SOLID-WASTE MANAGEMENT STRATEGIES IN INDONESIA:

CONTRACTING, COMMUNITY PARTICIPATION AND COMMERCIALIZATION

by

Juliet E. Johnson

B.A. Economics and Development Studies
University of California - Berkeley
(1989)

Submitted to the Department of Urban Studies and Planning
in Partial Fulfillment of the Requirements for the Degree of

MASTER OF CITY PLANNING

at the

Massachusetts Institute of Technology

May 1992

Signature of Author_____
Department of Urban Studies and Planning
May 20, 1992

Certified by_____
Paul Smoke
Assistant Professor, Urban Studies and Planning

Accepted by_____
Ralph Gakenheimer
Chairman, Master of City Planning Committee

ACKNOWLEDGEMENTS

First and foremost my sincere thanks to Bill Frej who made this thesis possible by organizing a challenging and rewarding internship in the Urban Policy Office at the USAID Mission to Indonesia. Much appreciation to Jim McCullough, Bill Kugler, Steve Perreria, and John Taylor who facilitated my research by organizing field trips, interviews and giving comments on earlier reports. I am indebted to the Dinas Kebersihan and PDK Directors: Budihardjo and Aboejoewono in Jakarta; Djembar Wiradisastra in Bandung; Eddy Indrayana and Bonny Satrio in Surabaya; and D.O.P. Nainggolan and Adly Junus in Medan for the considerable time they took from their busy schedules to discuss the obstacles they face in effective delivery of solid-waste collection services and the steps they have taken to solve them.

For his academic and professional support in Cambridge and Jakarta, my heartfelt thanks to my thesis supervisor Paul Smoke. His intellectual guidance and Indonesian expertise were critical to the thinking behind my thesis, but it was his patience and understanding that brought the ideas to paper. I am also very grateful to Karen Polenske who, as always, went beyond the call of duty as my thesis reader. Special thanks to my mentor Jane Walker, whose obsession with water inspired my own for garbage, for her confidence in me and tireless promotion of my work. Last, but not least, lasting gratitude to Julie Chen, Sumila Gulyani, Mary McVay, Hnin Hnin Pyne and Gabrielle Watson whose friendship made the thesis process bearable.

The information upon which the following analysis is based was gathered over a period of six months while I was the Urban Policy intern for the U.S. Agency for International Development in Jakarta, Indonesia. Although my research was the result of my employment at USAID/Jakarta, the views expressed here are entirely my own.

TABLE OF CONTENTS

GLOSSARY/ACRONYMS

ADB	Asian Development Bank
APBD	Routine and development budget
BUDP	Bandung Urban Development Program
Camat	District head
Dinas Kebersihan	Municipal sanitation agency
Dispenda	City tax and revenue department
DKI	Government of Jakarta
GOI	Government of Indonesia
IUIDP	Integrated Urban Infrastructure Development Program
Kecamatan	District
Kelurahan	Sub-district
Keputusan Walikota	Mayor's Directive
Lurah	Sub-district head
LKMD	Organization for Community Security
MOU	Memorandum of Understanding
MUDP	Medan Urban Development Program
Pasukan kuning	Yellow brigade, RW/RT laborers
Perda	Local government regulation
Perusahan Daerah Air Minum (PDAM)	Regional water enterprise
Perusahan Daerah Kebersihan (PDK)	Regional sanitation enterprise

PLP	Directorate of Environmental Sanitation, Directorate General of Human Settlements, Ministry of Public Works
PLN	National electricity enterprise
PUOD	Directorate General of Regional Enterprises, Ministry of Home Affairs
Repelita V	Fifth National Development Plan
Rukun Warga/ Rukun Tetangga	Community organization/ Neighborhood unit
Suku-Dinas Kebersihan	Sub-municipal sanitation agency
Seksi Kebersihan	Sanitation office
SOR	Largest solid waste firm in Indonesia

SOLID-WASTE MANAGEMENT STRATEGIES IN INDONESIA: CONTRACTING, COMMUNITY PARTICIPATION AND COMMERCIALIZATION

by

JULIET E. JOHNSON

Submitted to the Department of Urban Studies and Planning
on May 26, 1992 in partial fulfillment of the requirements
for the Degree of Master of City Planning

ABSTRACT

Given national fiscal constraints, the Government of Indonesia is promoting improved cost-recovery within local government agencies and encouraging greater cooperation with private businesses and community groups in the finance and delivery of urban services. Indonesia's four largest cities -- Jakarta, Surabaya, Bandung, and Medan -- have launched a variety of innovations to implement the government's policy with regard to solid-waste management. These initiatives include: (1) contracting out garbage-collection services to private firms; (2) establishment of quasi-commercial sanitation enterprises; (3) formal integration of community organizations into the solid-waste management system; and (4) improvement of solid-waste user charge collection by coordinating billing with the water and electricity enterprises. The purpose of this thesis is to identify the most promising financial and operational arrangements for providing refuse-collection services and suggest reforms that would further enhance their potential.

A priority for restructuring the solid-waste sector is the conversion of public sanitation agencies into quasi-commercial enterprises because the latter are more likely to vigorously pursue revenue collection and use their resources more efficiently than the former. The long-run financial viability of the enterprises is contingent on reform of the design and approval process for solid-waste tariff structures, and clarification of the mutual obligations between the enterprise and local government. The sanitation enterprises should pursue attachment of the solid-waste user charge to the electricity bill, which is the most lucrative revenue generation option; however, joint-billing with the water enterprise and contracting out community organizations for fee collection is also a rewarding combination. It is critical that local regulations that delineate the garbage and fee collection responsibilities of community organizations are established and subsequently enforced. Contracting out to private firms is predicated on implementation of these institutional reforms. Furthermore, effective contracting requires the creation of a competitive environment, and design of contracts that meet the profit-expectations of private firms and the quality and efficiency requirements of local government. Although international donors are pushing contracting out, the Government of Indonesia should first build on its strengths in quasi-commercial enterprise formation and community participation.

Thesis Supervisor: Paul Smoke
Assistant Professor, Urban Studies and Planning

Chapter 1

INTRODUCTION

After a decade of heavy debt, runaway inflation, and fiscal austerity, governments in developing countries have limited resources for investing in and operating urban infrastructure and services; thus, they are focusing on improving the efficiency of public provision as well as soliciting the participation of private firms and community organizations in service delivery. The Government of Indonesia (GOI) would have to invest an estimated $1.4 billion over the next ten years, approximately one-fifth of its entire annual development budget, in order to meet its urban service coverage targets (Devas 1989:244). Allocations for the solid-waste sector under the current national development plan (Repelita V) will satisfy only 63 percent of estimated demand. Given these budget constraints, the GOI is promoting improved cost-recovery within municipal agencies and greater cooperation with private businesses and community groups in urban service provision. Indonesia's four largest cities -- Jakarta, Surabaya, Bandung, and Medan -- are experimenting with a variety of methods for executing this broad policy in the solid-waste sector. The purpose of this thesis is to evaluate the innovations implemented to date and distinguish those strategies that are most successful at overcoming the institutional, regulatory and financial barriers that constrain effective delivery of solid-waste collection services.

Rapid Economic Growth and Urbanization

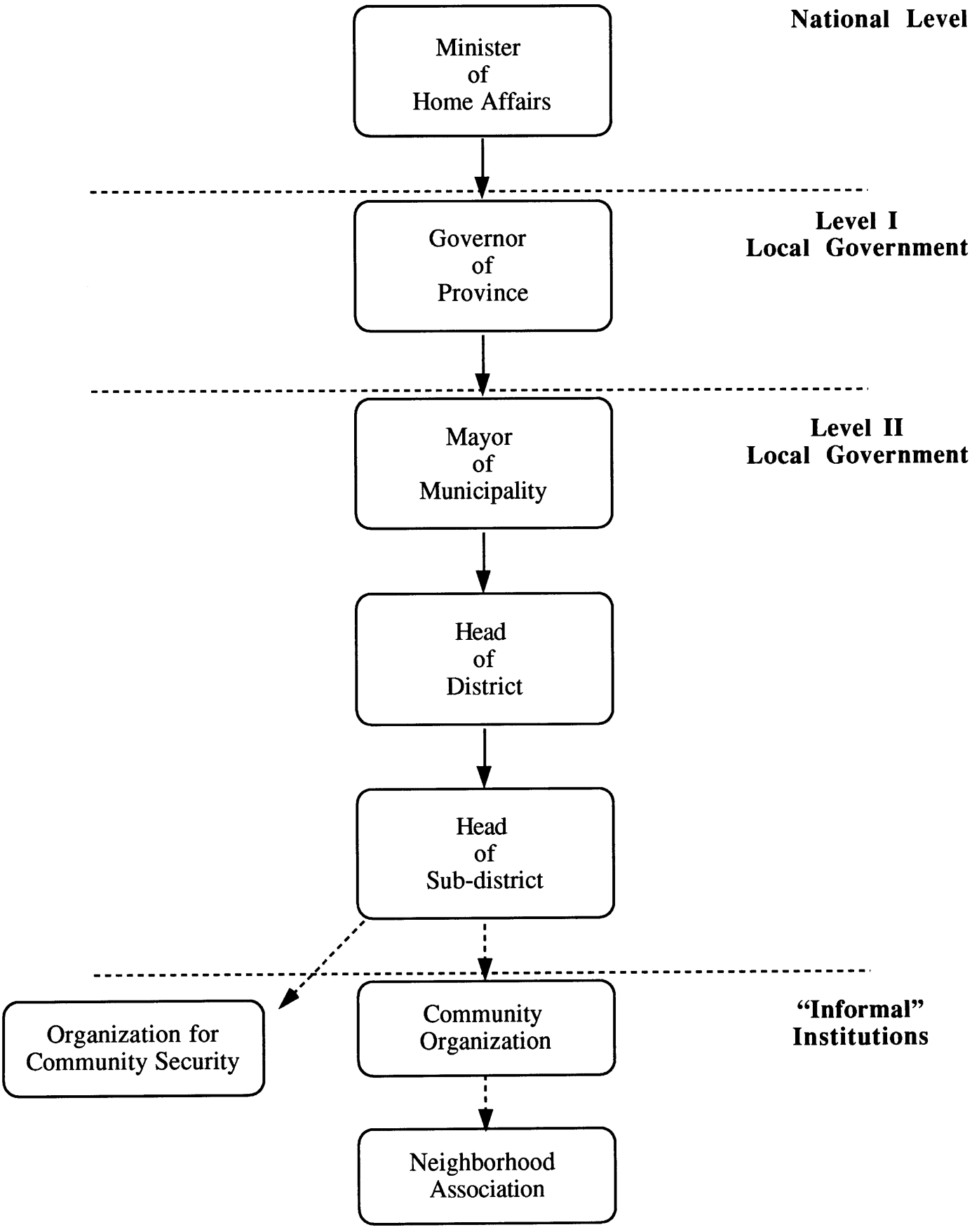
The abrupt collapse of oil prices in the late 1970s ushered in a decade of fiscal austerity, foreign exchange scarcity, and rising indebtedness in Indonesia. The GOI

placed a tight rein on public expenditures, and implemented substantial reforms in order to stimulate foreign and domestic investment (Hainsworth 1991). The complete restructuring of economic policy in the mid to late 1980s produced unexpectedly robust GDP growth of 7 percent in 1990 (USAID 1991:6). Freed from suffocating regulations, the private sector has fueled Indonesia's rapid expansion in production. The country's physical infrastructure, especially power, telecommunications, roads, and harbors, is overburdened by the demands of private investors, even though the central government is concentrating its scarce resources in these areas in order to sustain the economic boom. While the GOI plans to invest $750 million per year on infrastructure development over the course of Repelita V, urban service inadequacies will worsen as cities experience an annual increase in population of 5.4 percent (McCullough 1990:6). The GOI's strategy for meeting these deficiencies is to decentralize the responsibility for urban services to local governments and encourage municipal authorities to increase the participation of private firms and community organizations in their finance and delivery.

Decentralization of Urban Services

Urban infrastructure has traditionally been provided by central governments in developing countries, but they can no longer afford to carry this burden single-handedly. The World Bank estimates that central governments only have 4-5 percent of the financial resources that are needed to provide urban services and infrastructure over the next decade (Rondinelli 1990a:5). In addition to national budgetary constraints, the rationale for making local governments responsible for urban services is that (1) they can best assess the local needs and priorities of their citizens; (2) expenditure decisions can be made

Figure 1: Decentralized Government Administrative Structure



accountable to residents; and (3) resource allocation can be improved by explicit linkage of service costs and benefits (World Bank 1988:154).

In Indonesia local governments are highly dependent on central level allocations for both routine and development expenditures. Approximately 80 percent of local government funds are derived from central government transfers (McCullough 1990:ii). Two-thirds of the investment in urban infrastructure and services is controlled by national sectoral ministries (Devas 1989:256). In 1987, following significant central budget cuts in the urban sector, the Inter-Ministerial Coordinating Team for Urban Development issued a major policy statement on decentralization that emphasized increasing local government's financial responsibility and technical and administrative capacity in urban service delivery (McCullough 1990:45). An objective recently added to the agenda focuses on increasing private sector participation in urban services in order to raise absolute levels of investment and improve the efficient use of total resources (USAID 1991:7). In the Indonesian context, private sector participation refers not only to formal businesses, but also to non-government organizations, informal enterprises and community groups.

National budget constraints have spurred on decentralization in recent years, but the framework for increasing the autonomy of provincial and local governments was established by law in 1974. Figure 1.1 shows the GOI's decentralized administrative structure for urban areas. Because solid-waste management is organized by the municipality, I will focus on the second level of local government.[1] Although it is not specifically mentioned in the law, the lowest administrative unit of formal government is

[1] Except in the case of Jakarta which is a city with provincial status.

known as the kelurahan (sub-district)[2]. The head of the kelurahan, the lurah, is an appointed civil servant who coordinates government programs, such as community health services, family planning, refuse collection, tax collection, drainage cleaning, local road building and security. Depending on the region of the country, the lurah is assisted in implementation of these activities by either the LKMD or the RW/RT. The LKMD, or Organization for Community Security is headed by the lurah and the rest of the members are elected from neighborhoods in the kelurahan. The lurah also supervises two informal levels of government: community organizations (Rukun Warga or RW) and their composite neighborhood units (Rukun Tetangga or RT). Each RW and RT elects a leader who works primarily on a voluntary basis (Sivaramakrishnan and Green 1986; Karamoy and Dias 1986). In Medan, like the other cities on Sumatra, the RW/RT system is weak; consequently, the LKMD takes responsibility for solid-waste management at the kelurahan level. In Surabaya, Bandung, and Jakarta, Java's largest cities, the RW/RT coordinate household garbage collection and the LKMD are primarily concerned with social activities.[3]

Decentralization and Privatization in the Solid-Waste Sector

The central government plans to reduce funding for solid-waste management routine expenditures to cities with populations greater than 100,000. The municipal sanitation agencies (Dinas Kebersihans) in these cities are being encouraged to recover

---

[2] Because Jakarta is a special region, kelurahans are districts and kecamatans are regencies; in other Indonesian cities, a kelurahan is a sub-district, and the kecamatan is a district.

