

TOOLKIT

**SOCIAL ASSESSMENT AND PUBLIC PARTICIPATION
IN MUNICIPAL SOLID WASTE MANAGEMENT**

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Acknowledgments

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PART ONE

INTRODUCTION AND BACKGROUND

1. INTRODUCTION

Planning effective and sustainable investments in municipal solid waste management (MSWM)¹ systems requires an understanding of the needs and preferences of a wide range of stakeholders in the service delivery, costs, and corresponding environmental and social impacts. Because solid waste management is highly visible and affects residents' perception of government functionality, government and its political representatives are also stakeholders. The specific local and country context defines the MSWM needs of a society, as well as the degree to which the users of services identify with, take ownership of, and contribute either in cash or in-kind to its systems and facilities. To ensure public ownership and support, the planners of any investment in a new or improved MSWM system will need to involve all important stakeholders having a role in solid waste generation, collection, re-use, transportation, and/or disposal.

As new MSWM systems are being designed or existing ones modified, stakeholders will need to provide feedback on issues related to the provision and use of solid waste services as well as the manufacture, distribution, and marketing of related goods. No less important is feedback concerning financial arrangements, including fee setting and fee collection. Those managing the system should ensure that investments address users' objectives and expectations. For example,

¹ **Municipal Solid Waste Management (MSWM)** refers to the collection, transfer, treatment, recycling, resource recovery, and disposal of solid waste generated in urban areas. MSWM is a major responsibility of local government and a complex service involving appropriate organizational, technical, and managerial capacity and cooperation between numerous stakeholders in both the private and public sectors. MSWM encompasses: refuse storage and collection, street and drain cleaning, solid waste transfer and transport, solid waste disposal, and resource recovery. MSWM also involves vehicle maintenance repair; financial management; administrative activities such as routing, scheduling, and record keeping; staff management and development, and strategic MSWM planning. Generally, these facilities fall within the jurisdiction of the municipality, but the private sector often manages some domestic refuse and the wastes from large-scale industries, hospitals, and large office complexes.

Municipal Solid Waste (MSW) refers to wastes arising from domestic, commercial, industrial, and institutional activities in an urban area. Municipal solid wastes encompass all those wastes that are neither wastewater discharges nor atmospheric emissions. A solid waste may be semi-solid, solid, or even a liquid, and is generally perceived by society as lying within the responsibility of the municipality to collect and dispose of it. Categories of municipal solid waste include: household garbage and rubbish, yard waste, commercial refuse, institutional refuse, construction and demolition debris, street cleaning and maintenance refuse, dead animals, bulky wastes, abandoned vehicles, and sanitation residues.

facilities need to be appropriately sited and transport routes carefully chosen. In addition, disadvantaged social groups and poor neighborhoods should not be adversely affected by or excluded from the new or improved solid waste services.

The management of solid waste, especially in large urban settings, affects quality of life in many ways and significantly affects the social desirability of city segments, thus influencing the location of employment opportunities and enterprises as well as property values and the social fabric. Because the social fabric has a critical impact on the design and operation of MSWM systems, and in turn is affected by them, social considerations are central to their design and implementation. Social assessment (SA) is an important process through which these considerations can be incorporated in both the design and implementation of the MSWM systems.²

Objectives

This toolkit provides guidance to central, municipal, and private sector agencies in conducting an SA and ensuring appropriate levels of public participation in the planning and implementation of a MSWM investment. The emphasis in the toolkit is on both developing countries and transitional economies. The guidance is directed at project managers responsible for ensuring quality in the design and implementation of solid waste management investments. The toolkit also is intended to provide guidance to social scientists and public participation professionals responsible for carrying out social analysis and/or public participation activities in MSWM.

Organization

The toolkit is presented in two parts. Part One includes two chapters:

- Chapter 1-2 presents a brief introduction to the tools and clarifies terms used throughout the document, and

Part Two includes four chapters:

- Chapter 1 presents definitions and objectives of a Social Assessment (SA) and provides guidance for carrying out SAs for MSWM investments.³ It discusses social development issues associated with MSWM with a focus on public input to the planning of various aspects of MSWM; and describes tools and methods used in designing SA for MSWM initiatives;

² According to the World Bank, a SA refers to the “analysis that a Borrower undertakes during project design to assess social feasibility of a project” (Social Analysis Sourcebook: Incorporating Social Dimensions into Bank-Supported Project, The World Bank, 2003).

