



Abt Associates Inc.

Cambridge, MA
Lexington, MA
Hadley, MA
Bethesda, MD
Washington, DC
Chicago, IL
Cairo, Egypt
Johannesburg, South Africa

Abt Associates Inc.
55 Wheeler Street
Cambridge, MA 02138

**Report No. 4
Development /
Evaluation of Service
Unbundling Scenarios**

**Solid Waste and Public
Clean-Up Project
Governorate of Alexandria,
Egypt**

**USAID Contract LAG-I-
00-99-00007-00,
Task Order No. 800**

April 30, 2000

Prepared for
Governorate of Alexandria, Egypt
and
United States Agency for
International Development

Prepared by
Abt Associates Inc.
The Institute for Public-Private
Partnerships

Report No. 4
Development/Evaluation of Service Unbundling
Scenarios

Solid Waste and Public Clean-Up Project
Governorate of Alexandria, Egypt

Prepared for:

Governorate of Alexandria, Egypt

United States Agency for International Development

Prepared by:

Abt Associates Inc.

and

The Institute for Public-Private Partnerships

April 30, 2000

CONTENTS

<u>Section</u>	<u>Page</u>
Background	1
Opportunities for Unbundling	1
GOA Experience with Multiple Service Providers.....	2
Assessing the Applicability of Unbundling	3
Overview of Unbundling Government Utility Services	5
Shortcomings of Government Managed Services	5
Creating Market Competition	5
Potential Benefits of Unbundling.....	6
Protection from Service Interruption	7
Evaluation Criteria for Unbundling	7
Evaluation of Potential Unbundling Scenarios	8
Unbundling Geographically	8
Unbundling by Service Function	13
Unbundling by Waste Generator	17
Summary	20

REPORT NO. 4
DEVELOPMENT/EVALUATION OF SERVICE UNBUNDLING SCENARIOS

Solid Waste and Public Clean-Up Project
Governorate of Alexandria, Egypt

BACKGROUND

The Governorate of Alexandria (GOA) has embarked on a Solid Waste and Public Clean-Up Project with the intention of entering into a contract with a private sector service provider. A tender has been issued entitled *Book of Conditions and Specifications* inviting offers to provide the following services:

- Collection of household, commercial, and industrial wastes.
- Rehabilitation, outfitting, and operation of composting facilities.
- Collection and treatment of medical wastes.
- Mechanical and manual sweeping of roads and streets.
- Cleaning of beaches and public gardens.
- Cleaning of memorials, statues, fountains and spouts, tunnels, and bridges.
- Development and operation a sanitary landfill.
- Closure of existing open dumps.

The intent of the tender, as issued by the GOA, is to select one contractor to provide all of the services listed above and enter into a 15-year contract. Although this method of contracting is easy to monitor, it often results in higher prices due to a reduction in the overall competition for the contract.

The purpose of this report is to present several scenarios available to the GOA that would allow for the unbundling of the solid waste and public cleaning services listed in the tender documents. Although these options are typically discussed and decided upon prior to issuing the tender, they may still have value to the GOA as it reviews the technical and financial offers from the tenderers.

OPPORTUNITIES FOR UNBUNDLING

Unbundling of the solid waste and cleaning services is not clearly provided for in the tender document. However, analysis of the individual service price tables may reveal that no single tenderer has offered the lowest price for each of the individual services. Providing that the tenderer's low price for any particular service is accompanied by a technically acceptable work plan, the GOA may then want to give unbundling serious consideration.

Another case for unbundling is the scenario where the lowest overall technically acceptable price exceeds the total funds available for the project and alternative service/cost recovery options are warranted. In this case, the unbundling option should be evaluated to see if it has the potential to reduce funding requirements or improve the quality of services over the long-term.

GOA Experience with Multiple Service Providers

The tender is designed to select one contractor to perform the services that have previously been provided by the GOA, districts, NGOs, and/or private contractors. GOA experience with this mix of waste collection and cleaning service providers, while limited, has not produced acceptable results. This unfortunate experience with multiple service providers might suggest that provision of all solid waste and public cleaning services through a single contractor is the preferred way to achieve cleanup project objectives. However, unbundling or use of multiple regulated service providers may have an equal or greater potential of achieving the project objectives.

To determine if satisfactory performance is only achievable through a single service provider or if unbundling has equal or greater potential for overcoming existing obstacles requires analysis of its impact on proposed remedies. The choice of contracting options can then be based on an assessment of the relative potential of each to overcome the identified obstacles to success and optimize implementation of proposed remedies.

Obstacles to Success --

The GOA's experience with multiple service providers of domestic and commercial waste collection and street sweeping is well documented in the reports, *Economic Analysis of Municipal Solid Waste Service Options* and the accompanying *Municipal Solid Waste Implementation Plan* both published in late 1998. Both of these documents reach similar conclusions concerning the major obstacles to acceptable solid waste management and public clean-up services. In summary these include, but are not limited to, the following:

- Lack of a GOA wide plan that integrates all solid waste management components.
- Inadequate mechanisms for service cost recovery.
- Insufficient financial resources to purchase and maintain appropriate equipment.
- Insufficient resources to pay wages adequate to attract reliable workers.
- Lack of affordable and reliable door-to-door waste collection service.
- Dependence on street containers, that while insufficient in number and placement, are overused by a minority wishing to avoid fees for service.
- Scavenging materials from street containers results in spillage and excessive street sweepings.
- Littering as an acceptable public and private waste disposal practice.
- Lack of education or enforcement efforts to discourage littering/dumping.
- No mechanism for monitoring of service reliability and practices leading to:

- Dumping of collected waste in street containers rather than at landfills.
- Erratic service quality and reliability.
- Overflowing containers that deter legitimate use.

