste management is an essential public service which benefits all urban residents. It is not feasible to exclude from service those who do not pay, because public cleanliness and the safe disposal of wastes are essential to public health and environmental protection. As a result of these characteristics, solid waste management is a public good for which local or metropolitan governments are typically responsible. This does not, however, mean that local government has to accomplish the task of solid waste service delivery entirely with its own staff, equipment, and monies. In fact, this is where the role of the private sector comes into play.

This paper discusses the reduction of government activity through the participation of the private sector in service delivery. The paper poses the questions of whether and how to involve the formal private sector in the provision of municipal solid waste services. Private sector participation is a possible opportunity—not a panacea. In situations in which existing service delivery is either too costly or inadequate, private sector participation should be examined as a means of enhancing efficiency (and thus lowering costs) and mobilizing private investment (and thus expanding the resources available for urban infrastructure and equipment).

To decide whether to have private sector participation, many factors need to be analyzed, such as cost recovery, efficiency, public accountability, management, finance, economies of scale, legislation, institutions, and cost. Cost factors in particular should be analyzed separately for the different components of solid waste service—collection, cleansing, disposal, and transfer.

Methods of private sector participation most common to solid waste management are contracting, concession, franchise, and open competition. These options are discussed with particular emphasis given to the roles and responsibilities of local government in each case. The suitability of each of these methods may also vary for collection, cleansing, disposal and transfer services.

The paper summarizes decisionmaking criteria for whether to have private sector participation in delivery of solid waste management services. Furthermore, it recommends steps for proceeding beyond the discussion of issues and privatization approaches and moving toward field studies that will support decisionmaking in a specific city and, where justified, lead to phased involvement of the private sector.

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For his meticulous attention to issues of scholarship and his many patient readings of this paper as it was developed, the author thanks her husband Joel Levine.

CONTENTS

EXECUTIVE SUMMARY

i. **Solid waste management as a public good.** Solid waste management is a service for which local government is responsible.[1] This service is *nonexclusive*, meaning that once it is provided to some portion of a community it benefits the overall public welfare, not only the resident that specifically receives service (20).[2] The service is also *nonrivaled*, meaning that any resident can enjoy the benefit of the service without diminishing the benefit to anyone else (20). Beyond this, it is not feasible to exclude from service those who do not pay, because public cleanliness and the safe disposal of waste are *essential* to public health and environmental protection (47).

ii. These qualities of being nonexclusive, nonrivaled, and essential place responsibility for solid waste management squarely within the public domain as a public good. Because solid waste management is an urban issue, the level of government responsible is typically local or metropolitan government. This does not, however, mean that local government has to accomplish the task of solid waste service delivery entirely with its own staff, equipment, and monies. In fact, this is where the role of the private sector comes into play.

iii. **What is privatization?** Generally stated, privatization is a reduction in government activity or ownership within a given service or industry, as follows:

- Government *activity* is reduced when the private sector participates in service delivery.

- Government *ownership* is reduced when a) government enterprises are divested to unregulated private ownership and b) government agencies are commercialized (reorganized into accountable and financially autonomous semiprivate enterprises).

iv. This paper discusses only reduction of government activity through private sector participation. It does not address the reduction of government ownership.

v. **Context within which the decision for private sector participation should be made.** This paper poses the question of whether to involve the private sector in the provision of municipal solid waste services. The aim of government and of the private sector in providing this public good is based on two entirely different perspectives: for the private sector, the fundamental concern is whether the delivery of service will *make* money. For government, one of many considerations is whether it will *save* money through private sector participation. Moreover, government must consider known public values and address macroeconomic issues beyond the price of service as discussed in the context section.

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1. For the purposes of this discussion, solid waste management refers to the collection, transfer, recycling, resource recovery, and disposal of municipal solid wastes. Municipal solid wastes are defined to include: refuse from households, nonhazardous solid (not sludge or semisolid) wastes from industrial and commercial establishments, refuse from institutions (including nonpathogenic waste from hospitals), market waste, yard waste, and street sweepings. For purposes of this paper, construction and demolition debris is not included within the definition of municipal solid waste, because it dramatically skews waste generation rates and waste composition.

2. The numbers in parenthesis refer to references that begin on page 47.

vi. Private sector participation is a possible opportunity—not a panacea. In situations in which existing service delivery is either too costly or inadequate, private sector participation should be examined as a means of enhancing *efficiency* (and thus lowering costs) and mobilizing *private investment* (and thus expanding the resources available for urban infrastructure and equipment).

vii. Chapter one discusses the context for deciding whether to have private sector participation, in terms of cost recovery, efficiency, public accountability, management, finance, economies of scale, legislation, institutions, and cost. The Annex elaborates on the contextual issue of cost; and provides an analysis of the costs of solid waste collection, cleansing, disposal, and transfer.

viii. Chapter two discusses methods of private sector participation and provides case examples. The types of private sector participation most common to solid waste management are contracting, concession, franchise, and open competition.