³ SA also incorporates a range of instruments that can be used not only to obtain the necessary social input and identify appropriate mechanisms for community participation in the design and implementation of these systems, but to ensure that vulnerable social groups are not excluded from the benefits of investments and system improvements. Equally important is the need to ensure that social groups and communities are not adversely affected by relevant decisions whether they relate to factors such as changes in service fees, expansion of service boundaries, and/or inclusion/exclusion of activities of the informal sector.

- Chapter 2 provides guidance for carrying out contingent valuation studies which focuses on issues of poverty, affordability, and willingness- to-pay;
- Chapter 3 provides guidance for planning and carrying out public participation and consultation in the facility siting process; and
- Chapter 4 presents guidance for organizing waste pickers or otherwise improving the conditions of those who derive an important part of their income from waste picking or informal recycling.

The toolkit also contains three annexes. Annex 1 provides an example of a generic terms of reference for an SA. Annex 2 contains samples of household survey questionnaires. Annex 3 contains examples of focus group discussion guides that have been used for SAs and BAs carried out in selected countries. In addition, individual chapters may include appendices to provide relevant examples where relevant.

2. DEFINITIONS

The following are common social development terms used throughout this document.

Social Assessment (SA)

SA is an instrument that enables a municipal agency (or Borrower, in the case of an International Financial Institution (IFI) financed MSWM investment) to examine sustainability of the project and to incorporate measures to enhance the project's sustainability. SA involves examining the project's socio-cultural, institutional, historical and political context, and stakeholders' views and priorities. In the context of an investment in MSWM, the SA is a type of feasibility analysis that complements economic, financial, technical, and environmental analysis. It can be used to identify important stakeholders and analyze relationships among them. Because development involves behavior changes, the SA establishes patterns of existing behavior and creates social engineering tools to provide incentives for desired changes. The SA also can be used to identify household solid waste practices and problems, assess user needs and service preferences, determine current payments for solid waste services, and assess willingness and ability to pay for an improved MSWM system.

Because MSWM systems create significant opportunities for stakeholder involvement, the SA establishes a framework for public participation appropriate to local conditions to help reach consensus on many aspects of MSWM, including proposed facility siting. MSWM systems receive formal and informal feedback from a range of stakeholders which need to be incorporated into the design and operation of MSWM investments. While relevant expertise is needed to monitor engineering, financial, and other technical aspects, there also is a need to measure development effectiveness of programs/projects to ensure that the intended benefits are appropriately targeted and that vulnerable social groups are not excluded. The SA can thus help identify social development monitoring indicators and participatory procedures to assess the social impacts of MSWM investments.

Social Analysis

Social analysis is undertaken in connection with a lending program to determine the suitability of programs or projects proposed for international financial institution (IFI) financing. Social analysis enables the IFI to assess whether the proposed program or operation is likely to meet its social development objectives and to recommend measures to help meet them. Social analysis uses five "entry points" or dimensions of inquiry including: social diversity and gender, institutions, rules and behavior, stakeholders, participation, and social risk.

Community Participation

Community participation in MSWM refers to a range of activities that members of a beneficiary community can do to assist in planning and/or implementing a solid waste

management project. Strong community organizations may be able to provide solid waste collection services through self-help approaches, contracting with private enterprises, or establishing collectives to perform the service. Such direct participation of the community is generally limited to activities associated with primary collection of domestic refuse. Examples of some of the most common roles that communities could undertake are:

- Managing waste within the household and removing them from the premises;
- Reducing waste production and facilitating recovery for the purpose of recycling;
- Keeping public areas around the neighborhood clean;
- Supporting and/or participating in public projects intended to improve solid waste management;
- Supplying “watchdogs” for the neighborhood and the city at large;
- Providing input to solid waste facility siting decisions;
- Participating in the preparation of strategic solid waste management plans;
- Providing public education for raising awareness about issues and problems of solid waste management, including health education, environmental health, and attitudes towards wastes and waste workers; and
- Sponsoring or participating in special campaigns, competitions to raise the profile of solid waste management.