[3] For the purposes of this analysis, the RW/RT and LKMD will be considered interchangeable and referred to similarly as "community organizations".

operating costs by improving revenue collection. In cities with populations greater than 500,000, Dinas Kebersihans are slated for conversion into quasi-commercial enterprises, Perusahan Daerah Kebersihans (PDKs). Under the guidelines of the urban policy agenda, local government agencies and enterprises are supposed to harness the physical and financial resources of private firms and community organizations. Implementation of this policy is facilitated in the solid-waste sector by the fact that trash hauling is one of the few urban services that local governments have contracted out to the private sector and community organizations are the traditional providers of household garbage collection. The GOI has provided limited guidance to municipalities on how to build on this foundation effectively. Nonetheless, the local governments of Jakarta, Surabaya, Bandung and Medan and their respective solid-waste institutions, have plunged ahead on their own. Figure 1.2 indicates the current organizational and financial arrangements for solid-waste management in the four cities.

The municipalities of Bandung and Medan have converted their Dinas Kebersihans into semi-independent PDKs that have the authority to collect user charges for their services directly. They have approached revenue collection in different ways: the PDK in Bandung solicits fees at the payment point for the electricity bill, while the PDK in Medan contracts billing to the lurah and LKMD. Medan's approach is the strongest attempt among the four cities to formalize relations with the community groups. By contrast, the PDK in Bandung tried unsuccessfully to displace the RW/RTs' operational and financial activities in solid-waste management.

The Dinas Kebersihans in Surabaya and Jakarta form a useful basis for comparison with the PDKs because the former is frequently touted as a well-managed municipal sanitation agency, while the latter is popularly characterized as one of the weakest. The

Figure 1.2: Solid-Waste Management Organization and Finance

City	Solid-Waste Management Institution	Private Firm Participation	Revenue Collection Method	Community Organizations	
				Handcart Collection	Amount of revenue channelled to solid-waste institution
Jakarta	Dinas Kerbersihan	Yes; contracts by service area	Door to door; Dispenda	Yes	Minimal
Surabaya	Dinas Kerbersihan	Yes; contracts by volume	Surcharge on water bill; Dispenda and RW/RT coordination	Yes	Substantial
Bandung	PDK	None	Electricity bill "payment point" system	Yes	None
Medan	PDK	None	Door-to-door; Contracts with lurahs	No; except in pilot areas	Complete in pilot areas

Dinas Kebersihan in Surabaya closely coordinates its operations with the RW/RT and it has a relatively strong, albeit indirect, financial relationship with them. It was also one of the first municipal agencies to attach the solid-waste fee to the water bill. The Dinas Kebersihan in Jakarta tends to ignore RW/RT activities and has yet to implement a serious revenue collection campaign. Both Dinas Kebersihans have contracted out to private firms -- by administrative district in Jakarta and by volume of waste in Surabaya -- but institutional and regulatory obstacles prevent either of them from fully realizing the purported benefits of this approach.

Outline of the Thesis

The presentation of the thesis chapters follows a logic that is not inherently obvious and thus requires some explanation. We begin in Chapter Two with an overview of the institutional constraints in the solid-waste sector that affect the operational and financial performance of the Dinas Kebersihan. Because there is a growing tendency to deal with public sector failings by turning to privatization, Chapter Three briefly presents the literature on private delivery of urban services and the experience of contracting out for garbage collection in both industrialized and developing countries. Advocates of privatization often use these examples as a major support for their arguments; not surprisingly then it is also the framework applied by donor agencies in designing and implementing projects that promote the same agenda. Successful cases of solid-waste service contracting provide us with useful criteria by which to evaluate the experiments implemented in Jakarta and Surabaya.

In the next two chapters, we turn to forms of privatization, using the term more broadly, that are peculiar to Indonesia. The focus of Chapter Four is the conversion of

municipal sanitation agencies into quasi-commercial enterprises. Indonesia already has considerable experience with this mode of privatization through its establishment of 150 such enterprises in the water sector. By analyzing the financial and operational performance of the PDKs in Bandung and Medan, we can assess whether semi-independent enterprises can better achieve cost recovery and efficient delivery of solid-waste services than municipal agencies.

In Chapter Five, we examine the relationship between the PDKs/Dinas Kebersihans and community organizations that play a major role in garbage and fee collection. This analysis suggests that it may be premature to introduce an additional player -- private firms -- in the sector before the basic operational and financial responsibilities of the existing actors are clearly articulated. The case studies show that formal contracts and clear regulations are necessary for demarcating the boundaries between the solid-waste authority and community organizations. Finally, in the last chapter, we summarize the major issues, particularly the institutional, regulatory, and financial constraints to improved cost-recovery and private participation, and make recommendations regarding the removal of these barriers.

Chapter 2

EXISTING OBSTACLES TO EFFECTIVE SOLID-WASTE SERVICE DELIVERY

Solid-waste service coverage is inadequate in most Indonesian cities and the combination of rapid urban population growth and reduced central government assistance to the sector will further exacerbate the situation. On average, 40 percent of urban households are presently served by some form of garbage collection, with large cities providing more extensive coverage than small towns. Under Repelita V, central government allocations to the solid-waste sector total $53 million, while local governments are expected to contribute $185.5 million (McCullough 1990:31).[4] Because municipalities must increasingly self-finance solid-waste management services, it is imperative to identify the existing barriers that impede the generation and efficient use of resources by their sanitation agencies. The purpose of this chapter is to outline the institutional constraints placed on Dinas Kebersihans that limit their ability to finance and deliver adequate solid-waste collection services.

Inadequate Institutional Authority

Operational responsibilities in the solid-waste sector are dispersed among many uncoordinated institutions. Household garbage is generally collected by community organizations (RW/RT), while transport and disposal services are provided by the Dinas

[4] As mentioned earlier, over 80 percent of local government budgets are funded by central government transfers. During Repelita V, 40 percent of central government financing is expected to be through loans. Loans are particularly geared to services with cost-recovery potential, such as solid-waste management, so that debt-service can be financed by user charges.

Kebersihan.[5] The Dinas Kebersihan also hauls refuse from private businesses, offices, and shops on a door-to-door basis. Implementation of related solid-waste tasks by other local government agencies depends on the city. For example, in Jakarta, the municipal market agency collects market wastes, the Department of Public Works cleans canals, the Parks Department maintains parks and gardens, and industries dispose their own wastes, usually by illegal dumping in rivers (World Bank 1990:3). Dinas Kebersihans may also be responsible for services that are not within the scope of solid-waste management, like cemetery maintenance, septic tank disposal, and traffic and street light operation (PT Bumi Prasidi 1989:20).

The Dinas Kebersihan does not have the authority to collect user charges for its solid-waste services directly. The standard arrangement is for households to pay their RW/RT which turns over the fees to the lurah, who subsequently channels the proceeds to the camat. Lastly, the revenues that remain after deductions are made at each administrative level are submitted by the camat to the city tax and revenue department, Dispenda. Some households may also formally pay branch offices of the Dinas Kebersihan, in addition to the informal solicitation of tips by city crew members that haul trash on a door-to-door basis. Similarly, non-domestic customers might pay either the Dinas Kebersihan or Dispenda. For example, in Jakarta, commercial establishments pay Dispenda while offices pay field offices of the Dinas Kebersihan (World Bank 1990:2; Cerverro 1991:12). With fee collection carried out by many actors, there are numerous points for revenue leakages (Cerverro 1991:3).

[5] The role of the RW/RT in solid waste management will be analyzed in detail in Chapter 5.

In addition to weak collection authority, the Dinas Kebersihan is also unable to calculate user charge rates independently. Although the Dinas Kebersihan provides input into the tariff rates, Dispenda holds the authority to alter the tariff-classification scheme (IUIDP 1991b:14). Tariff structures and rates are authorized by a decree from the local parliament after agreement from the Mayor is secured. Final approval rests with the Provincial Governor, who has the right to accept or reject decisions made at the municipal level (PT Bumi Prasidi 1989:28). Largely because of the influence of politicians, tariff design has focused almost exclusively on social-equity goals, with minimal regard for the operations and maintenance costs, capital investment needs, and depreciation allowances of the solid-waste management system (Saleh and Arif 1991, PT Bumi Prasidi 1989, Arif and Abiyoga 1991).[6] Ironically, low income households may be willing to pay charges that would more adequately cover service costs. For example, an IUIDP household survey of low income households in Surabaya revealed that they were prepared to pay the municipality Rp. 1,500 per month for refuse collection, but they are only charged Rp. 500 under the tariff instituted in 1986 (IUIDP 1991b).

Weak Incentives for Efficient Resource Use

Because the Dinas Kebersihans lack authority in assessing or collecting solid-waste user charges they are dependent on the municipality to finance the majority of their operations. Solid-waste management is generally accorded a low priority, averaging about 5 percent of local government budgets (PT Bumi Prasidi 1989). Although demands for

[6]Not only are the economic and technical features of service delivery ignored in the original conception of most tariff structures; but increasing inflation and operational costs further depreciate the rates' value.

services are outstripping available funds, the local governments' unconditional financing of the Dinas Kebersihans discourages the agency from using limited resources efficiently.

In addition to the fact that the Dinas Kebersihan is not accountable to city residents for the quality of services it provides, it is not held accountable by the municipality for its operational expenditure decisions. Dinas Kebersihans, particularly those that enjoy substantial financial assistance from donors, have made investments in infrastructure and equipment that is unsuitable for use in Indonesia. Despite the abundant supply of labor, densely populated settlements, and waste with high organic content, the Dinas Kebersihans tend to favor western capital-intensive systems of collection and disposal. For example, Surabaya's Dinas Kebersihan purchased a massive incinerator, which is widely viewed as inappropriate for organic waste, at a cost of over Rp. 30 billion[7], or three times their current annual budget. The Jakarta Dinas Kebersihan previously invested in mechanized collection systems (compactor trucks) that were not only ill-suited for hauling highly organic waste but were also unable to service crowded neighborhoods (Bartone 1990b:69).[8] As long as the municipality continues to cover these expensive mistakes, the Dinas Kebersihans have no incentive to rationalize their expenditures.

---

[7] Rp. 1,000 is approximately equal to U.S. $.50.

[8] In both cases the Dinas Kebersihan ignored the World Bank's advice against investing in these solid waste transport and disposal methods.

Poor Management Practices

Deficiencies in solid-waste services are partly attributable to poor personnel, operational, and financial management practices. Assignment of civil servants to various agencies is centrally administered by the mayor (or Governor in Jakarta) and because of its low prestige, bureaucrats accept positions at the Dinas Kebersihan as a last resort. This does not mean, however, that the Dinas Kebersihan is understaffed in terms of upper management; to the contrary, central government grants to cover civil servant salaries can contribute to wastefully high levels of administrative personnel. There does not seem to be any correlation between the number of Dinas Kebersihan staff per 1,000 people and service coverage levels. The Dinas Kebersihans in Bogor and Surabaya serve approximately 82 percent of the cities' administrative area, but the Dinas Kebersihan in Bogor has 3.56 personnel per 1,000 people compared to 1.34 per 1,000 in Surabaya[9]. Likewise, service coverage in Yogyakarta and Palembang is close to 53 percent, but the ratio of Dinas Kebersihan staff per 1,000 people is 2.66 in the former city and .86 in the latter (PT Bumi Prasidi 1989, Table 4).

Because the municipality has little appreciation for the technical and financial expertise that is required for designing solid-waste management systems, the majority of staff have limited skills in sanitation engineering or business management. To date, training programs have only benefitted top managers, who report that the skills of middle-level supervisory and technical staff need considerable strengthening. Where they exist, job descriptions and responsibilities are very general; thus appropriate training may first require more specific definition of duties.

---

[9] Lower staffing levels in the Dinas Kebersihan in Surabaya are probably related to the participation of private firms in refuse collection.

A Ministry of Home Affairs study of the operations and maintenance costs of Dinas Kebersihans documented the lengthy downtime of vehicles due to shortages in spare parts and shop tools (PT Bumi Prasidi 1989:16). The procedures for acquiring these items are very cumbersome because they involve ordering through the city's general purchasing agency. Furthermore, Dinas Kebersihans in small cities may not even have their own garages, while Dinas Kebersihans in large cities often centralize maintenance when repair by field offices would be more efficient. The neglect of operations and maintenance of equipment and facilities results in low vehicle productivity; for example, in Jakarta, optimistic assessments put daily vehicle utilization at 70 percent (Danoedjo 1989:29). The economic life of containers and collection trucks is also relatively low. Although collection vehicles should have a service life of 5-7 years, in Jakarta they are only operable for 4-5 years (World Bank 1990:1).

Prevailing financial management practices make it difficult for the Dinas Kebersihan to evaluate its service costs accurately. The agency operates on a cash accounting basis, budgeting follows broad line items established by the city. Dinas Kebersihans typically do not delineate between recurrent and capital expenditures, nor do they track depreciation, debt-service, personnel benefits, or land acquisition (Cointreau-Levine 1991a:12). There has also been no attention in data collection and analysis to aid design of solid-waste service systems. Management information systems necessary for monitoring operational costs and anticipating investment needs are either underdeveloped or non-existent (Saleh 1991:1).