Proposed Remedies--

Among GOA officials and professional consultants who have analyzed the current practices, there is broad agreement on the most applicable remedies. These remedies include the following:

- An integrated waste management and public cleaning system based on a public/private partnership.
- Contracting with the private sector to provide service.
- GOA imposition of a surcharge on electricity bills to achieve full cost recovery.
- Replacement of street containers to the maximum extent possible with daily door-to-door residential waste collection from apartment dwellings.
- Comprehensive government oversight and monitoring of all contracted services.
- Integrated effort to reduce littering/dumping through education and law enforcement.
- Implementation of a comprehensive public awareness campaign to change personal behavior.
- Integration of the informal scavenging activities into the solid waste management system.

The commonality between these proposed remedies is that they are based upon one or more of the following essential elements for success:

- Private sector service provision.
- A sustainable long-term funding mechanism.
- Public sector monitoring of public and contractor practices.
- Motivation of service user participation.

There are cause and effect interrelationships between all of the obstacles and their proposed remedies. Optimization of the chances for program success therefore requires simultaneous implementation of all of the proposed remedies.

Assessing the Applicability of Unbundling

There is unanimous agreement among the experts that contracting with a private entity is the preferred approach. With uniform consensus on public/private partnering as the preferred organizational model for service delivery, the key question that remains for the GOA is whether selection of one or more private entities works best. The answer requires evaluating

the impact of unbundling relative to bundling on the three other essential elements for success, which includes the following:

- Adequate funding.
- Public sector monitoring.
- Service user participation.

Provision of Adequate Funding--

The importance of developing a mechanism for generating adequate funding has been recognized. No matter what mechanism is chosen, broad support for long-term funding sustainability will increase with reductions in the annual funding requirement. For the purpose of evaluating the potential benefit of unbundling the question is, “Can unbundling reduce funding requirements?”

It has been proven that unbundling can reduce funding requirements through increased competition. Unbundling allows bidders that may not have the capabilities to finance and perform over a large service area to select those areas where they can be competitive and compete against other bidders. Unbundling also allows bidders with specialized skills the opportunity to compete for the performance of services within their realm of expertise.

For example, the bidder may have experience in the construction and operation of a landfill, but not the collection of residential waste. This bidder may not be qualified to make an offer on a bundled bid, but can make an offer if the services are unbundled. This is led to increased competition and lower fees.

Public Sector Monitoring of Public and Contractor Practices--

Many of the failures of the existing system can be attributed to the lack of enforcement of existing litter and dumping laws and minimal regulation of existing service providers. Comprehensive monitoring of public waste disposal practices, as well as private service provider performance has been recognized as critical for project success. Can unbundling improve monitoring and enforcement effectiveness?

Concerns have been raised that unbundling would make it more difficult for the GOA to manage and administer the new solid waste system. This concern should be offset by the savings that can be obtained by the added competition. However, the GOA could privatize the monitoring and management of the solid waste and public cleaning system. This is not uncommon and this method of management has proven very successful in the City of Lima, Peru.

Motivation of Service User Participation--

Household, small business, medical, and industrial waste generators have been discouraged from adopting responsible waste management practices due either to inconvenient or nonexistent environmentally responsible alternatives. Implementation of the Solid Waste and Public Clean-Up Project contract will result in convenient access to services and facilities for each of these major waste generator groups.

OVERVIEW OF UNBUNDLING GOVERNMENT UTILITY SERVICES

Due to the monopolistic nature of the service infrastructure, electric, water, and waste disposal utility services are provided to large numbers of consumers relying on one provider. Although the consumer may enter into a contract with the supplier, he/she has little control over the provider if services fail except by withholding payment.

Since consumers need a continuous supply of these services at an affordable rate, failure of supply becomes a public issue. In the past, government attempted to provide services to ensure continuity, to protect the consumer from monopoly pricing, and ensure equitable distribution. However, the attempts, in many instances such as experienced in the GOA, failed to provide the expected results. A brief review of these shortcomings suggests that increased private sector involvement has a greater potential for overcoming them.

Shortcomings of Government-Managed Services

Building a utility infrastructure network requires substantial capital investment for construction and maintenance. Governments borrow and finance with a commitment to service the debt over the long-term. The sunk cost normally is not recovered for a number of reasons including rate subsidies, politically motivated rate setting, and weak collection systems. Therefore, most government utility services often run in deficit and create substantial burdens on government treasuries.

Non-commercial rates and poor collection systems in the long-term result in insufficient funds for maintaining, upgrading, or renewing installations, leading to a vicious cycle of poor service quality and decreasing revenue. To solve this problem many governments, find themselves in the same situation as the GOA, enlisting the private sector to develop competitive service provision under a regulated regime.

Creating Market Competition

Competitive utility management approaches include concession agreements with one or more provider, leasing facilities, hiring management contractors, and employing a provider through service contracts. These contractual methods attempt to optimize competitive utility provision by “unbundling” of services to the greatest extent possible, so that a number of private entities may compete for each component of the service. In the case of Alexandria, vertical unbundling of solid waste management and public cleaning services into collection, transportation, processing, and disposal could allow each of these activities to be separately contracted.