- **Contracting.** The government awards a finite-term contract to a private firm for the delivery of solid waste collection service, street sweeping service, the collection of recyclables, transfer station operation, disposal site operation, or fleet maintenance. The contract award is made after a competitive procurement process. The private firm is paid for service delivery by the government under the terms of the contract.

- **Concession.** The government awards a concession to a private firm to set up a facility that utilizes the government-owned resource—refuse. This concession may enable the private firm to recycle materials (paper, plastic, metal, glass) from refuse; to recover resources (compost, heat, electricity) from refuse; or to transfer or dispose of refuse. The concession is in the form of a long-term contractual agreement, whereby the private firm builds the facility. In some cases, the private firm may maintain indefinitely the ownership and operation of the facility. In others, the private firm may transfer ownership of the facility to the government after a specified period of private ownership and operation.

- **Franchise.** The government awards a finite-term zonal monopoly (a franchise) to a private firm for the delivery of solid waste collection service. The franchise award is made after a competitive qualification process. The private firm deposits a performance bond with the government and pays a license fee to cover the government's costs of monitoring. The private firm recovers its cost and profit through direct charges to the households and establishments that are served. Government provides control over the tariff charged to the consumer through: a) development of adequate competition and control of price collusion, or b) price regulation.

- **Open Competition.** The government freely allows qualified private firms to compete for refuse collection, recycling, or disposal services. In open competition, individual households and establishments make private arrangements with individual firms for refuse collection and/or recycling. No firm holds a zonal monopoly, and any number of firms may compete within the same zone.

Similarly, in open competition, the government grants a license to qualified individual firms for the private provision of disposal services. One city may be served by several disposal sites competing for business from the area's local governments and private haulers, as well as for business from remote governments and haulers. The government's role in open competition is to license, monitor, and, as needed, sanction private firms. Under open competition, costs are directly billed by the private firms to their customers.

ix. Chapter three summarizes the decisionmaking criteria for whether to have private sector participation in delivery of solid waste management services.

x. Chapter four recommends steps for proceeding beyond the evaluation of contextual issues and private sector methods available to a given country and city, toward incremental involvement of the private sector in service delivery.

I. CONTEXTUAL ISSUES OF PRIVATE SECTOR PARTICIPATION IN MUNICIPAL SOLID WASTE SERVICES

1.1 In developing policies and strategic plans for private sector participation in solid waste services, a number of contextual issues need to be addressed. These issues, discussed below, include those of cost recovery, efficiency, accountability, management, finance, economics of scale, legislation, institutional management, and cost.

The Cost Recovery Context

1.2 There is a simplistic argument that public goods should be paid for by public funds and delivered by public agencies, while private goods should be paid for by private individuals (through user charges) and delivered by the private sector. Issues of private sector participation in solid waste management services should not be confused with those of cost recovery. One premise of this paper is that there are sometimes reasons for involving the private sector in solid waste management activities, regardless of whether these activities are public goods or private goods.

1.3 Many activities within the overall purview of solid waste management vary in the extent to which they are public goods. Taking into consideration only the factor of the degree to which a solid waste activity is exclusive or rivaled, Figure 1 illustrates that most solid waste activities are public goods. For example, public cleansing, which involves sweeping of public streets and cleaning of public parks and lands, is clearly a public good because it benefits the public at large and not any specific individual. As a public good, the cost of these services is expected to be covered through general revenues of local government. This includes the cost for public education regarding the individual's civic duties in maintaining a clean community.

1.4 The safe disposal of all collected solid waste within a sanitary landfill is also a public good; it benefits no specific individual but is required for environmental protection purposes that benefit the public at large. The use of a sanitary landfill is usually the lowest cost method of safe disposal. All other methods of disposal also involve the sanitary landfill of residuals (ash from incineration) or of wastes that are incompatible with the disposal method (noncompostables from composting).

1.5 It is theoretically appropriate for the cost of sanitary landfill to be covered through general revenues. Nevertheless, tipping fees (user charges on a per tonne basis) can be readily collected from private refuse haulers and from individual industrial and commercial establishments that bring their solid waste to the landfill. For tipping fees to be levied in a manner that does not encourage clandestine dumping, relevant local government laws and sanctions need to be comprehensive, and inspection and enforcement systems need to be consistently vigilant in their monitoring of such.

1.6 In developing countries, resource recovery (composting, waste-to-energy incineration) can provide safe disposal of solid waste which is comparable environmentally to sanitary landfill. The cost of resource recovery, however, is usually significantly higher than the cost of sanitary landfill. Resource recovery should not be implemented unless a) the recovered resources (compost, secondary materials, steam) can be counted as public goods worthy of subvention from government, or b) the

cost difference between sanitary landfill and resource recovery can be covered by revenue from marketing the recovered resources.