Cost-Recovery Performance

Thus far we have focused on institutional problems in the solid-waste sector, cost-recovery is a crude indicator of how they affect the performance of the Dinas Kebersihans. Recoupment of routine and development (APBD) budgets by user charges averaged 28 percent in Indonesian cities over 100,000 population in 1987/88. Full cost-recovery by Dinas Kebersihans, including depreciation and debt-servicing, is estimated to lie between 5 and 10 percent (Cerverro 1991:2). In the Dinas Kebersihans selected for this study cost-recovery rates vary markedly.[10]

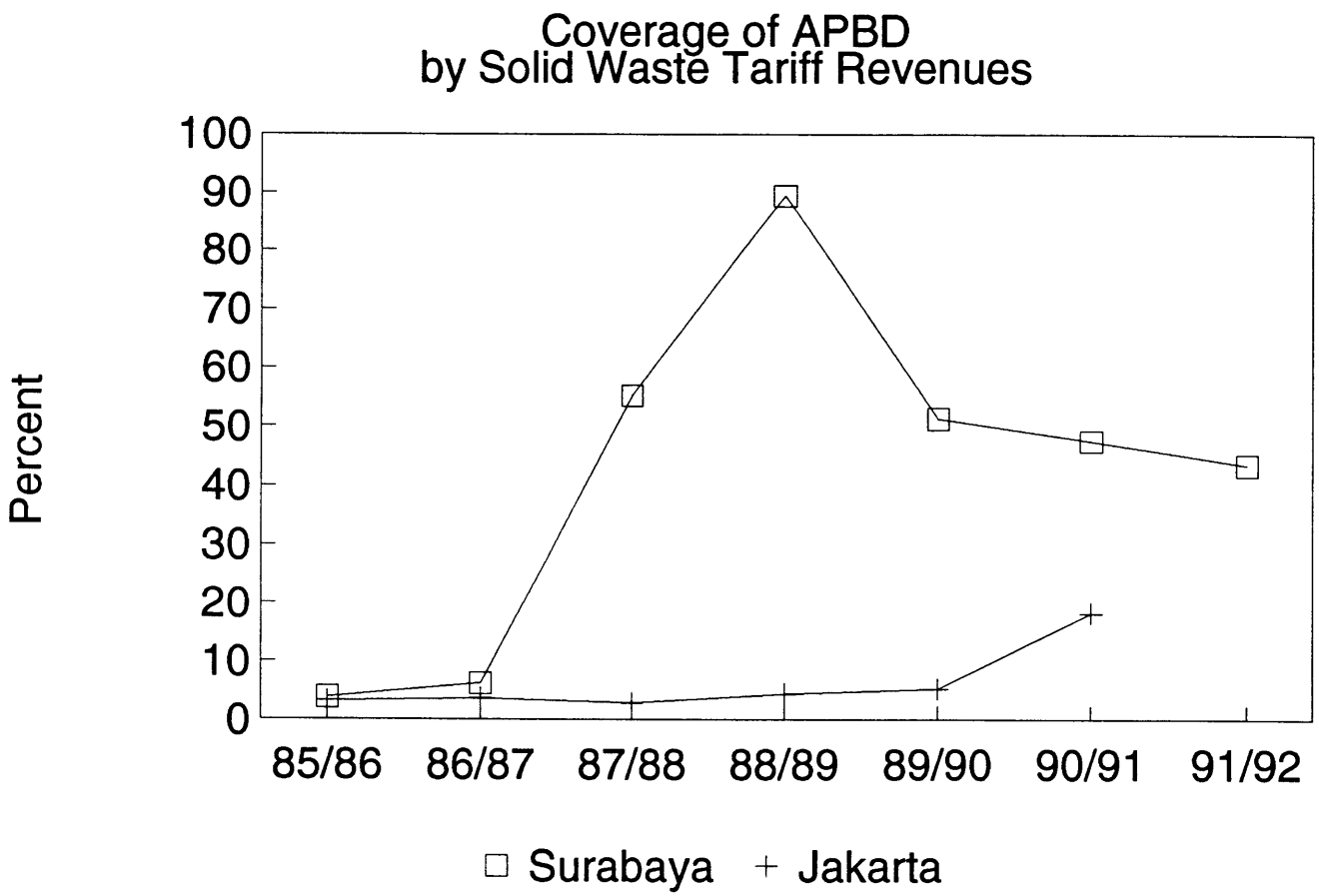
For many years the cost-recovery rate of the Dinas Kebersihan in Jakarta had been dismal at 3 to 5 percent. Due to more diligent fee collection from commercial establishments, like shopping plazas, hotels, and restaurants, the Dinas Kebersihan experienced a four-fold increase in revenues from Rp. 1.3 billion in 1989/90 to Rp. 4.2 billion in 1990/91, raising their cost-recovery rate to 18 percent (see Figure 2.1). No improvement has been registered in revenues to the Dinas Kebersihan from its residential customers, despite the large sums (an estimated Rp. 100 billion) amassed by RW/RTs. Unlike commercial establishments who pay their bills so that their business is not adversely affected by accumulating garbage, households have no incentive to pay because the Dinas Kebersihan will continue to collect refuse out of concern for public welfare.

A growing number of Dinas Kebersihans recognize that improvement of cost-recovery hinges on solving the household "free-rider" problem. The Dinas Kebersihans in Bogor, Tasikmalaya, Ambon, Banjarmasin and Sukabumi have informally linked the solid-

---

[10] "Cost-recovery" in this chapter refers to user charge coverage of routine and development (APBD) budgets, while "full cost-recovery" refers to the coverage of depreciation and debt-service as well as APBD.

FIGURE 2.1



Data for figure is in Appendix 1: Cost-Recovery Calculations.

waste tariff to the electricity bill by stationing a fee collector at the PLN (national electricity enterprise) payment point[11], while those in Surabaya, Manado, Padang, and Balikapan have formally placed a solid-waste surcharge on the PDAM (local water enterprise) bill. The cost-recovery rate among cities that have attached the solid-waste fee to the water bill is significantly higher than those that have not: 56 percent compared to 29 percent (PT Bumi Prasidi 1989). The advantage of this strategy is that both solid-waste management and water supply are under the jurisdiction of local government. The disadvantage of linking solid-waste and water payments is that the PDAM does not serve as many customers as the Dinas Kebersihan.

The Dinas Kebersihan in Surabaya registered dramatic improvement in cost-recovery, from 6 to 55 percent, in its first year (1987/88) of coordination with the PDAM (see Figure 2.1). The following year, the Dinas Kebersihan's cost-recovery peaked at 89 percent, but has since fallen rapidly as rising costs have contributed to a doubling of routine and development expenditures, while tariff rates instituted in 1986 become increasingly obsolete. Although fee realization through the PDAM is approximately 95 percent, total annual revenues have stabilized at Rp. 2.2 billion because of the slow growth in new water connections. The PDAM currently serves only 119,300 out of the city's 550,000 households. As will be discussed in Chapter 5, strong cooperation with community organizations brings in an additional Rp. 1.6 billion annually.

A recent IUIDP project appraisal concluded that Surabaya's Dinas Kebersihan would be financially self-sufficient in five years, if the municipality was made responsible for payment of the incinerator instead of the agency (IUIDP 1991b). This evaluation was

---

[11] The PLN "payment-point" system has also been established by the PDK in Bandung, and thus will be discussed in detail in Chapter 4.

based on several far reaching assumptions: an annual 10 percent increase in income from the RW/RTs, realization of PDAM's projected water connections, and solid-waste tariff increases of 30-40 percent every other year. The weak authority of the Dinas Kebersihan in affecting any of these outcomes, implies that it is unlikely that Surabaya's Dinas Kebersihan will achieve full cost-recovery in the near future. Nonetheless, the relatively high cost-recovery rate of the Dinas Kebersihan in Surabaya demonstrates a dedication to revenue collection; unfortunately a similar commitment to expenditure management is lacking.

Conclusion

In summary, the Dinas Kebersihans' inadequate institutional authority, weak accountability and poor management practices result in insufficient and inefficient use of funds. Despite these constraints, several Dinas Kebersihans have made considerable inroads in achieving cost-recovery; however, since they are ultimately not accountable for their operational or financial actions, the Dinas Kebersihans may make extremely unwise expenditure decisions or neglect revenue collection.

There are several different, and potentially complementary, approaches for solving the problems outlined above. As will be discussed in Chapter 4, the rationale behind the conversion of the Dinas Kebersihans to quasi-commercial enterprises was to enhance their institutional authority and improve their cost-recovery performance. Chapter 5 suggests how the substantial participation of community organizations in the finance and delivery of garbage collection can be more effectively integrated into the city solid-waste management system. But first we turn to the popular, donor-backed, solution to

inadequate and inefficient solid-waste services delivered by the public sector -- contracting out to private firms.

Chapter 3

CONTRACTING OUT TO PRIVATE FIRMS

In the past few years, the Government of Indonesia has taken tentative steps to encourage private provision of solid-waste services partly at the behest of leading donors. The U.S. Agency for International Development and the World Bank have recently embarked on privatization projects that include a solid-waste management component. Garbage collection and transport not only comprise the bulk of expenditures in the sector, but also have the greatest scope for privatization through service contracting. The purpose of this chapter is to present the standard argument for contracting out to the private sector in general, and trash hauling, in particular; outline the necessary conditions for efficient contracting; analyze the experience of private garbage collection in Indonesia; and identify barriers that hamper its effectiveness.

Private Provision of Public Services

The once clear boundary between the types of goods and services provided by government and business has become increasingly blurred in recent years. Traditionally the market has been the medium for individual exchange of discrete goods and services between buyers and sellers, while the government provides collective goods and services financed by collective payments, or taxes. In the Reagan/Thatcher years, privatization advocates argued vociferously that many public goods and services could be more efficiently provided by private business. Thus followed a decade of reducing a bloated and wasteful public sector in favor of the supposedly lean, mean efficiency of the private sector.

Analysts attribute the private sector efficiency edge to several factors: (1) businessmen have a vested interest in realizing the maximum return to their capital; (2) private firms are theoretically subject to market pressures that stimulate cost-cutting and technological innovation; and (3) private employers have greater flexibility in managing labor (Roth 1987, Savas 1982, Bendick 1984). A growing body of evidence indicates however, that efficiency arises from competition, not from private ownership (Donahue 1989, Sundquist 1984). It is the government's responsibility to ensure that reasonably competitive conditions prevail in order to realize significant savings from private sector involvement in public services.

Contracting out, which is one of the most common forms of privatization, is defined as the delivery of public services through the issuance of contracts to private firms instead of direct provision by a government agency (Bendick 1984:154). The government acts as a coordinator of service delivery, confining its duties to financing, monitoring, and regulating; while private firms operate and maintain the service system (Nolan 1986). Successful contracting out requires (1) clear specification of the expected outputs; (2) establishment of standard competitive bid procedures; and (3) definition and monitoring of performance standards.

Assuming that competition is ensured through the bidding process, savings to local government from contracting out are maximized when the contracts are of a sufficient length and size so that private firms can invest in capital improvements and achieve economies of scale in service provision. Potential savings may be larger in sectors where private employers have significantly greater control over labor than public agencies. Establishment of these conditions through contract design, administration and monitoring

can entail high management costs that may negate the expected savings from private involvement (Rondinelli 1990b:20).

Solid-Waste Service-Contracting in Industrialized and Developing Countries

Solid-waste collection is an urban service for which local governments in industrialized nations contract extensively to the private sector. In the United States the institutional features of public agencies may undermine garbage-collection efficiency. Employees in public sanitation departments enjoy relatively high pay, ironclad job security, and leisurely schedules. Labor unions have a great deal of leverage in public sanitation departments, because garbage strikes quickly result in citizen outrage. As a protected government monopoly, the sanitation agency has no inherent incentive to pursue or implement cost-cutting technological innovations, particularly those that negatively affect labor (Donahue 1990, Savas 1977). The National Solid-Waste Management Association (NSWMA) has found that private trash haulers use smaller, more efficient pick up crews that serve more households per hour and make more runs per day than their public counterparts. Contractors also achieve lower rates of worker absenteeism, 7.9 percent compared to 13.4 percent for municipal employees. Lastly, private firms perform better vehicle maintenance and invest in larger capacity trucks than those operated by the city (NSWMA 1991:3).

Thirty-five percent of local governments in the United States contract with private firms for residential garbage collection (NSWMA 1991:2). In a 1977 study of the savings from contracting out, Barbara Stevens of the U.S. Department of Housing and Urban Development (HUD) found that the costs of municipal services were 42 percent higher than those of private firms; higher pay and benefits received by public employees

accounted for 29 percent of the difference (Stevens 1977:445-6). In recent studies of contracting out in Canada, and England and Wales, researchers found that city services cost 40 and 22 percent more, respectively, than those of private trash haulers. Compared to the HUD study, a smaller fraction of the cost difference was due to wage gaps; private sector managerial and technical innovations, such as flexibility in scheduling runs, smaller crews, and specialized vehicles, were cited as more important (McDavid 1985:603-604; Cubbin 1987:52-54).

Private firms do not always provide services at the lowest cost. In his 1975 survey of 1,378 American cities, E.S. Savas found that where government oversight was weak and private trash haulers "competed" amongst each other for individual clients, the costs per ton of garbage were much higher ($38.54) than that of government collection ($28.28) or private firms under contract ($25.78) (Savas 1977:66). In the absence of sufficient government regulation and supervision of contracts, private firms can collude and charge non-competitive prices.

In cities where the municipal agency is allowed to compete with private contractors, the cost difference between the two actors is significantly reduced. For example, initially the service costs of private contractors operating in Newark were $8.44 per ton less than the city's, but once the municipal department implemented major changes in management, employment, vehicle maintenance and routing, the difference narrowed to $2.86 per ton. In Phoenix, after losing four successive bids to private firms, the Public Works department introduced cost-cutting innovations and subsequently won back all the contracts (Goodman and Loveman 1991). Clearly the important distinction is not between public and private ownership, but rather the presence of competition.

Developing countries have also experimented with contracting out for solid-waste collection. In the Ivory Coast, a French subsidiary is under contract to collect garbage in the capital city, but its performance is mixed: wealthy neighborhoods receive prompt daily service while slum areas are neglected because their physical structure restricts access by the company's large trucks (Lewis and Miller 1986:34). A refuse company (SOTEMA) in Togo collects more than 284,000 tons of garbage annually and manufactures its own equipment under license (ICMA 1990:3). In Adana, Turkey, two private firms haul 75 percent of the garbage generated in the city. Although the city does not award contracts competitively, private sector costs are almost three times cheaper than those of the municipality, primarily due to greater managerial discipline over labor (Bartone 1990b:36).

The World Bank has analyzed the solid-waste contracting experience of four cities in Latin America: Buenos Aires, Caracas, Santiago, and Sao Paulo. The municipal departments tendered bids for exclusive provision of specific services in well-defined city districts. The contract periods were sufficiently long for firms to recover their investments in truck fleets and equipment, payment was tied to performance (i.e. tons of refuse collected) and adjusted for cost increases. Overall the findings supported the experience in industrialized countries that competitive bidding and well-specified enforceable contracts of sufficient length can increase the efficiency of solid-waste service delivery (Bartone 1990a).

Solid-Waste Service Contracting in Indonesia

In Indonesia, private participation in solid-waste management was indirectly solicited by a 1989 Presidential Decree that excluded it from a list of sectors closed to private investment. Domestic and foreign firms were invited to invest and form

partnerships with local governments in the solid-waste sector; however, explicit guidance concerning the scope of work for private firms and procedures for cooperating with local governments has not yet been issued. The Indonesian Business News reported that private companies "badly needed guidance from the government" in solid-waste management. Participants at a privatization seminar sponsored by the Directorate General of Human Settlements in the Ministry of Public Works, which holds technical responsibility for the solid-waste sector, called for further clarification on laws and regulations pertaining to public-private partnership schemes (Arif and Abiyoga 1991:3).

Despite the lack of substantive guidance from the central government on private participation in the solid-waste sector, contracting out for refuse collection and transport has been applied on a limited basis in Indonesia's two largest cities -- Jakarta and Surabaya. In Jakarta a dynamic entrepreneur convinced the Governor of Jakarta that his firm (SOR) could provide higher quality services than the Dinas Kebersihan. After SOR's successful pilot demonstration, the Governor encouraged the Dinas Kebersihan to experiment with further solid-waste service contracting. In 1988/89, the Dinas Kebersihan appointed five companies to clean nine districts, and in the following fiscal year, contracts for 27 districts were let to 14 firms. Private trash haulers have operated in Surabaya for more than ten years. In fact, they used to dominate garbage collection until the Dinas Kebersihan received an influx of equipment through the World Bank's Surabaya Urban Development Program (SUDP) in 1987. Since then private collection of total waste generated has declined from approximately 60 percent to 19 percent today. Six private firms presently collect 1,380 cubic meters of garbage on a daily basis.