Similarly, horizontal unbundling can be achieved demographically by subdividing a political jurisdiction and contracting with a separate contractor to provide identical service in each subdivision. In both cases, efficiency, performance, and tariff rate acceptability can be measured against the other provider. In cases where unbundling is not sought, competitive pricing can be achieved to a lesser extent by tendering the services more frequently to make sure that the incumbent’s cost proposal reflects fair market price. These options are potential tools for the GOA to better achieve its goal of balancing service needs with cost recovery capability.

Potential Benefits of Unbundling

The experience of governments around the globe has been that unbundling of utility services on a functional, geographic, or other basis can lead to significant improvement in service delivery with reduced funding requirements from the consumers. A closer look at the benefits suggest that unbundling might be particularly applicable to the current situation in the GOA as well as to other governorates in Egypt which may choose to follow the GOA model.

Improving Service Delivery--

Establishing competitive solid waste management and public cleaning services through unbundling benefits consumers by obtaining the desired services at the market price. For example, a contractor providing collection or disposal of solid waste under contract at a predetermined price is monitored to ensure that services are performed pursuant to clearly written contract specifications. The consumer is entitled to get service commensurate with the amount paid. Violations by the contractor are measured in terms of monetary damage to the GOA or its citizens and the contractor is penalized accordingly.

Setting Standards--The standard of service and efficiency can be measured by competitive service provision in any vertically unbundled service through comparison of the results with the service contract specifications. Alternatively, in a horizontally unbundled service (i.e., two or more providers in a governorate divided by districts), the standard of service may be measured by comparing efficiency in one district as a benchmark for the other sectors. Thus, the unbundled competitive service provision gives the highest levels of service for the money paid.

Oversight and Control--Any governorate venturing into private sector participation and unbundling of services should guard against private company non-performance through contract oversight and monitoring. In Bangkok, Thailand, residents were not happy with private sector services initially because their neighborhoods were not as clean as before. Investigation revealed in this case that the real problem was that residents were not willing to bring their refuse to a street corner container that was picked up at a specified time, expecting instead door-to-door collection as previously provided by the city at subsidized rates.

Reduced Funding Requirements --

Contracting for solid waste and public cleaning services holds greatest promise as a way of lowering cost and thereby reducing funding requirements. Even when only a small portion of a governorate is served under private contract, significant efficiencies may be achieved when the governorate monopoly over service delivery is eliminated. Obtaining lower service costs, while still achieving solid waste and cleaning objectives requires balancing the benefits of increased competition against the potential losses of economies of scale enjoyed by large scale or monopolistic service providers.

Increasing Competition--In a free market economy competition results in goods and services being more widely available at lower prices. Competition drives innovation and production efficiency. When more competitors vie to meet consumer demands, the

probability increases that ways will be found to produce goods or services more efficiently at a lower cost. Competition keeps prices down, provides consumer choices, and keeps the vendor in a market conscious mode. In a competitive environment the private sector is required to be efficient so as to continue making a profit and maintaining market position.

Maintaining Economies of Scale and Service Integration Savings--Experience suggests that increased competition alone should positively impact prices offered for the requested services. The decision to unbundle or not must also take into account additional factors that impact service costs, such as the following:

- Applicable economies of scale.
- The cost benefit of specialized equipment/experience and/or expertise.
- Savings from sharing resources among vertically integrated services.
- Utilization of local versus foreign suppliers and labor.
- The cost of capital.
- Existing infrastructure transition costs.
- Savings from systems coordination and/or integration.

Comprehensive evaluation of the impact of unbundling on funding requirements must take into account these potential impacts on service costs and funding requirements.

Protection from Service Interruption

The greatest potential flaw associated with provision of public services through a single public or private entity is voluntary or involuntary stoppage of service. In this case, cessation of services for any reason could leave the GOA and its constituents with little or no practical and/or immediate recourse for uninterrupted provision of services essential for protection of public health, safety, and the environment.

In addition to providing a real and immediate contingency, the ongoing competition inherent with any unbundling of services acts as a deterrent to service deterioration and/or non-performance. Knowledge that the customer, in this case the GOA, has real alternatives, significantly diminishes the viability of work stoppage as a means of redress of alleged grievances or differences over compliance with contract terms.

EVALUATION CRITERIA FOR UNBUNDLING

The lessons for the GOA and other governorates are that unbundling services on functional, geographic, or other appropriate bases can result in significant improvement in service delivery and at substantial cost savings to residents and businesses. Applicability in the GOA can be determined by assessing the impact of unbundling on the critical elements for success of the project, which include:

- Reducing funding requirements.
- Improving monitoring and enforcement effectiveness.
- Increasing use and effectiveness of services and facilities.

Thus, it is against these criteria that the impacts on functional services in potentially viable unbundling scenarios are evaluated in the subsequent sections.

EVALUATION OF POTENTIAL UNBUNDLING SCENARIOS

Three methods of unbundling have been selected for evaluation of their potential relative to a bundled contract award to achieve Solid Waste and Public Clean-Up Project goals. The methods selected include the following:

- Unbundling geographically.
- Unbundling by service function.
- Unbundling by waste generator.