Beneficiary Assessment (BA)

BA is a qualitative research tool involving systematic consultation with project beneficiaries and other stakeholders to and obtains their views on a planned or ongoing intervention. BAs can be used to help beneficiaries identify MSWM investments, signal any potential constraints to their participation, and obtain feedback on reactions to an intervention during implementation. Where the broader social development issues have already been analyzed through an SA, and where the needs and interests of key stakeholders have been identified, a BA can be used to identify any factors that might make it difficult to generate intended benefits. The benefits of an investment could be maximized by determining specific measures that should be integrated into the system to ensure ownership and ultimately more effective MSWM than would otherwise be possible. Some consider BAs as a component of the SA, one that focuses primarily on the beneficiaries among all other stakeholder groups. Others, for example, Salmen (1995), views the BA as a reliable qualitative, in-depth source of information on the socio-cultural conditions of the beneficiary population. While all SAs incorporate BAs, the reverse is not the case.

Contingent Valuation or Willingness to Pay Studies

Contingent valuation is a type of economic analysis that helps to ascertain whether the populations who will be the beneficiaries or recipients of a public service value that service enough to justify its cost. In the case of solid waste services, the goal of the economic analysis is to identify whether the households served would collectively be willing to pay enough of their own money to finance the costs of the service.

Conflict Resolution

When participatory processes bring stakeholders of different power and interests together around development work, both apparent and latent conflicts are often at issue. MSWM investments can create conflicts among many different parties and require external assistance for their solution. For example, communities may object to the siting of a landfill, or may object to the location of transfer stations or even to the transportation of the waste through certain routes. Thus, to avoid conflicts, public participation in facility siting is of critical importance (see Chapter 3).⁴ Similarly, waste-related concerns created by such sources as workplaces, artisan shops, and restaurants also create high levels of conflict between communities and governments. Conflict resolution techniques seek to involve the stakeholders in a process, based on improved communication, to address differences in a constructive way. Conflict resolution specialists focus on helping stakeholders: describe their key concerns and identify common interests that will motivate them to work together; undertake joint problem-solving and suggest specific steps for organizing meaningful decision making processes; and work together to design creative solutions and make commitments to agreements reached. Conflict resolution is a multidisciplinary field that draws on insights from applied mathematics (game theory), psychology, communication studies, ethics, planning, law, and political science.

Social Impact Monitoring

MSWM investments often are justified on the basis of their meeting people's needs; improving the living conditions of poorer communities and the working conditions of waste management workers; and improving incomes by encouraging re-use, waste reduction, and recycling. Thus, it is important that development effectiveness is demonstrated, and if necessary, measures are taken to improve results. Social impact monitoring of projects provides critical information on results on the ground, and shows whether theoretical outcomes are indeed achieved. Many development initiatives are justified on the assumption that they will change people's lives for the better. It is therefore important to establish social impact monitoring to ascertain whether or not this is the case. To do so would usually require reliable baseline

⁴ Inadequate public participation has resulted in the cancellation of the MSWM project in Antalya (Turkey). After a Bank-financed seminar on Environmental Conflict Resolution that was organized in Antalya, a local NGO (Umut Foundation) specialized in conflict resolution was recruited to mediate between the affected communities and the local government. After 18 months, the conflict was resolved through a joint selection of an alternative facility site.

information. When baseline data are not available during project preparation, they can be included among the first steps of a monitoring and evaluation framework to be established for the project.

Participatory Monitoring and Evaluation

It is a collaborative process that involves stakeholders at different levels working together to assess a project or policy, and take any corrective action required. This joint problem-solving includes men and women at the community level; intermediary organizations, including NGOs; private sector businesses involved in the project; and government staff at all levels. Often, impact monitoring includes both systematic and qualitative information. While confirming information gathered through qualitative techniques such as focus group discussions, as “participatory” and characterize systematic information as “non-participatory” is not particularly useful, the development community has largely agreed on the use of this terminology. Nonetheless, it is important that local stakeholders identify problems, collect and analyze information, generate recommendations, and implement change on their own. Monitoring should not be left exclusively to external donor agencies.

PART TWO

TOOLS

1. SOCIAL ASSESSMENT

Introduction

This chapter of the toolkit examines the role of social assessment (SA) in planning and implementing new or improved municipal solid waste management (MSWM) systems and provides guidance on how to incorporate SA into the planning and implementation of MSWM investments in developing and transitional economies. The chapter: (a) defines SA and its objectives, (b) describes the basic steps and methodologies used in carrying out an SA for MSWM investments, and (c) provides information on the resources required for carrying out effective SA, including skills, budget, and timing.

What Are the Facets and Phases of Social Assessment?