1.7 In low-income communities characterized by limited access to refuse collection trucks or carts, door-to-door collection service is not economically feasible, and only a communal container or bell system is viable. Collection by communal systems a) inherently involves collection from a *public area* not from a private establishment or household, and b) requires the participation of residents who bring their refuse to a communal container or to an attending refuse collection vehicle (upon bell ringing). Such participation represents a significant, voluntary contribution by the community residents. Also, it is not feasible to make an accurate accounting of which residents bring refuse to the communal collection point. Communal systems of solid waste collection are considered a public good, and direct charges are difficult to implement unless a strong community organization exists to enable cost recovery.

1.8 Whether refuse collection from private establishments or individual households can be *treated like a private good* (even though it is a public good) depends on the education and culture of the residents. In communities wherein residents have been sensitized to the need for public cleanliness and to the problem of limited resources (or efficiencies) of government, the door-to-door collection service to households, institutions and to industrial and commercial establishments can be treated as a private good for which those being serviced would be willing to pay. In communities wherein the residents have not been similarly sensitized, there will be resistance, however, to direct user charges and a tendency toward clandestine dumping. Service to all customers, whether paying or nonpaying, is in the public interest. Unlike water supply or electricity, which can be readily cut off for nonpayment of user charges, solid waste collection can not be discontinued without jeopardizing the public welfare.

1.9 Recycling has historically been treated as a private good in most countries, except during war time when governments have conducted recycling in the interest of national security. China has been an exception, and state-operated recycling systems are perceived as an important element of self-sustainable development. In the last decade, industrialized countries have slowly changed their perspective on environmental awareness, thus recognizing that everyone benefits from recycling as a public good. Through recycling, foreign exchange is saved, natural resources are conserved, industrialization is promoted, and waste disposal cost is minimized.

1.10 While it is true that industries save on their materials and energy costs through the use of recovered waste materials as feedstock and that they are willing to buy recyclables, recycling is seldom achieved at an optimal level when left purely to market forces. Thus, recycling can be labeled a *merit good* (20,47). Even in the poorest of developing countries, many recyclable materials that could have been effectively recycled remain in disposal sites. In recognition of recycling as a public good, the governments of industrialized countries are beginning to sponsor education about recycling, to facilitate recovery and purchasing networks, and to provide financial incentives to buy-back (redemption) centers and industries that recycle.

1.11 Figure 1 provides a framework for categorizing various activities of solid waste management as pure public goods (also called *collective goods*) or as pure private goods. Public goods (national defense) are consumed jointly and are nonexclusive. Private goods (store-bought items) are consumed individually, and the producer can deny the good to the consumer until payment

has been made. Figure 1 also categorizes these activities that fall somewhere in between these two categories, such as toll goods and common-pool goods. To be economically viable, toll goods (cable television) are like private goods, in that some people can be excluded from benefiting, and like public goods, in that they need to be provided to a collective group of beneficiaries. Common-pool goods (air) are those for which consumption is not joint and to which access is nonexcludable.

1.12 Figure 2 links activities of solid waste management to the methods of private sector arrangement. For example, for pure public goods (collective goods), which can not exclude any potential user within the service area, contracting and concession are the most appropriate methods of private sector participation. On the other hand, toll goods can be exclusive, thus franchise and open competition are also appropriate methods. For activities that fall between pure public goods and toll goods, contracting, concession, and franchise are appropriate methods. For activities that fall between private goods and toll goods, contract, franchise, and open competition are appropriate methods. For pure private goods, open competition is the most appropriate method of private sector participation.

1.13 In developing countries, most local governments experience a serious shortfall in meeting their revenue needs from their tax base (60). User charges, as one means to cover solid waste cost, should not be neglected, even though most solid waste management services are public goods. User charges give the solid waste agency some autonomy by eliminating the need to compete with all other government agencies for their share of general revenue. User charges also may render the solid waste agency more directly accountable to residents for the cost and value of services that they provide.

1.14 Whether to involve the private sector in solid waste management services is an issue that is separate from cost recovery. Instead, the question of whether to involve the private sector in solid waste management activities is to be examined from the perspective of service coverage, efficiency, reliability, cost, economies of scale, equitability, and accountability, as discussed below.

The Efficiency Context

1.15 According to the World Bank's *World Development Report, 1991*, public spending in developing countries is relatively high for their level of development and provides very low returns. Total government expenditure is roughly 20 percent of GNP in low-income countries and 30 percent of GNP in middle-income countries. This report asserts a "need for smaller, more efficient public sectors and a more dynamic private sector." Furthermore, it states that private sector participation "is not to be undertaken as end in itself, but as a means to an end: to use resources more efficiently" (64).