Each may hold potential to reduce funding needs, improve monitoring and law enforcement, and/or increase the use and effectiveness of the improved services and facilities. The evaluation criteria discussed earlier are applied to all of the potentially viable unbundling scenarios in the sections that follow.

Unbundling Geographically

The GOA is divided into distinct Districts, which provides a convenient basis for unbundling geographically. With populations ranging from 400,000 to 900,000, some of these Districts are larger than many cities that are served by the international vendors submitting proposals. With the exception of Borg El-Arab and Gomrouk, each of the Districts is large enough to be an attractive business opportunity for waste management and/or cleaning service vendors. Under the District based scenarios, the contractor could provide all of the following services for a single District or groups of Districts:

- Domestic/commercial waste collection/transfer.
- Industrial waste collection.
- Mechanical and manual street sweeping.
- Beach cleaning.
- Cleaning of statues, fountains, memorials, tunnels, and bridges.

GOA Level Functional Services--

In conjunction with any geographically based scenario, medical waste collection and treatment, composting facility operation, dump closures, and sanitary landfill development and operation could still be provided on a GOA wide basis. Although no District contractor would be barred from being awarded one or all of these service contracts in addition to a District based contract, bidding for each would be open to other qualified contractors. Thus, geographic unbundling produces a hybrid that includes the unbundling of those individual service functions that are provided for the entire GOA. The viability of awarding contracts for each of these service functions separately is addressed in the Unbundling by Service Function section of this report.

Potential Geographic Scenarios--

To maintain the benefits that accrue from economies of scale and yet foster sustainable competition, potentially beneficial scenarios could include dividing the GOA into a minimum of two, and a maximum of three separately contracted service areas. If contracted separately, an example of potential District groupings could include the following:

- Two contracted service areas:
 - Montazah and Shark.
 - Wassat, Gomrouk, Gharb, Ameriya, and Borg ElArab.

- Three contract service areas:
 - Montazah.
 - Shark.
 - Wassat, Gomrouk, Gharb, Ameriya, and Borg ElArab.

The potential impact of geographically based unbundling on individual service elements of the cleanup project is assessed below.

Domestic/Commercial/Industrial Waste Collection Services—

The geographic unbundling scenarios group all of the waste collection services under the geographically awarded contracts. Evaluation of the impacts of doing so on the critical elements for success follow.

- **Can Unbundling Reduce Funding Requirements?** Review of the waste collection price tables submitted in the Tenders could reveal that the low price bidders for any of the waste collection services is not the overall service low bidder. In this case unbundling would allow the GOA to take advantage of the lowest technically acceptable prices for waste collection in each of the geographic subdivisions.

If the GOA decides to issue a new request for tenders, under this scenario the District contractors would be relieved of the obligation to provide bids for medical waste, composting, and sanitary landfill services. It is then possible that additional solid waste management firms would be qualified and invited to submit proposals. The resulting increase in competition could yield a more efficient/lower cost plan for providing all waste collection services, thus reducing annual funding requirements.

- **Are Economies of Scale or the Benefits of Service Integration Lost?** Division of waste collection services into two to three areas would reduce individual contractor collection requirements to 600 to 900 tons of household/commercial waste per day. This in turn will require a fleet of 35 to 50 collection vehicles per service area. An equivalent number of collection vehicles would be required for provision of industrial waste collection. Thus, in total, a contractor would be deploying a fleet of 70 to 100 trucks daily to meet all of the waste collection needs. Economies of scale that could be accrued at this level of resource deployment should not be significantly different

from those achievable on a GOA wide basis since collection vehicles are likely to be dispatched from geographically dispersed facilities in either case.

- **Can Unbundling Improve Monitoring and Enforcement Effectiveness?** While not a certainty, the ability to take advantage of a specialized collection contractor's expertise or to focus management and operational resources on a smaller geographic area, would appear to have the potential to more effectively overcome the past service problems that the GOA has deemed to be unacceptable. Having to compete with fewer Districts for the contractor's attention would provide the GOA monitors and contractor managers with an opportunity to expedite communication and responsiveness.

Enforcement of public littering and anti-dumping laws would not be affected by unbundling since the resources deployed would be the same.

- **Can Unbundling Increase Service Use and Effectiveness?** Providing collection of wastes at their source (household and small business) on a daily basis optimizes waste capture and eliminates the problems associated with the current waste pooling containers. If the GOA contracts with two or three contractors, rather than just one, neither the contractor's ability to execute, nor the user's ability to more conveniently participate in the positive manner desired is diminished. To the contrary, the ability to focus efforts in one-third to one-half, as opposed to the entire GOA, should expedite implementation of the strategy. Two or three contractors working on cleanup and/or elimination of waste pooling sites will produce visible results faster than a single contractor. There is every reason to believe that unbundling will either have a positive effect or no effect on increasing positive waste generator behavior and service delivery.

Mechanical/Manual Street Sweeping and Beach Cleaning--

Street sweeping and beach cleaning services are closely related to domestic and commercial waste collection functions in that much of the solid waste that is mismanaged by generators ends up either in the streets or on the beaches of the GOA. These circumstances dictate the integration of these services in any of the geographically based unbundling scenarios.