According to the World Bank, SA is the instrument the Borrower uses to analyze social issues and solicit stakeholder views for the design of Bank-supporting project. SA is a type of social analysis that is undertaken as a part of the project design, often continued during implementation. SA helps to make the project responsive to social development concerns and assists the Borrower in reaching the vulnerable and the poor so as to ensure that the project's objectives are acceptable to the intended beneficiaries. SA helps make the project responsive to social development concerns, by seeking to enhance benefits for the poor and vulnerable groups while minimizing or mitigating risk and adverse impacts. SA "is made up of analytical, process, and operational elements, combining: (a) the analysis of context and social issues with (b) a participatory process of stakeholder consultations and involvement, to provide (c) operational guidance on developing a project design, implementation, and monitoring and evaluation (M&E) framework"(Social Analysis Sourcebook, The World Bank, 2003).

According to the World Bank (2003), the ideal SA:

- Facilitates the process through which the Borrower better understands social organization and cultural systems, as well as institutional, historical, and political contexts in order to ensure the quality of investment design and success during implementation;
- Provides means to enhance equality, strengthen social inclusion and cohesion, promote transparent governance and empower the poor and the vulnerable in project design and/or implementation.
- Constitutes a mechanism to identify the opportunities, constraints, impacts, and social risks associated with policy and project design;
- Provides a framework for dialogue on development priorities among social groups, civil society, different levels of government and other stakeholders; and

- Uses an approach to identify and mitigate the potential social risks, including adverse social impacts.

Five Entry Points of Inquiry of Social Assessment

SA is an analytical tool that uses five “entry points” or dimensions of inquiry including: social diversity and gender; institutions, rules and behavior; stakeholders; participation; and social risk. SA should be initiated early in the project-planning process to help define the specific beneficiaries of an investment and the mechanisms through which intended beneficiaries can be targeted. In the context of MSWM, the five “entry points” of inquiry for an SA include the following.

Social Diversity and Gender

SA examines the social organization of the population, based on the statutes ascribed to them at birth (ethnicity, clan, gender, locality, class, and language) as well as other identity chosen or achieved. Gender analysis focuses on understanding and documenting the differences in roles, activities, needs, and opportunities available to people according to their gender. In MSWM, this analysis examines the roles of women and men in both production and management of municipal solid waste and attempts to understand how changes in such roles may produce beneficial or detrimental effects. The issues addressed include practical gender needs such as the determination of waste collection times and points; strategic gender needs such as the regulatory framework that govern women’s participation in SWM programs; intra-household dynamics or the likely effects of development changes on the interdependent relationships of family members; and inter-household relationships or the affects of development on community labor exchanges, the flow of goods and other survival coping mechanisms. Gender analysis can be seen as a tool, a “lens through which a project can take on new dimensions. Looking through the gender lens, muddy issues can become clear and intractable problems can be seen in a new and fruitful light” (UWEP 1999).

Institutions, Rules, and Behavior

SA examines the groups’ characteristics, intra-group and inter-group relationships, and the relationships of those groups with private and public institutions. It also assesses the norms, values, and behavior that have been institutionalized through those relationships, both formally and informally. Understanding the relationship between organizations and institutions is critical because often development interventions depend for their implementation on institutional change. Institutions are commonly accepted code or rules that govern or influence behavior and that allow organizations to interact. Institutions are also thought as a form of social capital that reflects how relationships between people enhance those people’s ability to get things done.

Stakeholders

Stakeholders include the various organizations, groups and individuals who have an interest or a stake in the project. Stakeholder analysis is closely linked to the identification of social development issues and constitutes an important starting point for other participatory work. It is used to acquire an understanding of the power relationships as well as the influence and interests of stakeholders involved in the development of a project or policy. Its findings can provide early and essential information about: who will be affected by the project (positively or negatively); who could influence the project (again, positively or negatively); which individuals, groups, or agencies need to be involved in the project and how; and whose capacity needs to be built to enable them to participate. Based on this analysis, a plan for involving each stakeholder group in subsequent stages of the project or policy work is developed.

Participation

SA examines opportunities and conditions for the participation of stakeholders in the development process. Participation refers the extent to which stakeholders can influence development by contributing to the project design, influencing public choices, and holding public institutions accountable for the goods and services they are bound to provide. It is a process that involves participation of beneficiaries in project design and implementation as well as participation in the opportunities created by the project. Participation also includes analysis of strategies for involving stakeholders, designing a plan to meet the costs of stakeholder participation, as well as managing the expectations and providing timely feedback and follow-up of participants.