Requirements for Effective Contracting Out

The experience documented in other countries indicates that there are a number of criteria that must be met in order for local governments to realize significant savings from contracting out garbage collection to the private sector. In order to attract private participation, government must first design contracts that are of a sufficient length and scope for firms to recover their investment in capital equipment. Second, competitive bidding for contracts is necessary to elicit proposals for low-cost services from private firms. Third, performance monitoring is required to ensure that public welfare is not compromised by poor quality service. Lastly, the local government must have the administrative capacity to establish these conditions. The Dinas Kebersihans in Jakarta and Surabaya contracted out to private firms before the essential groundwork was laid; therefore, it is not surprising that the results have been less than optimal.

Contract Length and Scope

Private companies enter markets where they can expect to recover their investment costs and earn a reasonable profit; prevailing contract procedures in Indonesia make realization of these expectations virtually impossible. Contracts cannot exceed one year in length because the local legislative assembly reviews the municipal budget on an annual basis and funds cannot be obligated for contract payment in advance of approval (Cointreau-Levine 1991:26). Because private trash haulers need at least a five-year contract in order to depreciate capital expenditures, they cannot invest in environmentally sound collection vehicles. For example, after the majority of transfer stations in Surabaya were outfitted with armroll containers, private firms could not service these sites because they could not afford to purchase armroll-container trucks without longer guaranteed contracts. Banks will not approve loans for expensive imported collection vehicles

because repayment takes at least three years and firms are guaranteed contracts for only one year in Jakarta, and three months in Surabaya. Thus, firms generally buy relatively cheap used dump trucks and use their land, homes, or office buildings as loan collateral. Because of its clout with the Governor of Jakarta, SOR obtained an exceptional five-year contract and has subsequently purchased several compactor and armroll container trucks. The Dinas Kebersihan in Jakarta gave two other firms "letters of recommendation" to submit to lenders that informally acknowledged that their contracts would be extended over the next three years. Even if a loan is secured, interest rates are phenomenally high at 28 percent, and must be paid back in a relatively short period. Private firms must also pay a 10 percent value-added tax on any imported equipment.

Not only are the contracts too short, but the concession size is too small: none of the firms are able to achieve economies of scale because they are serving too limited an area. In Jakarta, where contracting is done on the basis of administrative areas, all the companies except for SOR collect garbage in just one district. SOR management states that even though they serve the largest area contracted (12 districts), their workers and equipment are still underutilized.

Competitive Bidding

The Dinas Kebersihan in Jakarta claims to contract out competitively. In 1989/90 they announced the privatization of 10 percent of their administrative area. The agency received 82 proposals that they supposedly evaluated on the basis of demonstrated specialization in sanitation, existence of a training program for employees, and sufficient equipment. It is doubtful that these criteria were stringently applied; for example, only SOR has a training program and a demonstrated capability in garbage collection. All of the companies besides SOR had only one dump truck at contract commencement. The

majority of firms accumulated profits to buy additional vehicles by paying extremely low wages to workers. SOR's special five year contract and the "letters of recommendation" held by two other firms cast serious doubt on the competitiveness of the process. The Dinas Kebersihan in Surabaya makes no pretense of competitive bidding. The six firms operating in the city have received automatic renewal of their three-month contracts over the past 10 years.

Contract Administration

Design of contracts that are attractive to the private sector and meet the quality and efficiency standards of the public sector, require a technical and administrative capacity on the part of local government that is seriously lacking. Staff of sanitation agencies have stated they require technical guidance and training from the central government in the areas of competitive bid procedures, implementation of tender documents, qualification and selection of firms, and monitoring of performance.

Contract Monitoring

In general, contract payment should be based on the quantity of waste brought to the disposal site, in order to monitor the fulfillment of contract obligations by private firms. In Indonesia, private companies receive payment regardless of the amount of waste they actually bring to the landfill. In Jakarta there is no monitoring system in place at the city dump which is located 40 km outside the city. Many companies take advantage of the lack of supervision and dispose garbage at nearby illegal sites in order to avoid the long haul. A veterans organization operating under contract in Bandung manipulated the volumes of waste they transported by covering only the tops of empty bamboo baskets with garbage. A disposal site survey in Surabaya revealed that for the study week private firms delivered only 72 percent of the refuse they were contracted to transport (IUIDP

1991b). Within the city there are only ten waste collection inspectors each of whom face the impossible task of monitoring activity in two districts, or a total population of 130,000.

Results of Contracting Out

In industrialized countries the most common reason for privatizing refuse collection and transport is to cut municipal service delivery costs. In developing countries, the private sector may also be regarded as a source of supplementary investment funds. On the one hand, under current conditions it is unlikely that local governments in Jakarta and Surabaya are capturing the purported efficiency benefits of private contracting. On the other hand, private firms do bring additional resources to a financially strapped and poorly managed sector.

Differences in Service Costs

In order to evaluate the efficiency of public and private refuse collection, the Dinas Kebersihan must be able to compare its costs with those of the private sector. The World Bank estimates that the average operations and maintenance cost of the Dinas Kebersihan in Jakarta is Rp. 4,100 per cubic meter (/m^3) of waste collected, compared to Rp. 4,800/m^3 for private contractors. Officials hypothesize that the contract price is calculated by adding a 10 percent profit margin to the private companies' estimate of the Dinas Kebersihan's costs (World Bank 1990:18). SOR recently negotiated a price increase directly with the Governor of Jakarta, to Rp. 4,900/m^3 for door-to-door collection in the city's most prestigious neighborhood in Jakarta; however, by all accounts the firm also provides higher quality service than other companies and the Dinas Kebersihan. The Dinas Kebersihan estimates that contracting out released resources of Rp. 200 million, out of a routine budget of Rp. 14 billion. In Surabaya, the current rate paid to private

contractors is Rp. 1,100/m^3 for the transport of set volumes of waste from dispersed temporary depots. This is substantially cheaper than the actual estimated operation and maintenance cost of the Dinas Kebersihan at Rp. 1,800/m^3, but private firms use fully depreciated second-hand dump trucks as opposed to expensive imported collection equipment. It is difficult to compare the efficiency of the Dinas Kebersihan and private firms using these cost estimates, because the public and private sector use different kinds of collection equipment, have different accounting systems, and provide widely varying levels and types of service. Although firm conclusions cannot be drawn from the quantitative indicators, the Dinas Kebersihan and private operators' qualitative assessment is that the private sector uses labor and capital more efficiently.

Differences in Labor and Vehicle Productivity

Municipal officials and firm managers both agree that the private sector has an edge over the public sector with regard to labor and vehicle productivity. The Dinas Kebersihans in Surabaya and Jakarta state that the advantage of private firms is their ability to discipline, motivate, and even exploit labor. Because their employees have complete job security, the Dinas Kebersihan has difficulty increasing their performance levels, especially those assigned to trash collection crews. Hiring civil servants is a lengthy bureaucratic process, and firing is virtually impossible, resulting in an older, less-productive workforce in the Dinas Kebersihan than is found in the private sector. All the private firms, except SOR, employ beggars and homeless individuals, whose economic and social vulnerability ensures their acceptance of meager wages. These workers develop strong loyalties to the companies, and are motivated to work hard to keep their jobs. SOR makes a concerted effort to instill commitment, not only to the firm, but also to the importance of solid-waste management through an intensive training program. Unlike the

arguably exploitative practices of other firms, SOR provides uniforms and protective gear, and benefits like accident insurance, a health clinic, and a savings plan. The high-quality service provided by SOR is doubtless a reflection of the substantial investment in building workers' skills. In sharp contrast to the Dinas Kebersihan, private firms can also acquire parts and repair trucks immediately. SOR has its own maintenance shop to service its 25 trucks; while most of the smaller firms in Surabaya, operating with five trucks or fewer, repair vehicles in the owner's garage. Given the high investment costs private firms cannot afford for their trucks to remain idle.

Additionality Benefits

Although we cannot definitively determine whether private firms are more efficient than the Dinas Kebersihan, efficiency concerns do not appear to be the motivating factor for contracting out. To date, private participation supplements -- rather than replaces -- public provision; private firms bring additional equipment and personnel to the solid-waste sector. The private sector is filling a gap in service coverage created by limited public resources. Private participation in the Indonesian context does not yet threaten government jobs because the agencies cannot provide complete service coverage under present staffing patterns. Dinas Kebersihans tend to be top heavy, with large numbers of administrative staff and shortages of operational workers. Even more serious than inadequate numbers of refuse collection workers is the insufficient numbers of collection vehicles. This is evident in Surabaya where there is a direct relationship between the equipment capacity of the Dinas Kebersihan in Surabaya and the amount of waste contracted out to private firms; as the agency has acquired more trucks of its own it has systematically reduced private garbage transport. Given the severe equipment shortage experienced by the Dinas Kebersihan in Jakarta, which owns only 745 trucks or 40

percent of their estimated need, the 115 additional trucks brought to the sector by private firms is a small step towards fulfilling their requirements (*Jakarta Post* 1990a).

Conclusion

Competitive bidding for garbage collection in the United States, Canada and England, produces more efficient service delivery than monopolistic provision by either a public sanitation department or a private firm. A noncompetitive environment is a severe disincentive to the pursuit of efficiency for either a public agency or private firm. In Indonesia, the political leadership is responsible for establishing a competitive atmosphere. In order for private companies to be viable in such a market, the government must implement several reforms. From the perspective of private companies the primary constraints to profitable operation are (1) the short contract length; (2) small concession size; and (3) high import taxes and interest rates on domestic capital. Although local governments are benefitting from the additional resources private firms bring to the solid-waste sector, they need further guidance on how to make the private sector work more effectively for them. The Dinas Kebersihan needs training in designing contracts, implementing competitive bids, and performance monitoring. Construction of a weighbridge at city landfills would enable agencies to pay contractors on the basis of waste disposed. Local governments in Indonesia could realize substantial savings in their solid-waste management budget through contracting out if significant changes were made in the institutional structure and regulatory framework of the sector.

An intermediate step to contracting out garbage collection to private firms is the conversion of municipal sanitation agencies into quasi-private enterprises, which has been implemented in Bandung and Medan. The quasi-commercial nature of the enterprises may

also put them in a better position -- compared to fully public agencies -- to negotiate with private firms and realize the maximum benefits of contracting out. In the next chapter I evaluate the strategy of transforming municipal agencies into quasi-private enterprises, in terms of its effect on cost-recovery and efficient delivery of solid-waste services.

Chapter 4

COMMERCIALIZING MUNICIPAL SANITATION AGENCIES

The formation of public enterprises is a method by which local governments can promote efficient delivery of those urban services that are commercial in nature. Public enterprises must provide services that are readily marketable because they are expected to earn all of their revenue from user charges. Compared to government agencies, public enterprises have greater flexibility in pricing and personnel management, and greater financial accountability that should result in more efficient service delivery (Devas 1989:100). In practice, however, the delivery of urban services by public enterprises in many developing countries is neither efficient nor financially self-sustaining (Rondinelli 1990a:52). The Government of Indonesia has accumulated considerable experience in establishing enterprises in the water sector and solid-waste management is their next target. So far, only two sanitation enterprises (PDKs) have been established, but Dinas Kebersihans in cities with populations over 500,000 are being pressured to follow suit. The purpose of this chapter is to analyze the experience of the existing PDKs in order to identify the barriers to successful implementation of the GOI's commercialization strategy in the solid-waste sector.

Establishment of the PDKs

The Asian Development Bank (ADB) initiated the formation of the PDKs in Bandung and Medan by requiring improved cost recovery in exchange for substantial capital infusion through the second phase of the Bandung and Medan Urban Development Program (BUDP II/MUDP II). The conditions for the loan stated that "the charges for

solid-waste should be sufficient to cover annual operating expenses, plus debt service and depreciation, whichever is the higher" (PDK Bandung 1987). ADB officials felt that the PDKs' financial self-sufficiency would improve once their budget was separated from the local government account. As semi-independent enterprises, the PDKs were expected to cover their expenditures from user charges. Greater autonomy would theoretically heighten the PDKs' awareness of the costs of service delivery and invigorate their revenue collection efforts. PDKs were established in Bandung in 1985 and in Medan in 1989, but without sufficient supportive changes in the institutional and regulatory environment. Although the PDKs were expected to perform like quasi-commercial enterprises, they were not given the requisite autonomy and authority to do so. In fact, the Dinas Kebersihans in Jakarta and Surabaya are resisting conversion to PDKs because of the difficulties experienced in Bandung and Medan that are discussed below.

Ambiguous Institutional Autonomy

Although the PDK is supposedly an autonomous enterprise, it still comes under the jurisdiction of local government. PDK management is overseen by a Board of Supervisors, which includes the Mayor as its Chairman and other top local government executives as members. The local government also owns the PDK's equity, which includes the infrastructure and equipment of the former Dinas Kebersihan and capital works provided under the first phase of BUDP/MUDP. The municipality is responsible for servicing the BUDP I/MUDP I loans from the ADB. Because the PDK was not expected to achieve full cost-recovery immediately, the municipality has continued to provide some financial assistance for operations. The amount of the local government's contribution to operational expenditures is negotiated at the beginning of the fiscal year

but the PDK often experiences difficulty extracting the total sum agreed upon. For example, in 1990 the PDK Medan expected Rp. 980 million from the municipality, but they actually received only Rp. 600 million (PDK Medan 1991b:8). Salaries of civil servants appointed to the PDK are covered under a separate grant from the municipality and funded by the central government.

For its part, the PDK is obligated, according to Indonesian regulations on enterprises, to turn over 55 percent of its net profit (income in excess of capital investment requirements) to the municipality. So far this has not been an issue because the PDK is still struggling to meet its operational expenses. The PDK also provides the municipality with services, such as street sweeping, refuse collection from government offices, and drainage cleaning. Lastly, the PDK is responsible for servicing on the BUDP II/MUDP II loans.

Tension in the relationship between the PDK and the municipality is due to the ambiguity surrounding the various transactions listed above. In Bandung, 21 percent of the PDK's total operating expenditures are for street sweeping and drainage cleaning, while the municipal grant covered 22 percent of the enterprises' routine budget (PDK Bandung 1991b)[12]. In Medan, the PDK estimates that the cost of collecting garbage from government offices and public street cleaning amounted to approximately Rp. 1.9 billion last year compared to the municipal grant of Rp. 600 million (Deserco 1990:172). Although neither municipality fully pays for the services it receives, the informal

[12] Although this appears to be a fair exchange between PDK services and the municipal subsidy, the costs of refuse collection from government offices are not included as one of the services provided by the PDK because the data was unavailable. By way of comparison, in Medan, a city of similar size and stature, the annual cost of garbage collection from government offices were Rp. 885 million in 1990. The total grant to PDK Bandung in 1990 and 1991 was Rp. 800 million.

understanding is that the annual operational grant combined with the initial capital donation and debt-servicing, are sufficient reimbursement. Both local governments have made vague promises to compensate the PDK for street-sweeping, drainage cleaning and office waste collection services more formally in the future, but the PDKs' existing financial arrangements with the municipality severely constrain its ability to project future income, and thus achieve full cost recovery, much less profit.