- **Can Unbundling Reduce Funding Requirements?** The results of the financial analysis of the individual service price tables may reveal that the lowest price technically acceptable provider of sweeping and beach cleaning services is not the same as the overall low cost provider. In either this or a similar case for waste collection, unbundling would allow the GOA to take advantage of a lower combined price for these two services by awarding geographically based contracts to the lowest priced contractor for each geographic area.

As described previously in the waste collection section, relief from having to provide the more highly specialized services opens the door to additional qualified service providers if the GOA were to decide that it was in its best interest to issue a new request for tenders in an unbundled form. An increased number of competitors

increases choice and the probability of finding a contractor with a more efficient/ lower cost plan for street sweeping and beach cleaning.

- **Are Economies of Scale or the Cost Benefits of Service Integration Lost?** Geographic unbundling as proposed into two to three service areas would result in individual contractor sweeping service areas being reduced from 935 km to a range of 105 to 589 km. While this represents a substantial difference in the scale of operations, the fact is, that even under the bundled scenario, sweeping services are likely to be deployed from strategically distributed sites across the GOA.

Multiple centers located closer to the work area allow mechanical and manual sweepers to be productive a higher percentage of the workday. Any increased cost of constructing multiple equipment maintenance and running centers will be offset by work productivity gains. The total resources and funding required in the aggregate should be largely similar in the bundled and unbundled scenarios.

While data is not available to quantify the distribution of beach cleaning needs across District based unbundled scenarios, the productivity gains of multiple deployment centers described for sweeping applies. Beach cleaning equipment and personnel will likely be housed and dispatched from strategically located facilities both under the bundled and unbundled scenarios to minimize travel and maximize productivity.

- **Can Unbundling Improve Monitoring and Enforcement Effectiveness?** The appearance of streets and beaches is critical to the image of the GOA and its ability to expand the tourism industry. Therefore, contractor compliance with the performance specifications contained in the contract for street sweeping and beach cleaning is of the highest priority.

Maintenance of streets and beach cleanliness at the desired level cannot be accomplished through the efforts of the contractor alone. The current littering practices of pedestrians, shoppers, and merchants must be reduced in order to achieve cleanliness objectives. The strategic placement of new, easier to use litter receptacles will be the first step. Optimization of their use will require comprehensive education and enforcement efforts. Education efforts will be designed and delivered from the GOA level.

Enforcement of existing littering and anti-dumping laws should be a responsibility of the GOA cleanup project monitors. Since the number of monitors will be identical for both the bundled and unbundled scenarios, there is reason to believe that the monitoring of contractor compliance with contract terms or of the public's use of litter receptacles will be equally effective in either case.

- **Can Unbundling Increase Service Use and Effectiveness?** The contractor's ability to comply with performance specifications will be dependent upon reducing litter at the source. The solid waste and public cleaning project contains several initiatives that have the potential to decrease littering of streets and beaches including the following:

- Replacement of waste pooling sites with door-to-door service.
- Placement of additional waste pooling containers where door-to-door residential waste collection service is not feasible.
- Strategic placement of attractive and user-friendly litter baskets.
- An education campaign to promote positive waste handling behavior.
- Enforcement of laws that prohibit littering and dumping.

Service should be positively impacted through the use of multiple contractors. Competition between two or three contractors gives each of them the added incentive to expedite implementation and promote the use of litter baskets to “best” their peers. The effectiveness of the service should also improve due to the ability of each contractor to focus on smaller geographic areas.

Cleaning of Statues, Fountains, Monuments, Bridges, and Tunnels--

The cleanliness of these public properties is of special interest to District level governments, residents, and businesses. Thus, their inclusion with the other District-based services is justified by facilitated compliance monitoring and improved contractor accountability.

- **Can Unbundling Reduce Funding Requirements?** Similarly to the previously described cases for waste collection and sweeping, comparison of the individual price tables may reveal that when the GOA wide service functions are separated, a lower combined price for these geographically based services is attainable. If unbundled, these services could then be awarded to the contractor(s) that offer the lowest technically acceptable prices for these services in the subdivided contract areas.

The cleaning functions specified are not services typically offered by the solid waste management vendors pre-qualified for submittal of proposals for the Solid Waste and Public Clean-up Project. Although a GOA decision to issue a new request for tenders based on division of this service into two to three service areas could result in more competition, firms specializing in cleaning services would still be precluded. Thus, there is no obvious reason to conclude that public cleaning price bids would be lower

- **Are Economies of Scale or the Benefits of Service Integration Lost?** Cleaning services will be less capital intensive than waste collection and mechanized sweeping. The preponderance of variable (labor) as opposed to fixed (equipment) costs minimizes the potential for economies of scale. However, division of the cleaning service scope of services by a factor of two or three may mean that some specialized equipment that might be economically justified in the bundled scenario may not be affordable.

The equipment, supplies, and technical skills to be applied in the cleaning service areas are not readily transferable to any of the other service functions. The cleaning

operations are likely to resemble a standalone service under any bundled or unbundled scenario, and thus there is little opportunity for cost savings from integration.

- **Can Unbundling Improve Monitoring and Enforcement Effectiveness?** The advantage of geographic unbundling is that individual cleaning service contractors can concentrate efforts on a smaller number of public facilities in a tighter geographic area. This provides an opportunity for closer oversight by GOA monitors and more direct accountability to individual districts. Monitoring of detrimental or unlawful public acts committed against these public facilities should not be effected.
- **Can Unbundling Increase Use and Effectiveness of Services?** A potential disadvantage associated with subdividing public facility cleaning is the possibility that capital-intensive mechanical equipment that could improve performance may not be justified from an economic standpoint. On the other hand, competition between two or three contractors, each trying to make a better impression on the GOA, could have a positive impact on service effectiveness.