In planning and implementing new or improved solid waste management systems, the degree to which the public is involved in strategic decision making is a critical determinant of the proper functioning of the system as well as its sustainability. Participation strategies targeting various stakeholder groups substantially differ from one another; those that aim at the support of the key ministries or industry groups require information/communication (I/C) methods sharply different from those that aim at changing the behavior of, let us say, garbage workers. Public participation also can be defined as I/C for the public at large, consisting primarily of the MSWM agency's outreach to the city populations, informing them of the proposed MSWM activities and expected support from the user of these services.

Social Risk

SA looks at the potential social risks associated with a project and explores how to address them so as to achieve the project's development objectives. Social risks may range from the obvious, such as involuntary resettlement as well as social and political tensions, to more subtle impacts, such as institutional reforms that affect access to goods and services. Social risks can be broken into five categories: vulnerability; country risks; political economy risks, institutional risks; and exogenous risks. *Vulnerability* risk includes increased exposure to endemic risks or external shocks. *Country* risks include political instability, ethnic or religious tensions, and military conflicts. *Political economy* risks are those that include distortion of distribution of benefits or opposition of the project by influential stakeholders (e.g. elites). *Institutional risks*

include inappropriate institutional arrangements, weak governance, complexity and low capacity. Finally, the *exogenous risks* include regional conflicts or macroeconomic changes.

Application of Five Entry Points of Inquiry in the MSWM Projects

Social Diversity and Gender

Designing effective MSWM strategies or plans requires an understanding of the social diversity and behavioral aspects as well as other characteristics of the key stakeholders. These aspects affect the patterns of materials use, waste generation, and waste disposal of the population and the associated needs and demands, as well as user and community-based organization and participation in MSWM, community-based waste management activities; and the social conditions of solid waste workers.

Social Diversity

The most important social diversity issues that can have a direct or indirect effect on the effectiveness and sustainability of a MSWM system are: poverty, affordability and willingness to pay, gender, age, ethnicity, and other demographic characteristics, as well as the health and safety of especially vulnerable groups, and public awareness and perceptions.

Community and institutional characteristics are as important as household characteristics in determining the role of stakeholders in MSWM. Often the poorest communities, such as those that are of low caste or ethnic status, and those that are new immigrants of urban peripheries, are either excluded from MSWM services or may be adversely impacted. Dump sites may be located near the most vulnerable communities, thus subjecting them to health problems. Their voices may not be strong enough within the urban political structure to affect positive changes in their environmental status. For instance, the recently conducted Tehran City Solid Waste Management Project (2004) demonstrated that a thorough assessment of socio-economic, demographic and migratory characteristics of the project population was an important analytical tool that helped formulate recommendations for the improvement of the MSWS in the city. These improvements were directly derived from the findings of the SA⁵.

Thus, the design and implementation of MSWM systems require both an adequate analyses of existing behavior of key stakeholders (including their attitudes, perceptions, and values), and a thorough understanding of adverse impacts of all elements of the system (including siting and cost recovery). Social considerations are relevant for all aspects of MSWM (Box 1).

⁵ Social Assessment for Tehran City Solid Waste Management Project (2004) Almizan Institute for Social Research and Planning

**Box 1. Assessment of Social Diversity, Gender, and Poverty are
Key in Social Assessment of MSWM**

The SA conducted for Tehran City Solid Waste Management Project demonstrated that in the last decades solid waste management has been seriously hindered by the lack of urban development planning, dramatic migration and increase of informal trade activities in the city and its suburbs. The SA demonstrated that systematic analysis of social and human development issues were necessary in order to help formulate a comprehensive strategy for MSWM that is responsive to the needs of the target population. In addition to environmental and health issues, the study revealed important social and human development concerns among the city's population including high unemployment and increase of drug abuse among the urban youth. The findings of the SA were far reaching and guided policy attention not only in the SWM sector but also in the social sectors.

Source: Proposed Tehran City Solid Waste Management Project (2004)

Some of the specific aspects of solid waste management are also illustrated below.

Waste Generation. Waste generation is primarily a function of people's consumption patterns and thus is based on their socioeconomic characteristics. Low income groups and the very poor typically generate low volumes of organic waste. In Tashkent, Uzbekistan, for example, there is little food to go around and the parts that are not consumed by the household members are used for the domestic animals or composted to amend the garden soil. Those who are somewhat better off may share leftovers as well as old clothing with those more needy (Bernstein 1999).