Limited Enhancement of Revenue-Raising Authority

Although PDKs were given the authority to collect solid-waste user charges directly, they still cannot set tariff rates. Despite rising fuel and labor costs, and increasing service coverage demands, the tariff levels have not been raised since 1988 in Medan and 1987 in Bandung. For example, the estimated unit costs of serving non-domestic customers in Bandung ranges between Rp. 9,000-11,000/m^3 (depending on the disposal method) while the current rate paid by such customers is only Rp. 4,650/m^3. Both PDKs designed a new tariff structure, explicitly related to operational costs, debt and depreciation, immediately following their establishment as enterprises (McManus 1990). Unfortunately, as indicated above the tariff in Bandung is now out-of-date; while PDK Medan hopes to have its new tariff structure instituted this year.[13] The PDKs are also pursuing reform of the tariff authorization process such that they can design their own

[13] Because of the uncertainty concerning the financing of street cleaning, the tariff has been developed in two forms: including and excluding the cost of street cleaning.

tariff structure and adjust rates subject to approval by the Board of Supervisors, the Mayor, and the Provincial Governor, without interference from the local legislature.[14]

At the same time that the PDKs are negotiating to expand their authority to design and modify tariff rates, they are also vigorously pursuing revenue collection under the current structure. In Medan, the average monthly revenue received by the Dinas Kebersihan in 1988/89 was only Rp. 67 million; compared to the Rp. 135 million amassed by the PDK in its first year. Through door-to-door collection of fees, PDK Medan has increased its annual revenues by 260 percent over the past three years; however, as of 1990 they were still collecting only 52 percent of billed charges (PT Deserco 1990:169). In Bandung the Dinas Kebersihan collected only Rp. 10 million per month in 1984, compared to Rp. 100 million per month by the PDK in 1987 (PDK Bandung 1987:12). In the past year, the Bandung PDK further expanded its take to Rp. 165 million through informal billing coordination with the PLN.

Potentially the most lucrative strategy for increasing revenues is the addition of the solid-waste user charge to the electricity bill, but the national PLN has rejected such proposals from the PDK in Bandung, and the Dinas Kebersihans in Surabaya and Jakarta. In Bandung, the Mayor used his political clout to force the local branch office of the PLN to agree to the so-called "payment point" plan. Under this system a PDK collector is stationed at the payment point for the electricity bill, usually a bank, where he/she requests that customers also contribute for solid-waste management. By using the same payment location, customers mistakenly perceive that their electricity will be cut off if

---

[14] A 1988 MOHA regulation eliminated the need for ratification of the water tariff by the local legislature. Water rates are proposed by PDAM management, and subsequently approved by its Board of Supervisors, the Mayor and the Provincial Governor (WASH 1991, Working Paper B, p. 62).

they do not also pay the solid-waste fee. Coordination with the PLN allows the PDK to solicit solid-waste fees from 75 percent of the households in Bandung.

The Bandung PLN office has overcome its reservations about cooperation with the PDK, since neither receipts nor the payment process were negatively disrupted in the first six months of the pilot project. For its part, the PDK has achieved a collection efficiency rate of 72 percent, collecting Rp. 190-200 million on a monthly basis since June 1991. Projected revenues for 1991 were Rp. 2.1 billion, compared to Rp. 1.3 billion for 1990 (PDK Bandung 1991a). Revenues should further increase in 1992 when the payment point system will function for the entire year. In response to public clamor for greater equity in assessment of the solid-waste charge (currently a flat fee of Rp. 1,000), the PDK proposes to increase the rate on those households who consume more than 550 volt-amperes of electricity per month. Equity is also served by the fact that those residents who do not have (or share) electricity are effectively receiving free or highly subsidized transport and disposal services from the PDK.

The payment point system may temporarily increase revenues, but its long run viability is threatened if there is no formal sanction for failure to pay the solid-waste tariff. More formal cooperation, such as direct attachment of the solid-waste charge on the electricity bill is necessary for sustained revenue generation. Implementation of such an initiative requires negotiation at the national level between the Ministry of Home Affairs and the PLN.

Improved Financial Management

With the assistance of consultants, the Bandung PDK has developed an accounting and related administrative system that is compatible with their enterprise status. The PDK

uses accrual rather than cash based accounting procedures that are common to Dinas Kebersihans. Operating budgets are reviewed monthly, and income statements and balance sheets are prepared on an annual basis. The PDK also makes cash flow projections to determine the required income levels for future asset management (McManus 1990:49). Because it was relatively recently created compared to the PDK in Bandung, the Medan PDK is still in the process of revamping their accounting system. Some improvements have already been made; for example, budgeting is reasonably detailed and uses the same categories as the accounting system, which allows the PDK to reconcile planned and actual expenditures. A recent consultants' review of the Medan PDK's accounting and budgeting system concluded that it did not clearly provide PDK management with the information necessary to make financial and operational decisions, particularly for medium and long-term planning. For example, expenditures are divided by category, but cost allocation to departments and to specific services is missing. Experts have been brought in to solve these and other problems, such as the use of straight line depreciation on purchase value rather than progressive depreciation on book value and inadequate registration and tracking of delinquent solid-waste bill payers (PT Deserco 1990:162). Overall, both PDKs have demonstrated a commitment to establishing financial management procedures that are critical to effective operation of a quasi-commercial enterprise.

Cost-Recovery Performance

The PDKs' cost-recovery rates have been steadily rising since their establishment (see Figure 4.1).[15] Bandung's PDK has increased its coverage of operating expenses by solid-waste tariff revenues from 24 to 71 percent over the past seven years. During the 1985-87 period, the PDK in Bandung's improving performance can be compared to that of the Dinas Kebersihan in Medan, which recovered less than 20 percent of its routine and development expenditures. In the year after Medan converted its Dinas Kebersihan to a PDK, cost-recovery increased from 35 to 56 percent. Although both PDKs' coverage of operating expenses is relatively high, at 61 percent in Medan and 71 percent in Bandung, they are a long way from financing depreciation, which generally account for 40-50 percent of total costs (Cerverro 1991:2). Because the PDK is acutely aware of their self-described "unsatisfactory" financial position, it is unlikely that they will invest in equipment or facilities they cannot afford. The reality of the municipality's threat to eliminate its subsidy[16] and the ADB covenant conditions will force the PDKs to use resources more efficiently than the Dinas Kebersihans.

Labor and Vehicle Productivity

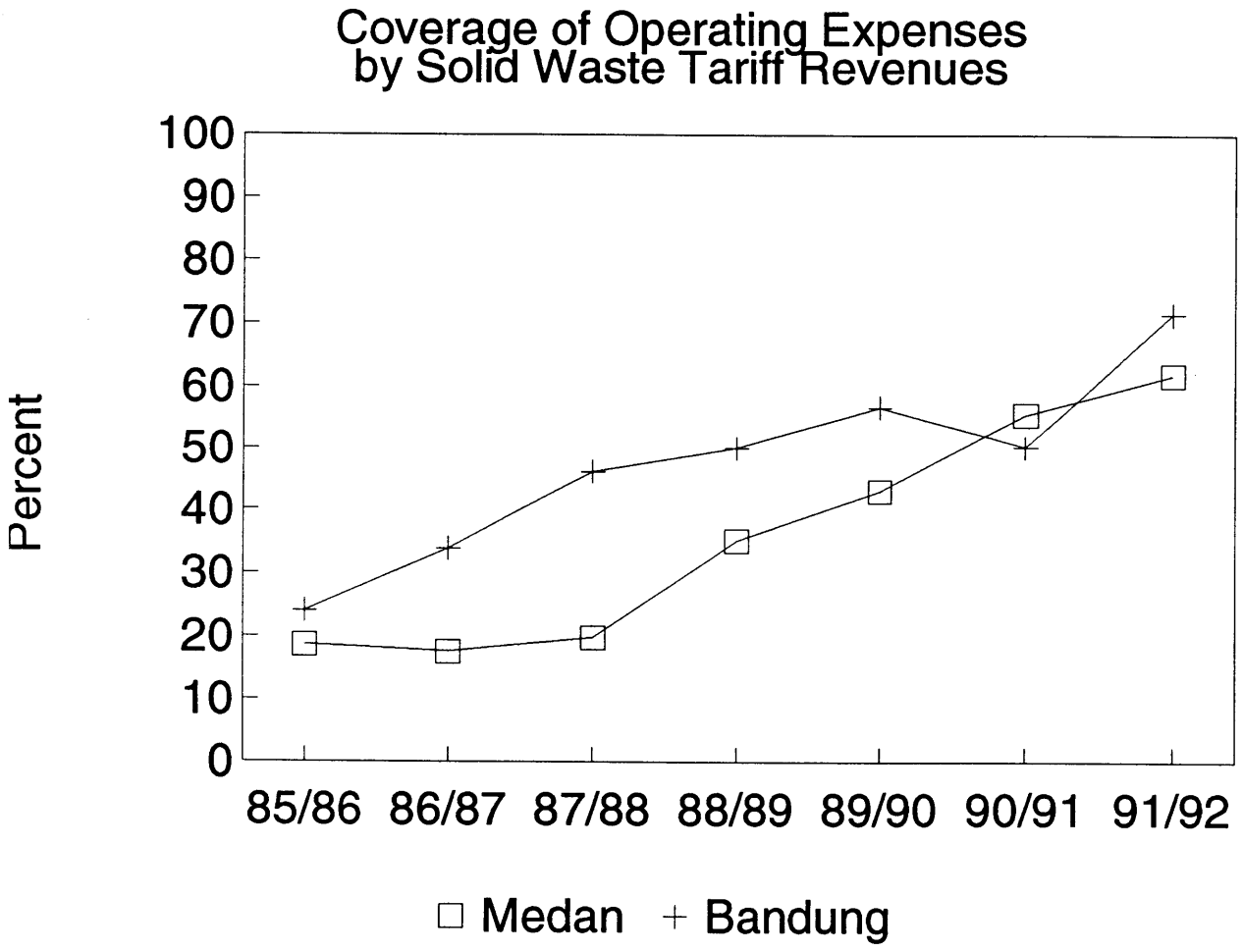
Given the limitations of available data, it is difficult to evaluate differences in the labor and vehicle productivity of the PDKs and the Dinas Kebersihans. A qualitative

---

[15] The PDKs both include the subsidy from the municipality on their operating income statement. This is a misleading accounting procedure because the funds provided by the municipality are not explicit payments for such PDK services like streetsweeping. Thus previous cost-recovery estimates have been close to 100 percent, because total income (including the municipality contribution) instead of just solid-waste tariff revenues, was compared to operation and maintenance costs.

[16] The municipality of Bandung has already set 1993 as the year when the subsidy of operations will be discontinued.

FIGURE 4.1



Data for figure is in Appendix 1: Cost-Recovery Calculations.

assessment suggests, however, that the PDKs do have some advantages in personnel management and equipment maintenance compared to the Dinas Kebersihans.

The PDKs' ability to manage personnel remains somewhat limited. On the one hand, like the Dinas Kebersihans, PDK upper management is dominated by civil servants. In Bandung, two-thirds of the Dinas Kebersihan staff were retained by the PDK, while in Medan all of the Dinas Kebersihan employees were transferred to the PDK. The majority of staff members lack solid-waste technical expertise, and former Dinas Kebersihan personnel were not given adequate training in business management prior to formation of the enterprise.[17] The municipality often reassigns skilled civil servants to other agencies. Furthermore, the PDKs are limited in their ability to recruit and hire replacements for upper level staff. On the other hand, the PDKs in Bandung and Medan have greater control over their operational field staff. While Dinas Kebersihans have difficulty motivating permanent government workers assigned to trash collection crews, the PDKs are free to hire monthly contract laborers who are readily replaced for poor performance of these tasks. The PDKs can also motivate their staff with extra incentive payments because they are not required to follow government regulations on wage scales (PDK Medan 1991a:9).

The PDKs enjoy much greater flexibility in running their maintenance workshops than the Dinas Kebersihans. They may order spare parts independently of the local government purchasing agency, thereby reducing the downtime of vehicles in need of

---

[17] The PDK in Bandung has run several training programs since its establishment, such as a senior management seminar and short courses on field operations for lower level staff (PDK Bandung 1987). Consultants to PDK Medan stated that not only did the PDK employees lack sufficient education and experience, but they feared that they lacked potential for improvement in these areas (PT Deserco 1990:158).

repair. Improved operational efficiency from 1989 to 1990 is indicated by the increases in the volume of waste transported of 11 percent in Medan and 14 percent in Bandung, when the PDKs' service areas almost doubled without a significant increase in staff or equipment.

Conclusion

The PDKs' commission is to achieve full cost-recovery, or even turn a profit, but they have not been given the necessary authority to achieve this goal realistically. First, the financial and service obligations between the PDK and the local government are unclear. Second, PDKs are still constrained in their ability to ensure that the tariff structure covers service costs. Third, the PDKs have limited flexibility in managing critical upper and middle level technical and supervisory staff.

On the positive side, the PDKs have improved their financial management procedures and made good use of their new powers to collect fees directly. The Bandung PDKs pilot project in coordinating collection of the solid-waste charge with payment of the electricity bill has been a huge success. The PDK in Medan has also implemented an innovative revenue-collection strategy, contracting to community organizations, that we will analyze in the next chapter.

In spite of significant obstacles, the cost-recovery performance of the PDKs suggests that conversion of the public agencies to enterprise status can invigorate revenue collection, and increase service cost-consciousness and accountability to expenditure decisions. However, in order to cover depreciation and/or debt-service, local governments will need to remove the remaining barriers to effective enterprise management.

Thus far, we have focused on the Dinas Kebersihans and the PDKs' relationship to local government and private businesses; however, there is another major actor in the sector -- the community organizations. In the next chapter, we examine the critical role played by informal community organizations in the delivery and finance of garbage-collection services and suggest the most effective ways they can coordinate with formal public and private institutions.

Chapter 5

COORDINATION WITH COMMUNITY ORGANIZATIONS

Community participation and self-help initiatives became important components in development projects during the 1970s, as a result of the growth-with-equity and basic-needs movements. During this period, local governments took a paternalistic stance towards community groups, but they are increasingly regarded as equal partners in certain development activities. Scarcity of fiscal resources has prompted this change of attitude. In Indonesia, voluntary monetary contributions are an important means of financing and implementing local services and small-scale development schemes. For example, in 1982/83, city residents contributed Rp. 10.8 billion for "mutual assistance" activities, and almost one-third of the revenues at the sub-district level were self-help contributions (Devas 1989). In Indonesia the phrase expanding private sector participation generally encompasses increasing the monetary and in-kind contributions of community organizations.