Unbundling by Service Function

A review of successful experiences reveals that attainment of the lowest fair market price for public services requires the contracting agency to perform the following:

- Define the service need in a way that matches existing business practices.
- Separate and divide service functions to maximize the number of competitors.

The scope of services requested in the tender documents does not match current solid waste and cleaning/maintenance service business practices. While vertically integrated international waste management vendors offer services for collection, transportation, processing, recovery, and disposal of wastes, few offer street sweeping and beach cleaning services, and fewer still include, statute, memorial, bridge, or tunnel washing/cleaning. Moreover, medical waste collection and treatment are specialized services that many typically do not have the experience or expertise to offer. Finally, public facility cleaning and maintenance vendors typically do not offer expertise or experience in solid waste management.

To match industry practices, unbundling some of the functional services in the tender documents are worthy of consideration. Service function unbundling could achieve several objectives including the following:

- Increasing the number of qualified competitors.
- Reducing funding requirements by taking advantage of increased competition.
- Improving the quality of service.
- Providing a better benchmark of service fair market value.

- Creating and sustaining local competition for reducing funding needs over the long term.

As functional services, solid waste management firms do not always offer the following. However, firms without core solid waste collection expertise can provide those services. The following services deserve consideration for unbundling:

- Medical waste collection and treatment.
- Cleaning of statues, fountains, monuments, bridges, and tunnels.
- Rehabilitation, outfitting, and operating composting facilities.
- Establishment, outfitting, and operation of the sanitary landfill.

Medical Waste Collection and Treatment--

As recognized in the tender documents, both the collection and treatment of medical wastes are services that require specialized skills, training, equipment, and operational experience to guarantee protection of worker safety and public health. Few solid waste management firms have the experience to meet this prerequisite, thus making these services potential candidates for unbundling and thereby allowing procurement of a more experienced contractor.

- **Can Unbundling Reduce Funding Requirements?** The financial committee review of the individual service price tables may reveal that the contractors offering the lowest technically acceptable bid prices for medical waste services and overall service are not the same. Unbundling would allow selection of the contractor with the lowest medical waste service price and result in reduced funding requirements.

Firms that have demonstrated experience in the collection and treatment of medical wastes often do not offer the other waste or cleaning related services required by the tender documents. Thus, unless unbundled and rebid, the opportunity to identify and procure the optimal combination of performance and price is lost. Separate procurement for this service through issuance of a new request for tenders should increase the number of qualified competitors and increase the probability of obtaining acceptable service at the fair market price.

- **Are Economies of Scale or the Cost Benefits of Service Integration Lost?** Both the collection and treatment operations will utilize equipment, fixed facilities, and personnel that cannot be readily integrated with any of the other service functions. The potential economic benefit from any operational synergies is negligible. Medical waste collection equipment cannot be used for collection of domestic, commercial, or industrial wastes. Truck and collection crews will be dispatched and routed independently from other operations. The treatment center has the same functional and operational limitations. The fixed facilities, equipment, administration, and technical staff cannot be readily transferred or used in the performance of any other services.
- **Can Unbundling Improve Monitoring and Enforcement?** The GOA medical waste service monitors will be given responsibility for determining the following:

- If generators comply with best handling and storage practices and applicable local and Ministry of Health regulations.
- If the medical waste collection contractor complies with contract specifications and all other applicable local and national regulations.
- If the generators and medical waste service contractor are fulfilling all of their waste tracking system obligations.

Since the number of monitors will be identical for the bundled and unbundled scenarios, unbundling will have no impact on their ability to monitor either the medical waste generators or contractors.

- **Can Unbundling Increase Service Use and Effectiveness?** Compliance with contract specifications and optimization of communication with generators and GOA monitors is facilitated by provision of medical waste services by a specialized and separately contracted vendor. Such a contractor has the luxury of focusing all management and operational resources on optimizing medical waste service quality without any potential distractions from other service responsibilities.

By unbundling medical waste collection and treatment from other solid waste and cleaning services, the GOA is free to select the contractor that submits the most technically acceptable plan for handling of medical wastes. The bundled procurement model forces the GOA to select the contractor submitting the lowest overall service price, even if it includes an inferior medical waste services plan.

If the GOA chooses to issue a separate request for tenders for these services, the increase in the number and overall quality of competitors could yield proposals with more potential to improve the safety and effectiveness of medical waste collection and treatment services.

Rehabilitating, Outfitting, and Operating Composting Facilities--

As recognized in the tender documents, the required composting facility service requires a firm experienced in construction, operation, and marketing. Few solid waste management firms have the experience to meet this prerequisite, thus making these services potential candidates for unbundling and thereby allowing procurement of a more experienced contractor.

- **Can Unbundling Reduce Funding Requirements?** In the likely case where the lowest technically acceptable overall price bid does not include the lowest price for composting facility operation, funding requirements could be reduced by awarding the composting facility operation to the contractor with the lowest technically acceptable price.