1.16 Within local governments of developing countries, expenditure for municipal solid waste service is usually from 20 percent to 50 percent of total municipal expenditure. Even at such a high level of expenditure, the level of solid waste service is low, and only 50 percent to 70 percent of the solid waste is collected. In response to this high level of expenditure and low level of service, the main argument raised for private sector participation is that the private sector might be more *efficient* than the public sector in providing services. Private sector efficiency is said to derive from management flexibility, freedom of action, greater financial discipline, and accountability to market forces (12). Presumably, in a competitive environment, private firms must perform efficiently to make a profit and to maintain their position in the market place. Optimum efficiency does not occur when there are no opposing competitive forces. It doesn't occur when there is a public monopoly or

Figure 1. Public versus private goods in solid waste management

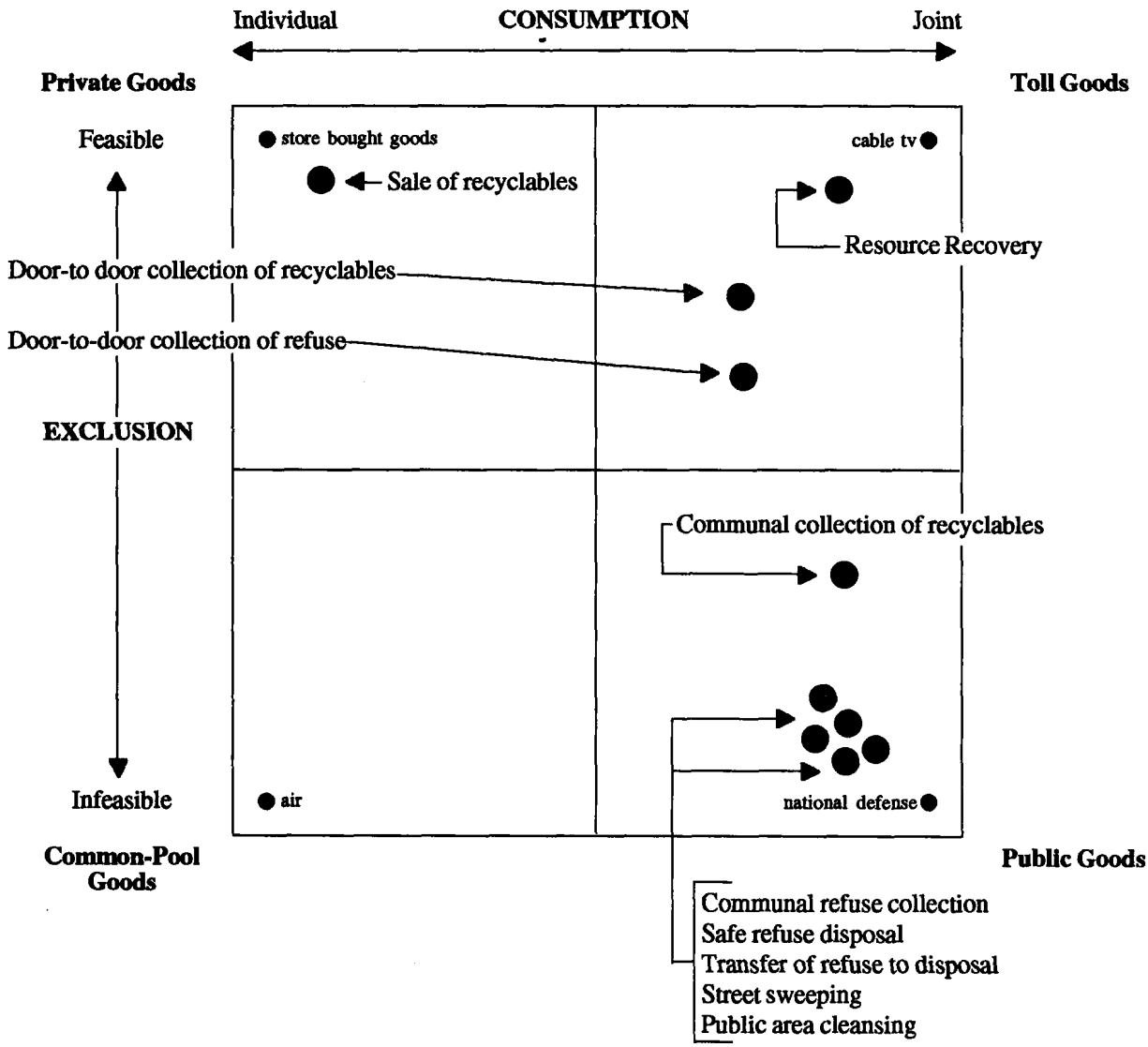

Figure 2. Private sector arrangements in solid waste management