Although the government has placed special emphasis on the importance of community participation in national development, the traditional self-help organizations have not been satisfactorily integrated into the city solid-waste management system (Arif and Abiyoga 1991:16). A recent strategy paper developed by the Directorate of Environmental Sanitation (PLP), one of the central departments responsible for solid-waste management, stated that a key problem in the sector was the unclear role of community organizations (Saleh 1991:1). The solid-waste institutions in Indonesia's four largest cities have pursued a range of methods for coordinating with the traditional community organizations (RW/RT or LKMD), and achieved markedly different results. In this

chapter, we evaluate which were the most effective approaches in financing and providing garbage-collection services.

As discussed earlier, community organizations (RW) and their component units (RT) are the traditional providers of garbage-collection services for their residents. The RW/RT appoints and pays daily laborers, known in some cities as the yellow brigade (pasukan kuning) because of their bright colored uniforms, to collect garbage from households and cart it to the community transfer depot. In turn, the municipal sanitation agency or enterprise (Dinas Kebersihan or PDK) transports the refuse to the city dump. In other words, the RW/RT takes charge of "primary collection" at the household level, while the Dinas Kebersihan/PDK handles "secondary collection" from communities to the final disposal site. Tension in the relationship between the RW/RTs and the Dinas Kebersihan/PDK arises more from the financing of solid-waste management than from the operational division of responsibilities.

In many developing countries, residents participate in solid-waste management by bringing their garbage to a communal container or to the collection truck when it stops in the neighborhood (Cointreau-Levine 1991b:10). It is more unusual for the community organization to coordinate and finance door-to-door collection, although it has been observed in some countries, such as Sri Lanka, where community councils provide refuse collection and street-cleaning services to their residents for an income-adjusted fee (Devas 1991:37). Similarly in Indonesia, the RW/RT assess a community charge, based on perceived income, for garbage collection, night security, and other community services. The major problem between the RW/RTs and the Dinas Kebersihan/PDK is that it is not firmly established what proportion -- if any -- of the community fee should be handed over to the local government to defray the costs of solid-waste transport and disposal.

It is difficult for the Dinas Kebersihan or Dispenda to extract revenues from the RW/RTs because the organizations are outside of the formal administrative structure and the leaders are independently elected by the community. On the one hand, the RW/RTs claim that the fees they receive just cover the costs of primary handcart collection. On the other hand, when the local government has attempted to levy an additional charge for secondary transport and final disposal directly on households, residents argue that they already pay the RW/RT for this service. The inability of the Dinas Kebersihans/PDKs to tap into community revenues is a major source of their financial difficulties.

The relationship between the Dinas Kebersihan or PDK and the RW/RTs or LKMD ranges across a broad spectrum. The PDK in Bandung unsuccessfully attempted to eliminate community participation in solid-waste management; the Dinas Kebersihan in Jakarta has largely refrained from interfering with the RW/RT system; the Dinas Kebersihan in Surabaya has a strong cooperation arrangement with the community organizations; and the PDK in Medan has experimented with formal contracting to LKMD. We now take a closer look at the experience of each of these approaches.

Temporary Displacement in Bandung

Immediately after its conversion from a Dinas Kebersihan the Bandung PDK argued that the RW/RT participation in household collection and delivery to the transfer depot posed a serious financial problem for the enterprise. Since the people pay the RW/RT directly for solid-waste services, "the PDK is left to beg for assistance from the city as sufficient funds are not passed on by the community leaders" (PDK Bandung 1987:5). The PDK felt that they had no choice but to establish greater control over fee

collection in light of the imminent elimination of local government funding for solid-waste management (McManus 1990).

BUDP II provided for the upgrading of the solid-waste management system through the supply of equipment and civil works. Under the new system the PDK would displace the RW/RT and provide full service to customers, from door to dump. Publicly, the PDK portrayed their decision to integrate the primary and secondary collection system as a response to poor and unreliable service by the RW/RTs. Privately, economies of scale from the operation of the donor funded modern equipment would not be realized if the PDK did not take over household collection (PDK Bandung 1987:6).

The PDK implemented direct collection of both fees and waste on a pilot basis in 25 percent of the city area. By providing high-quality service with modern equipment the PDK hoped that citizens who received services from the RW/RT would soon find fault with the community system. According to the PDK, heightened awareness was sure to lead "to public protests and rejection of inadequate levels of service from the RW/RTs" (McManus 1991).

The PDK had to receive permission from the local community leaders before it could operate within the neighborhoods, and in many cases it was refused. Naturally the RW/RT leaders were loathe to turn over a service to the PDK which had provided them with a steady income for many years. Beginning in 1987, those RW/RTs that refused to relinquish control to the PDK, were assessed a tipping charge of Rp. 1,000/m^3 of waste brought to the community transfer station to cover the costs of transport and disposal. A new tariff was also promulgated in 1987. Despite these measures, total revenue from households decreased by more than one-third from 1986 to 1987 (see table below), and collection efficiency dropped from 80.5 to 67.6 percent over the same period (PDK

Bandung 1991a). The absolute decline of revenues from households was caused by RW/RT resistance to the PDK's encroachment into their sphere of authority. RW/RTs minimized the tipping charge paid to the PDK by reducing the amount of waste brought to the transfer station and dumping it illegally instead.

TRENDS IN HOUSEHOLD REVENUE COLLECTED BY PDK BANDUNG
(in Current Rupiah, Rp. 1000 = $.50)

Year	1986	1987	1988	1989	1990
Revenue	332,224,500	209,269,400	251,719,643	296,708,160	321,705,737

Source: PDK Bandung 1991a.

The PDK proved unable to displace primary collection by the RW/RTs. In spite of their efforts, in 1990 income from households was running at less than one-fifth of the revenues projected under the centralized operational and financial plan (McManus 1991). Without the necessary authority to collect adequate revenues at the community level, the PDK abandoned door-to-door service of households. In the past year, the PDK has reverted to sharing both operational and financial responsibilities with the RW/RTs. This makes sense because handcart collection is the most economical method for door-to-door service in the majority of middle- and low-income areas, and the community is willing to self-finance it. The PDK is experimenting with the electricity payment point system as discussed in Chapter 5, which is supplementary to the fees collected by the RW/RT.

Besides their attempts to supplant the community organized garbage collection system, the PDK has worked closely with the RW/RTs in the city's environmental sanitation campaign. The PDK has organized forums at local meeting halls to discuss the importance of city sanitation, as well as explaining the goals of the PDK and stressing the need for the public to pay for solid-waste management (PDK Bandung 1987:15). The Mayor has also attended rallies aimed at creating citizen awareness of environmental

health. Bandung won the prestigious Adipura award given by the central government in recognition of the cleanest, most beautiful city in 1986, 1987, 1989, and 1990. In 1990, their conflict with the RW/RTs over primary garbage and fee collection behind them, the PDK held a public parade with them to celebrate the honor (McManus 1991).

Passive Coexistence in Jakarta

In Jakarta, the RW/RTs are responsible for ensuring proper household storage of garbage, payment and supervision of handcart operators and street sweepers, collection of fees from residents, and implementation of the environmental sanitation campaign (Danoedjo 1989:20). Door-to-door handcart collection organized by the RW/RTs covers about 70 percent of the population in Jakarta. RW/RT laborers also assist city crew members in loading the truck at the communal container (Danoedjo 1989:27). The RW/RT leaders complain that they then must bribe the Dinas Kebersihan drivers and workers to haul away the waste. A 1986 survey found that Rp. 1.7 billion was paid to city crew members by the RW/RT (PT Bumi Prasidi 1989:43). Since full secondary collection service has not yet been achieved because of equipment and operational staff shortages, the Dinas Kebersihan is not even considering supplanting the traditional garbage collection system. Thus, the Dinas Kebersihan and RW/RTs are satisfied with the operational division of responsibilities.

A widely quoted estimate of the current revenues collected by the RW/RTs is Rp. 100 billion, of which a meager 1 percent reaches the city coffers (Cerverro 1991:1). An undetermined number pay a separate fee to the local sanitation office (Seksi Kebersihan) as well, but there is no internal control and monitoring mechanism for these funds to be directed to the Dinas Kebersihan. Insufficient coordination and supervision between

central and field offices prevents the Dinas Kebersihan from extracting revenues from the bottom to the top of the organization. Despite a local regulation that obliges households to pay the city for solid-waste management services, residents are resistant to paying an additional charge for transport and disposal (Danoedjo 1989:9). Furthermore, RW/RT leaders refuse to turn over any revenues to Dispenda because they already pay Dinas Kebersihan crew members.

To date, the Dinas Kebersihan has not interfered with RW/RT fee collection; instead they have chosen to focus their energies on billing high-income households, industries, and businesses served by door-to-door collection systems, approximately 15 percent of total customers. In the most prestigious neighborhood in Jakarta, Menteng, 70 percent of the households pay for this service directly (PT Bumi Prasidi 1989:42). Several newspaper articles have indicated that the Dinas Kebersihan plans to explore alternative collection methods, such as joint billing with the PDAM or PLN, in order to "replace the present system in which residents pay their monthly bills through neighborhood and community units" for solid-waste management (*Jakarta Post* 1990b, 1990c). Given the experience in Bandung and Surabaya with coordinating the solid-waste tariff with electricity and water bills, respectively, it seems more promising to consider these methods as supplementary to the RW/RT system.

Strong Cooperation in Surabaya

A local government regulation issued in 1986 established the operational responsibilities for solid-waste management. The Dinas Kebersihan was given responsibility for establishing temporary and final disposal sites, as well as transport of waste between the two; while the RW/RTs were made responsible for carting garbage to

the temporary depot (Listayawan 1991:29). In 1987, a Mayor's directive set out the financial responsibilities: the PDAM collects fees from mutual customers and keeps 5 percent as an incentive and 4 percent for administrative costs; and the RW/RTs turn over 75 percent of the solid-waste fees they collect in their neighborhoods to Dispenda for ultimate channeling to the Dinas Kebersihan (IUIDP 1991b:14).

The operational division of the solid-waste management system in Surabaya has worked well. Sixty-seven percent of the waste generated in Surabaya is from households, which is collected by the RW/RT laborers, or pasukan kuning. Each handcart operator picks up garbage daily from about 200 homes, working within a kilometer radius of a small transfer station outfitted with containers supplied by the Dinas Kebersihan (IUIDP 1991a:9).[18] The RW/RT funding for street sweepers and handcart collectors is estimated at Rp. 3.7 billion per year (Kugler 1991:5). According to a local regulation, the lurah has to submit a monthly report to the camat concerning the performance of the RW/RTs in maintaining a clean environment, who in turn reports to the Dinas Kebersihan on all the kelurahans in the kecamatan (Listayawan 1991:21).

Despite the fact that fee-collection through the RW/RT can be difficult to control, the Dinas Kebersihan, with the assistance of Dispenda, has been fairly successful in generating revenues from the community organizations (IUIDP 1991a:ix). Contributions amount to Rp. 1.6 billion annually, 60 percent more than is collected in Jakarta, a city three times its size. This is a reflection of the institutional arrangements that are not only established in local regulations but subsequently enforced. In addition to the laws specific to solid-waste management, another regulation requires that the RW/RT leaders generally

[18] The Dinas Kebersihan provides some handcarts to the RW/RT to support the collection activity.

follow the instructions of the mayor or his appointed officials in implementing community activities (Listayawan 1991:34).

The Dinas Kebersihan works closely with the RW/RTs on public education. In 1987, the city government began a campaign to motivate people to get involved with solid-waste management. The Mayor personally visited all the residential areas and discussed enivornmental problems directly with citizens. As part of the campaign, sanitation competitions between RW/RTs were held, and community organizations were encouraged to contribute to improving solid-waste management. In 1988, community donations, in the form of cash, mini-containers, garbage cans, litter bags, brooms and raincoats for RW/RT workers, totalled over Rp. 80 million (Listayawan 1991). A recent survey found that the RW/RTs were the biggest source of information about solid-waste management, particularly the relationship between improper waste disposal and potential health risks, for the respondents (Listayawan 1991:25). Public awareness and community participation has been suitably rewarded; Surabaya received the prestigious Adipura Award several years in a row.

Formal Contracting in Medan

Medan's PDK provides complete services: collection, transport, and disposal of household waste. The expense of door-to-door service and the difficulty in convincing citizens to pay for solid-waste management led the PDK to implement an innovative contracting scheme with community organizations (LKMD) for operations and fee collection.

Seven months after its conversion from Dinas Kebersihan to an enterprise, the PDK entered into formal contracts with lurahs for the finance and delivery of solid-waste

collection on a pilot basis in fifteen kelurahans. First, the research and development section of the PDK undertakes a field survey in order to calculate the payments due from each household in the sub-district, and subsequently estimates total revenue for the area. Over the past two and a half years, this fieldwork was done in 70 of the 144 kelurahans in Medan. Second, the revenue target is negotiated with the lurah, who then signs a Memorandum of Understanding (MOU) agreeing to give a set amount to the PDK each month, keeping any surplus for himself.

Not only is the lurah contractually bound to collect and submit solid-waste fees to the PDK, but he is also formally responsible for refuse collection and street sweeping services. In order to assist him in these tasks, the PDK provides him with some funding, equipment, and a team of workers. The lurah employs additional daily laborers through the LKMD. As an incentive, a 10 percent management fee for the lurah is built into the operational costs financed by the PDK.

The lurah holds a monthly meeting with LKMD leaders to discuss implementation of a variety of government programs including health, family planning, drainage cleaning, and garbage collection. The lurah uses his traditional authority to persuade local residents to pay the solid-waste tariff. If the lurah does not meet the revenue target, then the PDK will not reimburse his operational expenses, including the management fee, and the lurah will be forced to compensate the PDK and LKMD laborers personally.

On the next page is a sample Memorandum of Understanding (MOU) that was negotiated in October 1991 between the lurah of Sei Rengas Permata kelurahan and the PDK.

Memorandum of Understanding[19]
between PDK Medan and Kelurahan Sei Rengas Permata

I. Operational Costs

5 street sweepers x Rp. 2,000 x 31 days =		310,000
4 handcart pullers x Rp. 2,200 x 31 days =		271,800
1 supervisor x Rp. 3,300 x 31 days =		102,300
Equipment maintenance		60,000
TOTAL		745,100
Management fee (10%)		74,510
TOTAL	Rp.	819,610

II. Calculation of wage payments will be adjusted according to the total work days of the relevant month and the total casual laborers working in the area.

III. Revenues that the lurah is obligated to turn over to the PDK amount to Rp. 2,700,000.

IV. If the revenues are not received when the accounts are closed at the end of the month, the PDK will not pay the operational costs.

V. An official report of the environmental condition in the area and accounting of operational expenditures must be submitted at the end of the month.