Lower costs are attainable if unbundling results in more competition. Few solid waste management firms have adequate expertise in the design, construction, and operation of composting facilities. On the other hand there are many firms that specialize in

composting, but have been precluded from bidding because they do not offer all of the services required in the tender. Unbundling of the rehabilitation, outfitting, and operation of the composting facilities would allow these firms to compete, thus increasing competition and identification of the fair market price for the level of performance specified.

- **Are Economies of Scale or the Cost Benefits of Integration Lost?** The equipment, technical and management skills, and labor dedicated to the composting facilities are not likely to be shared with any other functional service area. Only at the highest level of management, the contractor's GOA project manager, can a case be made for allocating overall Solid Waste and Public Clean-Up Project cost to this function. While there may be benefits to internal coordination of the supply needs of each of these facilities with an in-house supplier, this same coordination can also be achieved through incorporation of the appropriate language in the contract terms of separate contractors as well.
- **Can Unbundling Improve Monitoring and Enforcement?** The monitoring plan specifies that one GOA monitor will be assigned to each of the three composting facilities. Operation of the composting facilities by a specialized contractor should have no impact on monitoring effectiveness.
- **Can Unbundling Increase Service Use and Effectiveness?** As pointed out earlier, not all vertically integrated waste management firms can boast of a wealth of successful composting experience. To the contrary, the majority of successful worldwide experience lies with firms that have specialized in the research and development of optimal composting techniques. Thus, inclusion of these firms through unbundling has the potential to result in the procurement of the composting expertise best able to optimize the use and effectiveness of the facilities by maximizing recovery of materials and reducing disposal needs.

Establishment, Outfitting, and Operation of the Sanitary Landfill--

Most vertically integrated solid waste management firms have considerable experience in the development and operation of sanitary landfills. There is potential for obtaining improved service performance at a lower price by allowing specialized landfill contractors to compete to provide the sanitary landfill services.

- **Can Unbundling Reduce Funding Requirements?** The firm that offers the most technically acceptable and/or least cost waste collection and street sweeping may not have the most expertise or offer the most efficient method of landfill design, development, and operation. Unbundling the landfill related services, opens up the competition to firms that either specialize in landfill operation or could enter the business based upon their experience in related excavation and/or landfilling activities. An example would be The Arab Contractors or similar Egyptian companies whose construction expertise could be supplemented by professionals with expertise in landfill design and operation. In either case, the increased competition could yield technically acceptable proposals at lower prices that would reduce GOA funding requirements.

- **Are Economies of Scale or Benefits of Service Integration Lost?** There are few efficiencies or economies of scale to be gained by the bundling of landfill services with other solid waste and cleaning services. The types of fixed facilities, equipment, technical, administrative, and labor skills differ significantly. Whereas waste collection requires conventional truck driving and repair skills, landfill operations require highly skilled equipment operators and heavy-duty equipment mechanics. Capital development and operational costs associated with the sanitary landfills are not reduced through integration with other waste related services.
- **Can Unbundling Improve Monitoring and Enforcement Effectiveness?** The monitoring plan recommends that a GOA monitor be onsite during all hours that the landfill is open. Whether a full-service or specialized landfill contractor operates the landfill should have no impact on the monitoring and enforcement effectiveness. However, response to GOA requests for remedial measures to maintain compliance with contract terms should be expedited by the specialty contractor's ability to focus on a single operation.
- **Can Unbundling Increase Service Use and Effectiveness?** In any situation where a landfill operator also offers waste hauling services there is a potential for the contractor to use the landfill for his economic advantage. In this case a full service contractor collecting waste from outside the GOA could dispose of those wastes at the GOA's expense. To protect the value of its significant investment, the GOA will want to ensure that no waste from outside the GOA is accepted unless a fee is charged which allows the GOA to recover its expenses. This, as much as any other, is the reason that it is a good policy to elect separate contractors for collection and disposal services.

Since unbundling provides the opportunity to select the contractor based solely on the technical acceptability of the landfill design and operational plan, the use and effectiveness of the landfill service should be significantly increased. By unbundling the landfill from the rest of the cleanup services, the GOA can protect its investment, reduce funding needs and choose the contractor with the best construction and operational plan.

Unbundling by Waste Generator

The two previous unbundling methodologies have been reviewed and evaluated based upon the assumption that GOA administered collection of funds from electrical service users would provide the primary means of cost recovery. This third, and final proposed unbundling methodology assumes that total funding is insufficient to pay for all Solid Waste and Public Clean-Up Project services, or an equitable means of assessing all service users is not found.

Either of the above scenarios produces a situation for unbundling and separately funding services currently proposed for specific categories of waste generators. These would include medical waste collection and treatment and industrial waste collection and disposal. Since the mechanism for recovering the costs of managing wastes from domestic/commercial

generators has already been established and those services are the core of the full service contract, unbundling on this basis is not applicable.

Industrial Waste Collection--

The method for recovery of the costs of household and small commercial business wastes is based on the following premises:

- There is a correlation between electrical power usage and waste generation.
- Quantities generated are relatively similar or at least in the same order of magnitude.

Neither of these premises is applicable to industrial waste generators. The types, physical, and chemical characteristics, and volumes of waste generated by individual industries vary significantly. Cost recovery based on electrical power usage is not a viable alternative. While other parameters such as type of industry, number of employees, or plant size offer potentially usable surrogates for estimating waste generation rates, development of a credible database to support equitable fee assessments would be impractical.