The economic activity within a settlement and the expectation of the community are also import factors. For instance, small communities that have little more than tourism to market have more to lose from the accumulation of waste in their street corners than the larger cities. Their citizens, youth groups, and the tourism industry actively participate in beach clean-up programs and other campaigns to keep their towns clean. Local enterprises (for example, hotels, and restaurants) that generate much of the waste at the peak tourist season also agree to subsidize the household sector to secure the flow of tourists. At the same time, waste generation is influenced to an important degree by people's attitudes toward waste: their patterns of material use and waste handling, their interest in waste reduction, the degree to which they separate wastes, and the extent to which they refrain from indiscriminate dumping and services.

Waste Disposal. People's attitudes also influence the effective demand for waste collection services. Attitudes may be positively influenced through awareness building campaigns and education about the negative aspects of inadequate waste collection with regard to public health and environmental conditions, and the value of effective disposal. Such campaigns also should inform people of their responsibility as waste generators and of their rights as citizens to adequate solid waste management services.

Industrial establishments present special problems regarding waste disposal patterns due to the volume and/or the occasionally hazardous nature of the generated wastes. While regulation and control measures should be employed as far as possible, low income countries commonly have limited enforcement capacity and tend toward many small industrial establishments (versus a few large ones).

In many parts of the world, there is a clear ethnic, caste, or class dimension to people's participation in the collection, sorting and trading in waste. In Istanbul, for instance, gypsies (that is, *Roma*) have traditionally collected and traded in waste (Kudat 1988). In several countries of South Asia, sweepers and garbage sorters come exclusively from low caste groups.

Aging is also emerging as a critical problem in MSWM (Bernstein 1999). In many nations of Eastern Europe and most countries of the former Soviet Union (FSU) population aging is rising. In some cases, over a quarter of the population are older than 60 years (Kudat and Youssef 1999). Even when they generate low volume of solid waste, elderly people face special problems. For example, they often do not have easy access to a waste collection bins or have difficulties paying for the waste collection services. In some countries, the poorest segments of the elderly population (mainly abandoned single elderly) collect food from waste bins, thus facing serious health risks. In others situations (e.g., in Mongolia) there are many elderly individuals who collect recyclable items (cans and bottles) for cash⁶. For many of them, collecting waste is the main source of income. Chapter 4 describes the issue of waste pickers in detail and shows how entire families, including the elderly, get involved in different aspects of waste collection, sorting and re-cycling.

Solid Waste Storage and Reduction at Source. User cooperation is essential regarding proper storage of household wastes, waste separation, placement of household containers and discipline in the use of public collection points, and source reduction (for example, use of cloth versus disposable diapers or bringing one's own bag to the market). Factors that influence participation in source reduction include the amount of effort required and the time of the activity at point of purchase.

Siting Waste Transfer Stations, and Landfills. Public participation is critical in planning the development of large centralized facilities such as waste transfer stations and landfill sites. While the adjacent residential population may perceive the need for these facilities, they would rather have them located elsewhere (the so-called "NIMBY" or not-in-my-back-yard phenomenon). Overcoming this attitude requires general public understanding of the requirements of effective MSWM, effective communication, and participation of the concerned community in siting decisions. Therefore, information and communication (I/C) is of critical importance to all MSWM efforts as discussed below.

Solid Waste Recycling. Poverty, ethnic background, culture and traditions, gender, and age are all important social considerations in the extent of waste recycling. They are also important in the design and implementation of newly established recycling programs. The poor not only generate a very low volume of waste but also recycle it. The poor also generate income from recycling

⁶ Poverty and Social Impact Assessment for Cashmere Sector Improvements,(Draft) 2004, The World Bank.

efforts by sorting the waste, by collecting already sorted waste, by marketing the separated waste, and often by clothing or even feeding themselves with waste. As was well documented during the preliminary meetings for the 1995 World Conference on Women, women's groups have been particularly active in promoting recycling and encouraging women to start small-scale businesses using recycled materials.