Although the pilot project has been a success, the PDK has some reservations about its replicability throughout the entire city. In the pilot kelurahans there has been a large increase in the revenue collected per month. For example, prior to the Memorandum of Understanding in Sei Rengas Permata, the lurah only collected approximately Rp. 1.7 million per month from 950 households, compared to Rp. 2.7 million today. In May 1991, revenue-collection efficiency was 34 percent for the entire city, compared to 92 percent in the pilot areas (Cerverro 1991:19). Three lurahs of the original fifteen in the pilot project dropped out because they said they could not achieve the revenue target; but the PDK suspects that they merely wanted to keep the entire

[19] The management fee for the lurah is clearly stated; however, PDK officials also said that approximately 5 percent of the revenues collected were distributed to the lurah, LKMD members, and the camat (head of district), which is not specified in the MOU. In addition, interviews and previous reports on the MOU system have indicated that if the lurah does not meet the revenue target, he must make up the deficit; but the only penalty in the contract is that the lurah is obligated to self-finance operations.

proceeds. Common complaints of the lurahs are that the target is too high and that the citizens of Medan are not accustomed to paying solid-waste charges. The PDK agrees with the latter point, and is engaged in an extensive campaign to educate the public about the importance of environmental sanitation. A major barrier to expansion of the pilot program is the overwhelming administrative burden of negotiating contracts every three months for 144 kelurahans.

Conclusion

The case studies presented above suggest that primary garbage collection from households, particularly in low- to middle-income areas, should remain the responsibility of the RW/RTs. Because of the physical structure of these neighborhoods, modern door-to-door collection vehicles are expensive (if not impossible) to operate.

Given that it is more efficient for the RW/RTs to handle primary refuse collection, how should the Dinas Kebersihan or PDK generate funds to pay for secondary garbage transport and disposal? We have previously discussed indirect methods such as joint billing with the water or electricity agency, but there is also scope for financial cooperation with community organizations. The Bandung experience tells us that trying to deny the RW/RT leaders their income from solid-waste management is likely to fail. The experience of both Surabaya and Medan show that financial coordination between the Dinas Kebersihan/Perusahan Daerahs and the RW/RTs can work if the community organizations are brought into the official administrative structure through enforcement of local government laws or formal contracts.

Dinas Kebersihan officials in Surabaya complain that the lurahs are passive in their fee collection methods; thus, they might follow the Medan model of motivating the lurahs

by providing equipment, laborers, and a management incentive. The lurah's prestige is enhanced by supervising the PDK workers and it enables him to provide visibly better quality service for which he can solicit higher fees from residents. Because MOUs are public knowledge, the community knows the PDK revenue target as well as the payment to the lurah. In the loose financial arrangement in Surabaya, it is difficult to convince households to pay higher fees when there is no guarantee that the increase will go to the Dinas Kebersihan rather than the lurah.

The main problem with PDK Medan's contracting scheme is its administrative intensity. One suggestion is for the PDK or Dinas Kebersihan to contract to the camat at the district level, instead of the lurah at the sub-district level. For example, in Medan this would significantly reduce the number of contracts from 144 (kelurahans) to 11 (kecamatans). Just as the lurah has a great deal of influence over his residents, so does the camat over the lurahs. In order to increase revenues, the camat could exploit the Indonesian penchant for competition; contests between kelurahans for environmental sanitation are already common in Surabaya. A percentage of the revenues generated at the district level could be used to reward the best-performing kelurahan. An additional recommendation is to lengthen the current contract period from three months to one year. In the initial period of cooperation, the lurah would attempt to achieve the target revenue indicated by the PDK field survey. Based on the experience of the pilot period, the camat would negotiate a year long contract with the PDK. In order to ensure that the lurahs and camats are not shirking their responsibilities or pocketing extra income, the PDK can rely on reports from their operational staff working in the neighborhoods. Given a well-enforced legal and regulatory framework, and incentives to the lurahs or camats,

community groups can be mobilized to help finance as well as deliver solid-waste management services.

Chapter 6

CONCLUSIONS AND RECOMMENDATIONS

In order to finance and deliver urban services, local governments must simultaneously expand and improve efficient use of financial, physical and human resources. The Government of Indonesia's urban policy agenda focuses on improved cost-recovery and private participation as strategies for achieving this dual objective. In light of this policy, municipalities have independently launched a variety of initiatives to strengthen the effectiveness of their solid-waste management systems. By evaluating the innovations implemented to date by local governments in Jakarta, Surabaya, Bandung, and Medan, we have identified the most promising financial and organizational arrangements for providing garbage collection services and suggested reforms that would further enhance their potential.

Inefficient use of limited resources is caused by a constellation of institutional, regulatory and financial factors. Nominally the key institution for providing solid-waste management services, the Dinas Kebersihan does not have the requisite authority to organize operations effectively in the sector. Responsibility for refuse collection may be divided among as many as five other municipal agencies, as well as the community organizations that are outside of the local government. Even for the services that it does deliver, the Dinas Kebersihans does not have exclusive control over collection of user charges. Besides the funds accumulated by the community organizations, formal revenue generation is managed by the city tax and revenue department, Dispenda. Furthermore, the Dinas Kebersihan does not have the sufficient influence over establishment of the solid-waste tariff structure. Because tariff approval is in the hands of the legislature,

political and social equity concerns overwhelm concrete considerations of service cost. The agency's lack of control over rate assessment or collection naturally creates a dependency on the municipality for financing its operations. On the one hand, the funds allocated to the Dinas Kebersihan from the local government budget are generally insufficient and unrelated to actual need, reflecting the low prestige of the agency in the administrative hierarchy. On the other hand, the municipality's guaranteed subsidy of the Dinas Kebersihan's operations is a major disincentive to increasing system productivity.

Commercializing Municipal Sanitation Agencies

Theory tells us that quasi-commercial enterprises will be more efficient in their expenditures and more vigorous in revenue collection than public agencies, and the performance of the PDKs compared to the Dinas Kebersihans bears out this claim. A key priority for reform of the solid-waste sector should be the conversion of Dinas Kebersihans in large cities (population over 500,000) into PDKs. Divorce from the municipality's budget and a cost-recovery mandate imposed by an external donor has compelled the PDKs in Bandung and Medan to make serious attempts at reconciling service costs with user charges. The major advantage of the PDKs over the Dinas Kebersihans is that they are empowered to collect solid-waste fees directly. The PDKs also have somewhat greater control over operational costs because they manage their own maintenance and repair operations and can freely hire and fire daily laborers.

The PDKs have made significant progress in recovery of their operational and maintenance costs through user charges; however, implementation of several institutional and regulatory reforms could enable them to finance depreciation and/or debt-service as well. The PDKs are in the unenviable position of being directed to operate as a healthy

company in a public sector environment that is presently hostile to efficient behavior. Given that PDKs do not enjoy some of the expected advantages of commercial enterprises, their performance has been commendable. Several steps could further improve the situation.

First, the PDKs are entitled to greater authority in the establishment of solid-waste tariff structures that are commensurate with the costs of service delivery. In order to design such a tariff, the enterprise needs continued assistance in reforming its financial management system so that operating expenses, income, capital investment, and depreciation are clearly depicted. Authorization of the tariff by the legislative assembly should be discontinued because politicians are prone to subsidize user charges under the guise of social-equity concerns. Approval by the PDKs' Board of Supervisors, the Mayor of the municipality and provincial Governor should be more than sufficient. Depending on the extent of the disparity between the current tariff and service costs, increases may have to be phased in over several years. In addition, the tariff regulation should allow for incremental adjustments due to inflation.

Second, the relationship between the PDK and the local government needs substantial clarification. Contracts should be drawn up to state explicitly the services the PDK will provide to local government, such as street sweeping and drainage cleaning, in exchange for fair payment. In the law that authorizes the establishment of the PDK, the responsible parties for servicing past and future loans should be clearly stated and the terms of the initial transfer of capital and equipment defined. The regulation concerning the division of net profits with the municipality should also be revoked. Achieving a break-even point -- coverage of capital investment and depreciation as well as operating

expenses -- is a formidable task in itself. If the PDKs do generate significant profits, their staff should be rewarded and a portion should be set aside for future investments.

Third, because wages are their largest expenditure item, the PDKs require greater control over personnel management. High levels of administrative staffing are a drag on the PDKs' labor productivity. The administrative and technical skills of PDK personnel also need considerable strengthening. The cost-recovery imperative placed on the PDKs in Bandung and Medan forced their directors to give themselves a crash course in business management, but some of this learning by doing could be avoided by training staff prior to the conversion from Dinas Kebersihan to PDKs. In cities where the potential exists to contract out to the private sector, PDK personnel should be able to design terms of reference that specify the scope of work, expected quality of service, performance indicators, and monitoring procedures that will be used to ensure compliance. Staff should be given training in contract management, from design through bidding to enforcement. The strengthening of personnel's skills must go hand-in-hand with performance related payment, greater pay differentials, and incentives to increase staff productivity. The PDKs already use incentives to motivate workers and have pledged to allocate a share of future profits to employee pension funds.

Reform of the tariff-authorization process, clarification of institutional autonomy, and technical and administrative capacity building will be a gradual process. In the meantime, Dinas Kebersihans and PDKs can focus their energies on increasing revenue collection.

Effective Revenue Collection Strategies

Attachment of the solid-waste user charge to the electricity bill would be the most lucrative approach for collecting revenues from households. The PLN has the widest coverage of any public utility, customers pay their bills diligently, and the electricity tariff's breakdown of residential classes provides an equitable framework for assessing a variable solid-waste fee. Local branch offices of the PLN have not suffered any decrease in electricity revenues by allowing the PDK/Dinas Kebersihan to place a collector at the same payment point. Because this system creates a perception that electricity and solid-waste services are linked, households not only continue to pay for their electricity consumption, but the vast majority voluntarily contribute to solid-waste management. Therefore, it is unlikely that the PLN's domestic customers would stop paying for their electricity if a solid-waste charge was placed on their bill. From the PDK/Dinas Kebersihan's perspective, formal joint-billing with the PLN is much more efficient than the payment point system, and the PLN is reimbursed for the additional administrative costs. The Ministry of Home Affairs and the Solid-Waste Management Association[20] should bring pressure to bear on the national PLN to approve a country-wide policy on joint billing for solid-waste management and electricity services.

In the interim, joint billing with the water enterprise and contracting out to the community for fee collection is a rewarding combination. The Dinas Kebersihan in Surabaya was achieving close to full recovery of their routine and development budget by revenues received from PDAM coordination and contributions from the RW/RT, until unrestrained expenditure growth set in. The advantage of placing a solid-waste charge on

---

[20] The Solid Waste Management Association is an organization of the heads of Dinas Kebersihans and PDKs.

the water bill is that the PDAM is a local enterprise; thus, negotiations on rates, incentives, and administrative fees can be based on city specific conditions and decided at the municipal rather than the national level. The disadvantage with PDAM cooperation is that their clientele is limited to wealthy residents, and commercial, industrial and government customers. Because community leaders tend to wield more power in the low to middle income neighborhoods, the PDK/Dinas Kebersihan could contract out for fee collection in these areas, following a modified version of the Medan model.

Although PDK Medan's general strategy of contracting out to community organizations for revenue collection is promising, the method by which it is currently implemented is an inefficient use of scarce managerial resources and too cumbersome for city wide expansion. In large municipalities, the design and negotiation of three month contracts at the sub-district level is an overwhelming administrative burden for the PDK or Dinas Kebersihan. Instead of cooperation with the sub-districts chiefs (lurahs), the PDK/Dinas Kebersihan might consider contracting at the district level, and rely on the district head (camat) to coordinate the lurahs under his supervision, who, in turn, motivate the community organizations (LKMD or RW/RT, depending on the locale). In addition, the contract lengths should be extended to one year, after an initial trial period. In the first three months of formal cooperation, the community should attempt to achieve the target revenue level determined by the research and development department's field survey. After mutual review of the pilot results, the district heads and PDK/Dinas Kebersihan can negotiate a year-long contract. In order to make sure that the camats, lurahs, or community organizations are not shirking their responsibilities or pocketing extra income, the solid-waste authority should rely on reports from their operational staff working in the neighborhoods. The loan of operational staff and equipment to the lurahs

also facilitates their ability to demand payment, because the community can witness official government workers providing services in their area.

Coordination with Community Organizations

The Dinas Kebersihans and PDKs have blamed many of their budgetary woes on the stranglehold of community organizations on solid-waste fee collection. The accomplishments of the solid-waste authorities in Surabaya and Medan show that Dinas Kebersihans and PDKs can reap financial rewards from coordination with community organizations given a supportive regulatory structure and binding contracts. Successful financial cooperation with community organizations is predicated on several regulations that must be not just issued but enforced. First, a law should be passed that explicitly states that residents must pay for total solid-waste services (collection, transport and disposal) through their RW/RT or LKMD leader.[21] Second, although the tariff structure is presented in local law, it should be made public knowledge so that households know the payment required of them. Third, the RW/RT or LKMD leaders should be brought more formally into the city solid-waste management system, by designating them as the official collectors of the solid-waste charge for the municipality. Incentives and administrative fees for the camats, lurahs and RW/RTs or LKMDs should be spelled out in local regulations.

In addition to financial resources, communities have shown a willingness to contribute labor and handcarts for garbage collection services at the neighborhood level,

[21] If the solid waste charge is attached to the electricity bill, the community organizations should revert to assessing fees only for household garbage collection, and the charge on the electricity bill should reflect transport and disposal costs.

which conserves the labor and capital resources of the government agency or enterprise. The division of operational duties should follow the traditional breakdown, with garbage collection handled by community workers at the household level, and transport and disposal handled by the PDK, particularly in low- and middle-income areas where the physical environment limits access by modern collection vehicles. In wealthy residential areas where the solid-waste authority, or possibly a private firm under contract, provides door-to-door services, the RW/RT may only organize fee collection. The operational duties of the RW/RT should be clearly defined depending on the mode of collection and transport appropriate to the neighborhoods' socio-economic and physical structure. Lastly, to ensure that community organizations do not shirk their garbage collection tasks, regulations that severely penalize illegal dumping must also be issued and enforced.

Contracting Out to Private Firms

Once the institutional arrangements between existing actors in the sector -- the solid-waste authority and the community organizations -- are clarified, then private firm participation can be considered. If certain conditions are met, of which the most important is the creation of a competitive environment by the political leadership, contracting out to private firms can be more efficient than direct provision by the Dinas Kebersihan or PDK. Furthermore, in cases where the municipal budget allocation is not keeping pace with rising demands for solid-waste management services, private firms can bring additional capital equipment and a more cost-effective pool of labor to the sector.