A logical alternative to consider is to remove the GOA from the process of recovery of costs associated with industrial waste collection and disposal. The GOA objective of ensuring that industrial wastes are in fact collected and disposed in more environmentally sound manner could still be achieved through GOA administration of an industrial waste collection franchise.

Using a franchise scenario, one or more qualified contractors would be granted exclusive rights to provide industrial waste collection service. In return, the franchisee would pay the GOA an annual fee that would be used to monitor industry use and contractor provision of the service.

- **Can Unbundling Reduce Funding Requirements?** While it is uncertain whether provision of industrial waste collection through a franchise would lower costs, it provides for more practical and equitable cost allocation and recovery. This unbundling does have the potential to substantially reduce the administrative costs to the GOA that it would incur if its responsible for developing, implementing, and administering a cost recovery program.

The financial review of the individual service price tables that have been submitted may reveal that the low price bids for industrial waste collection and overall service are offered by different bidders. The opportunity then exists to negotiate with the low bidder for industrial waste collection to provide that service under franchise or other separate contract conditions.

If a decision is made to unbundle industrial waste collection and solicit requests for proposals on a franchise basis, it is likely that the number, quality, and competitiveness of responses will increase. Such circumstances would be favorable for negotiating a lower price for industrial waste collection.

- **Can Unbundling Improve Monitoring and Enforcement Effectiveness?** Whether included in the GOA's full service contract or provided via a franchise as described above, GOA responsibility for monitoring contractor performance would remain unchanged. The franchised contractor(s) and the industrial waste generators would be held to the same standards under either scenario.
- **Can Unbundling Increase Service Use and Effectiveness?** Separately contracted industrial waste collection service has the potential to increase service use and effectiveness for several reasons including the following:
 - Unbundling opens competition to firms with specialized expertise that had been precluded from bidding on the full service scope of work.
 - The industrial waste contractor will be highly motivated to expedite solicitation and procurement of industrial customers since they will provide the only source of income.
 - Unencumbered by multiple work preparation and implementation plans, the contractor will be able to concentrate all resources on the accomplishment of only one objective; providing efficient collection of industrial wastes in accordance with the terms of the franchise agreement.
 - The GOA review and approval of tariffs on an annual basis will ensure that the contractor is operating efficiently and that industries are paying a fair price for the level of service received.

Medical Waste Collection and Treatment--

Approximately 120 medical facilities in the GOA generate discards that contain infectious pathogens. Previous studies estimate that between 6 and 10 metric tons of medical waste are generated each day. While some portion is being treated through incineration, the performance of these facilities is uncertain and the majority is assumed to remain untreated. There is general agreement on the need for strict regulation and management of these wastes to protect health care workers, waste handlers, and the public at large.

- **Can Unbundling Reduce Funding Requirements?** Reduction in GOA funding needs is inherent with selection of this unbundling scenario. The cost of service provided by a franchised contractor would be borne directly by the generators. However, unbundling does have the potential to reduce the costs to the generators. It would allow the GOA to negotiate a franchise with the firm that has submitted the lowest technically acceptable price from the tenders already received. Alternatively, the GOA could issue a separate request for tenders. This would open the competition to any firm with sufficient expertise in medical waste collection and treatment, removing the existing requirement of full service capabilities. Exercising this option should result in more competition and logically result in more competitive pricing.
- **Can Unbundling Improve Monitoring and Enforcement Effectiveness?** Whether provided as part of the full service contract or by a separate franchisee, it is assumed that medical waste collection and treatment would be allocated the same number of

GOA monitors. Therefore, effectiveness of medical waste generator and service contractor monitoring should not be affected.

From a practical standpoint, the GOA would have more leverage over a specialty service franchisee than a full service contractor. For example, in a worst-case scenario of total work stoppage, the consequences of contract termination would be far less catastrophic with the franchisee. Knowing the tolerance threshold for noncompliance would motivate the franchisee to maintain a higher level of performance.

- **Can Unbundling Increase Service Use and Effectiveness?** Unbundling for the primary purpose of reducing GOA funding requirements can positively impact service use and effectiveness in several ways. These include, but are not limited to, the following:
 - The selection criteria will be medical waste service work plan/price rather than overall service plan/price.
 - Service users, aware of exactly what they are paying, will have higher expectations.
 - A franchised medical waste service provider can concentrate all resources on a single activity.
 - A franchised medical waste service provider will have the incentive to obtain and retain every medical waste facility as a customer since they will provide the only source of income.
 - GOA officials and monitors will have higher expectations.

SUMMARY

The unbundling of solid waste and cleaning services is not provided for in the tender documents. The analysis of the individual service price tables may reveal that no single tenderer has offered the lowest price for each of the individual services. A second scenario that may develop during the financial evaluation would be that the GOA does not have sufficient funding for all of the services desired. In this case, unbundling may have the potential to reduce funding requirements for some services, making other services financially viable.

Three methods of unbundling were presented in the report. They include geographic area, service function, and waste generator methods. One or all of these methods may be applicable to the GOA and could result in reduced funding requirements, improved monitoring and enforcement, increased use by citizens, and increased effectiveness of services and facilities.

The GOA may not feel comfortable with the unbundling of services for this initial attempt at privatization of solid waste and public cleaning services. Once the monitoring system is in

place and the term of the initial contract has expired, the GOA may want to consider unbundling for the next contract.