Because there is income to be generated from solid waste, dump sites in many countries are controlled by the "garbage mafia" with pre-established power relationships with the scavenger groups. In Tashkent, for instance, control over the waste had for a short period of time become the object of competition between various groups after the transition (Expert Center for Social Research 1999). While the city's efforts to upgrade the solid waste management system subsequently interfered with the waste picking operations at the landfill, opportunities were created for the pickers to find alternative sources of income (for example, some were hired by the recycling center located near the landfill, others hired to carry out manual labor at other waste facilities). Because curtailing informal waste recycling can threaten the incomes of the very poor and disrupt their fragile social networks, measures to assure alternative livelihoods, and in some cases, hold communities together, could be essential.

Gender

Many aspects of solid waste management are "gendered." Looking at gender dimensions of MSWM also enables the planners to note the differences in the behavior, needs, and the roles played by other social groups. Women and men play different roles in the MSWM at all levels. At the household level, for example, they have different responsibilities. At workplaces dealing with waste sorting, collection, transportation, and planning, there are other key differences. Although the differences are largely culture specific, it is not common to see women among the high level managers of solid waste within municipal or formal private sector institutions (Scheinberg et al. 1999).

In every culture there is gender specificity in the generation, disposal, re-use, recycling, and management of waste as well as the activities that support the sector. For example, street sweeping and the maintenance of public spaces; separation of waste at source; re-use of waste materials; and the collection, transport, and disposal from households and businesses fall on one or the other gender. Women and men also differ in their needs and preferences and tend to differ in their willingness to pay for MSWM investments. As a result, gender analysis often leads to policies that recognize women's contribution to MSWM and aim at promoting community involvement in waste management. Such an analysis would help uncover gender characteristics of households, communities, and small enterprises; improve sustainability of relevant investments; and support the formulation of social impact monitoring of such investments

In many respects, the household is the most important and smallest economic unit in an urban environment. Urban services, and the taxes that pay for them, are based on the household as the primary unit of activity. Women are the household managers and the members of the household often having the principal responsibility for managing the practical aspects of daily life, such as getting and preparing food, supplying water, assuring cleanliness, and maintaining

the physical spaces. Because women are charged with the responsibility for cleanliness of the home and for the health of the family, they can be viewed as the solid waste managers of the household. In many instances, moreover, women also take responsibility and have a special interest at the community level when they become aware of the health impact of inadequate waste management and become aware of possible alternatives. Whether out of poverty or for other reasons, women carry the main responsibility in sorting and recycling the waste (Scheinberg et al 1999).

The implications of the gender dimension are important in planning MSWM improvements. Thus, attempts to encourage higher levels of recycling and/or promoting special recycling programs require a good understanding of women's behavior within the household. For example, women who have initiated waste or recycling activities for altruistic or livelihood purposes are likely to be forced out or marginalized when informal or voluntary activities become legitimized, formalized, and the subject of employment or commercial contracts. Women themselves may collaborate in this process, or concur with the overall result. Thus, a well-meaning effort to strengthen a women-run project or enterprise may end up having the perverse effect of forcing women out of the project, unless special measures are taken to protect their access to and control of the resources (Scheinberg et al 1999).

Women may take responsibility for community cleanliness as long as the work is voluntary, but when it becomes paid and legitimized, it frequently, if not always goes to men. In planning improvements to the MSWM system, therefore, the implications are that there is a need to preserve women's role in cleaning activities (UWEP 1999). Women's ability to contribute to environmental cleaning or even carrying their household waste to bins placed in public places may be hindered in certain cultural settings where women's presence in public is discouraged, as is documented for Yemen's secondary cities (Bernstein 1998).

Similarly, when women are involved in waste activities as paid workers (as opposed to volunteering their time), they usually are among the lowest paid. They work in the dirtiest and most dangerous conditions, have no social or health insurance, and may be forced to have their children work with them. Their work is also likely to have lower social value and therefore be lower-paid - or they may only have access to lower-paid work since they are seen as less capable or valuable than men (Scheinberg et al 1999).

Community-based enterprises often operate on the boundary between a traditional or informal concern for the health and sanitation of the community, which is often a principal concern of women and the commercial world, but usually the domain of men. Community-based enterprises comprise a range of small-scale activities which are largely informal, but which have links with more formal enterprises and local authorities. At one end of the spectrum, these enterprises resemble community-based organizations (CBOs) with a great deal of volunteer input by the leaders, often women and community leaders in a position to exercise co-ordination and control. At the other end, there are enterprises which adopt a business profile and seek markets for their products and services both within and outside their communities, despite their location within the community. This second type of enterprise tends to engage in waste collection or recycling and opportunities for participation by women differ greatly, depending on the culture's attitude towards the idea of women working outside the home.