Although the Dinas Kebersihan managers state that they are saving money by contracting out to the private sector, the evidence is far from convincing. Because they are not held accountable for their expenditures, there is no motivation for Dinas

Kebersihans to use contracting out to the private sector as an efficiency measure. At the very least, the Dinas Kebersihans are not realizing the full benefits of privatizing selected administrative areas, and it is possible that they are losing money in cases where private companies are more expensive than the public agency. In fact, under prevailing contract terms, private firms cannot be expected to be more efficient than the municipal agency. The contract length of three months to one year is too short a period for firms to invest in and depreciate environmentally sound equipment. The concession sizes areas are also not large enough for firms to achieve economies of scale. In contract bidding and negotiations with the private sector, the Dinas Kebersihans are handicapped because they do not know their own service delivery costs; thus, they cannot accurately assess whether the proposals submitted are underestimated, reasonable or padded.

Contracting out to private firms is likely to be more successful under the PDKs compared to the attempts to date by Dinas Kebersihans for the following reasons. First, the PDKs have a clearer understanding of what is entailed to run a healthy company; and second, their grasp of their own costs of service provision facilitates evaluation of tenders. The PDKs can also offer better terms to the private sector than the Dinas Kebersihans because they are not constrained by the annual budget approval process and could offer longer contracts.

Contracting to the private sector is most appropriate in wealthy neighborhoods and commercial districts, where services are delivered door-to-door to residents and businessmen who provide free performance monitoring. As long as fee collection is separated from operations in these areas, the PDK does not have to provide services personally in order to maintain a hold on this major source of revenue. Since the PDKs in Bandung and Medan are due to receive an influx of equipment from the ADB, it is

unlikely that they would require contracting to the private sector for these capital needs. In the future, however, in cities where donors do not play a substantial role in financing solid-waste management, newly formed PDKs could contract to the private firms in order to bring additional trucks and laborers to the sector.

In their zeal, advocates of privatizing urban services may gloss over the substantial public sector reforms that are required before its potential can be fully realized. The results of the innovations implemented to date in Jakarta, Surabaya, Bandung and Medan, such as contracting out to private firms, formal cooperation with community organizations, and converting sanitation agencies into semi-independent enterprises, have met with considerable success in spite of the significant institutional and regulatory barriers. The recommendations listed above are suggestions for enhancing the governments' efforts to expand and improve the efficiency of solid-waste service delivery through a privatization strategy that encompasses not only contracting out to private firms, but also the creation of quasi-commercial enterprises and formal cooperation with community organizations.

APPENDIX 1: COST-RECOVERY CALCULATIONS

SURABAYA

	TARIFF REVENUES	APBD BUDGET	COVERAGE PERCENT
1985/86	105,000	2,746,409	3.82
1986/87	151,000	2,414,978	6.25
1987/88	1,823,000	3,299,270	55.25
1988/89	3,615,000	4,037,773	89.53
1989/90	3,796,000	7,393,545	51.34
1990/91	3,826,000	8,054,945	47.50
1991/92	4,200,000	9,675,700	43.41

JAKARTA

	TARIFF REVENUES	APBD BUDGET	COVERAGE PERCENT
	400,000	12,400,000	3.23
	524,268	14,529,474	3.61
	538,843	18,796,651	2.87
	845,168	19,134,150	4.42
	1,303,979	24,553,340	5.31
	4,223,548	23,187,650	18.21

MEDAN

	TARIFF REVENUES	OPERATING EXPENSES	COVERAGE PERCENT
1985/86	312,017	1,675,000	18.63
1986/87	315,649	1,799,000	17.55
1987/88	413,283	2,094,000	19.74
1988/89	807,205	2,300,000	35.10
1989/90	1,155,549	2,684,562	43.04
1990/91	2,004,348	3,608,884	55.54
1991/92	2,294,363	3,713,304	61.79

BANDUNG

	TARIFF REVENUES	OPERATING EXPENSES	COVERAGE PERCENT
	358,150	1,489,668	24.04
	546,000	1,611,101	33.89
	835,357	1,809,000	46.18
	1,061,554	2,121,000	50.05
	1,182,976	2,084,000	56.76
	1,277,747	2,543,000	50.25
	2,000,000	2,798,000	71.48

REFERENCES

Arif, Boediman, and Budiyati Abiyoga. 1991. "Private Sector Participation in the Urban Solid-Waste Management in Indonesia." Paper written for the International Expert Group Seminar on Policy Responses towards Improving Solid-Waste Management in Asian Metropolis held in Bandung, Indonesia.

Bartone, Carl et al. 1990a. "Private Sector Participation in Municipal Solid-Waste Service: Experiences in Latin America". Paper presented at the EPA Conference on Municipal Solid-Waste Management: Solutions for the 1990s. Washington D.C.:The World Bank.

Bartone, Carl, Janis Bernstein, and Frederick Wright. 1990b. Investments in Solid-Waste Management: Opportunities for Environmental Improvement. Policy, Research and External Affairs Working Paper No. 405. Infrastructure and Urban Development Department. Washington D.C.:The World Bank.

Bendick, Mark. 1984. "Privatization of Public Services: Recent Experience" in Public-Private Partnership by Harvey Brooks et al. Cambridge, MA.:Ballinger Books.

PT Bumi Prasidi. 1989. National Solid-Waste Management Strategy. Report written for the Directorate of Environmental Sanitation, Directorate General of Human Settlements, Ministry of Public Works, Indonesia.

Cerverro, Robert. 1991. Improving the Revenue Performance of Solid-Waste Management in Indonesia. Harvard Institute for International Development. Unpublished manuscript.

Cointreau-Levine, Sandra. 1989. "Policy Options for Improving Solid-Waste Management." Unpublished manuscript.

Cointreau-Levine, Sandra. 1991. "A Framework for Private Sector Participation in Municipal Solid-Waste Services in Indonesia". Paper prepared for the World Bank.

Cointreau-Levine, Sandra. 1991. "Financial Arrangements for Viable Solid-Waste Management Systems in Developing Countries." Paper presented at the Third International Expert Group Seminar on Strategies for Developing Responsive Solid-Waste Management in Asian Metropolises held in Bandung, Indonesia, Feb. 4-8, 1991.

Cousins, William J. 1991. "The Urban Poor and Urban Basic Infrastructure Services: Non-Government Initiatives." Paper prepared for a policy seminar on The Access of Urban Poor to Basic Infrastructure Services in Asia, Manilla, Jan.22-28, 1991.

Cubbin, John; Simon Domberger, and Shirley Meadowcroft. 1987. "Competitive Tendering and Refuse Collection: Identifying the Sources of Efficiency Gains," Fiscal Studies (August).

Devas, Nick. 1989. Financing Local Government in Indonesia. Ohio University Monograph in International Studies, Southeast Asia Series, No. 84.

Devas, Nick. 1991. "Financing Mechanisms, Constraints and Future Mobilization." Paper prepared for a policy seminar on The Access of Urban Poor to Basic Infrastructure Services in Asia held in Manilla, Jan.22-28, 1991.

Danoedjo, Soenarjono. 1989. "Case Study Report on Policy Responses Towards Improving Solid-Waste Management in the Metropolitan City of Jakarta, Indonesia." Paper prepared for the International Group Seminar on Policy Responses Towards Improving Solid-Waste Management in Asian Metropolises. October 16-21, 1989, Kitakyushu, Japan.

PT Deserco Development Services and DHV Consultants. 1990. Inception Report. Financial Management Advisory Assistance to Solid-Waste Management Enterprise, PDK Medan.

PT Deserco Development Services and DHV Consultants. 1991. Report on Tariff Structure and Tariff Levels. Financial Management Advisory Assistance to Solid-Waste Management Enterprise.

Donahue, John D. 1989. The Privatization Decision: Public Ends, Private Means. Basic Books.

Goodman, John B., and Gary W. Loveman. 1991. "Does Privatization Serve the Public Interest" in Harvard Business Review Nov/Dec.

Hainsworth, Geoffrey. 1989. "Indonesia: On the Road to Privatization," in Current History no. 545: 121-134.

Hanke, Stephen. 1984. The Private Provision of Public Services and Infrastructure. Report submitted to the U.S. Agency for International Development, Washington D.C.

ICMA. 1990. "A Solid Record for Waste Collection in Togo," Cities International Vol 1, no. 3.

Indonesian Business News. 1989. "Private Participation in Garbage Management Requires Clear Procedures and Guidelines." June 22, 1989.

Integrated Urban Infrastructure Development Project (IUIDP) Surabaya. 1991a. Solid Waste Sector Report. Prepared by PT Indulexco and Sir Mott MacDonald & Partners Asia for the Surabaya Municipality and the Ministry of Public Works, Indonesia.

Integrated Urban Infrastructure Development Project(IUIDP) Surabaya. 1991b. Solid Waste Sector Report. July Addendum. Prepared by PT Indulexco and Sir Mott MacDonald & Partners Asia for the Surabaya Municipality and the Ministry of Public Works, Indonesia.

Iskandar, Dono. 1988. "Privatization of Local Public Services." Paper prepared for International Workshop on Public-Private Partnership in the Provision of Infrastructure for Human Settlements, held in Ciloto, Indonesia, Oct. 19-21, 1988.

Jakarta Post. 1990a. "Twelve private firms to handle sanitation." January 10, 1990.

Jakarta Post. 1990b. "New system for garbage bills being worked out." March 7, 1990.

Jakarta Post. 1990c. "Monthly water bill to include sanitation service fees: Mayor." November 20, 1990.

Karamoy, Amir, and Gillian Dias. 1986. "Delivery of Urban Services in Kampungs in Jakarta and Ujung Padang," in Community Participation in Delivery Urban Services in Asia, edited by Y.M. Yeung and T.G. McGee. International Development Research Center, Ottawa, Canada.

Kugler, William R. 1991. "Trip Report - Surabaya - Preliminary Survey of Privatization of Urban Services". Internal memo, Directorate General of Urban Development, Ministry of Home Affairs.

Lewis, Maureen, and Ted Miller. 1986. Public and Private Partnership in African Urban Development. Report for U.S. Agency for International Development.

Listayawan, Budi, and Enri Damanhuri. 1991. "Public Participation as a Variable in the Metropolitan Solid-Waste Management System of Surabaya, Indonesia."

McCullough, James, Dennis Rondinelli, John Taylor, David Foster and John Kasarda. 1990. Urban Strategy Assistance, Indonesia. Prepared by Research Triangle Institute for the USAID Mission Jakarta, Indonesia.

McDavid, James C. 1985. "The Canadian Experience with Privatizing Residential Solid Waste Collection Services," Public Administration Review 45.

McManus, Gerald M., and Djembar Wiradisastra. 1990. Financial Aspects of Solid Waste Management in the Context of Metropolitan Management. UNCRD Research Project Paper, Improving Solid-Waste Management in the Context of Metropolitan Development and Management in the Asian Countries.

McManus, Gerald M. 1991. Final Report of Solid-Waste Management Advisor, 1989-91. Prepared under the Second Bandung Urban Development Project for the Directorate General of Human Settlements, Ministry of Public Works.

Morrison, J. Stephen. 1986. "Perspectives on Privatization: Contracting Out". Mimeo. National Association of Schools of Public Affairs.

National Solid-Waste Management Association. 1991. "Privatizing Municipal Waste Services: Saving Dollars and Making Sense". NSWMA:Washington D.C.

Nolan, Amy. 1986. A Growing Role for the Private Sector in the Provision of Public Services in the Third World. Report for the Office of Housing, U.S. Agency for International Development.

Owens, R. J. and R. J. Macklin. 1984. "Solid-Waste Aspects of Public Health Engineering in Java, Indonesia," in Managing Solid-Wastes in Developing Countries edited by John R. Holmes. New York: John Wiley and Sons, Ltd.

Perusahan Daerah Kebersihan Bandung. 1987. Annual Report. Prepared for the Bandung Municipality.

Perusahan Daerah Kebersihan Bandung. 1990. Urban Solid-Waste Management in Bandung: Towards the Development of Integrated Resource Recovery. Paper presented at the World Congress of Local Authorities for Sustainable Future, New York, Sept. 5-8, 1990.

Perusahan Daerah Kebersihan Bandung. 1991a. Fax transmission to Asian Development Bank regarding progress made on revenue collection in accordance with Loan Agreement No. 768 INO. PDK Bandung, Municipality of Bandung, dated June 15, 1991.

Perusahan Daerah Kebersihan Bandung. 1991b. "Comparison Between Annual Budgets of Bandung, Surabaya and Semarang." Unpublished mimeo.

Perusahan Daerah Kebersihan Medan. 1991a. Brief Description of Solid-Waste Management Enterprise Medan. Prepared for Municipality of Medan.

Perusahan Daerah Kebersihan Medan. 1991b. Laporan Keuangan Semester I. Prepared for Municipality of Medan.

Rondinelli, Dennis A. 1990a. Decentralizing Urban Development Programs: A Framework for Analyzing Policy. Office of Housing and Urban Programs. U.S. Agency for International Development.

Rondinelli, Dennis A., and John D. Kasarda. 1990b. "Privatizing Public Services in Developing Countries: What Do We Know?" Paper for Institute of Private Enterprise, UNC Business School at Chapel Hill.

Roth, Gabriel. 1987. The Private Provision of Public Services in Developing Countries. New York: Oxford University Press.

Saleh, Darmawan. 1991a. Environmental Sanitation Development Policy. Director of Environmental Sanitation, Directorate General of Human Settlements, Ministry of Public Works.

Saleh, Darmawan, Boediman Arif, and Budi Listayawan. 1991b. "Partnership and Non-Conventional Arrangements in Solid-Waste Management." Paper presented at the International Expert Group Seminar on Policy Responses towards Improving Solid-Waste Management in Asian Metropolis held in Bandung, Indonesia.

Savas, E.S. 1977. "Policy Analysis for Local Government: Public vs. Private Refuse Collection," Policy Analysis 3(1):1-26.

Savas, E.S. 1982. Privatizing the Public Sector. Chatham, NJ; Chatham Publishing.

Sivaramakrishnan, K.C. and Leslie Green. 1986. Metropolitan Management: The Asian Experience. Economic Development Institute, The World Bank, Oxford University Press.

Stevens, Barbara J. 1977. "Scale, Market Structure, and the Cost of Refuse Collection," Review of Economics and Statistics 60.

UNCRD. 1991. "Solid-Waste Management in Asian Metropolises" in the United Nations Center for Regional Development Newsletter, July issue.

U.S. Agency for International Development/Jakarta, Indonesia. 1991. Private Participation in Urban Services Project Paper.

Water and Sanitation for Health Project (WASH). 1991. Private Sector Participation in Urban Water Supplies: Issues for Investment in Indonesia. Sponsored by the U.S. Agency for International Development. Operated by CDM and Associates.

World Bank. 1988. World Development Report 1988. Washington D.C.: The World Bank.

World Bank. 1990. "Priority Solid-Waste Management" in Annex 2: Indonesia, Third JABOTABEK Urban Development Project, Rpt. 8397-IND. Washington D.C.: World Bank.

Zack, Alvin, and Frank Sudol. 1987. "Privatization: The Newark Experience". Mimeo distributed by the Bureau of Private Enterprise, U.S. Agency for International Development. Washington D.C.