Taking into account gender considerations in planning MSWM improvements can increase the effectiveness and efficiency of most waste management systems. For example, formal collectors or managers may complain because the waste is not set out properly or not take into account that the women cannot leave their homes to put it in its proper place. Similarly, the times for waste collection may not have been set with any attention to the schedules and responsibilities of the women who will bring the waste to be collected. Moreover, the containers that women find appropriate for waste storage in the home may not be acceptable to the municipal solid waste collectors.

In addition, where women are primarily responsible for managing household work and for the socialization of children in a family, it is most effective to target environmental education on waste management to women rather than men. Similarly, where women are involved in community management, it is efficient to involve them in designing innovations to community-based solid waste collection. Depending on the context, women often are more likely than men to participate in social organization and collective action at the neighborhood level because the smooth operation of local level services is important to them and because they are more at ease than men at carrying out household tasks. Nonetheless, where women are socially excluded or are only marginally involved in community-level activities or social organization, it more effective to involve men in the management of self-help initiatives around community waste management. Further, gender relations have an impact on other social relationships such as class and caste. For example, on the part of many South Asian women, there is a general reluctance to interact with waste workers who are believed to be ritually impure within the context of the caste system (Beall 1998).

Gender also comes into play in paying for MSWM services. It should be remembered that different cultures and societies assign the obligation to pay the bills for public services differently. In Europe, for example, the obligation tends to be assigned to men or to men and women jointly. In Central America, specifically Honduras, bill paying appears to be included among other household responsibilities, which are assigned to women, who must pay public service charges out of their household budgets. The way the culture assigns this obligation is both

an empirical question and a very important piece of information when planning solid waste systems as well as other public services such as water and sanitation (Scheinberg et al 1999).

Men tend to be more vocal and active in choosing service levels and development goals, which could cause women to pay for a service level they consider inappropriate. In Choluteca, Honduras, this was true of waste collection. The women had to pay out of their household budgets, but felt that they were paying too much for too high a level of service. A number of women attempted to disconnect from the collection service altogether, but no lower-cost level of service was offered.

While women may be responsible for paying for MSWM services, they may not have a say in how much of the family income should be spent on this service. For this reason, men commonly determine the level of service to which the family can have access (Scheinberg et al 1999). It is clear that calculations about ability to pay cannot simply be based on objective data about household income level. They also must include an analysis of who controls the cash resource and how this is allocated. In some cases, for example, women-headed households, even though their household income is lower, are able to maintain better payment levels for services and have also shown higher payback rates for micro-lending. In practical terms, this may mean that credit-worthiness and ability to pay may need to be assessed differently depending on the composition of the household. A woman-headed household at a significantly lower income level may nevertheless be a more reliable client. Social assessments and analyses should in all cases record the household structure and composition, in addition to its income level (Scheinberg et al 1999).

Poverty

Among other issues that are important in analyzing social diversity, understanding poverty dimensions is critical. Urban poverty and poor environmental conditions in most parts of the world are inextricably linked. In many cities, the poor do not have access to the formal solid waste collection service, or live in unsafe, marginal, and environmentally hazardous areas such as polluted land-sites near solid waste dumps. These conditions lead to poor environmental health which aggravates poverty and leads to impacts such as loss of income due to sickness and disease, inadequate medical treatment, and increased spending on health care which depletes household savings. Lowered incomes and aggravated poverty divest the poor of their capability either to live in safer environments or to improve the environment where they live. Hence, it is essential to improve environmental conditions that surround the urban poor in order to enhance the latter's capability to fight poverty (Bartone 2000). In the context of an investment in MSWM, project planners should ensure that the poor are among the beneficiaries of service improvements.

Waste pickers at dumpsites and on the streets commonly are socially marginalized. They live and work without basic economic or social security, under conditions which are extremely hazardous to health and detrimental to family, social, and educational development. Often children and the elderly are involved in this type of work. Waste pickers live and work under socially precarious conditions and are subject to serious health risks. Support should aim to improve their

working conditions, earnings, and access to social services. In three Turkish cities (Diyarbakir, Mardin, Urfa), large numbers of school age children walk around the city streets in small groups, sorting for a wide range of items. These are the children of families that have been displaced from their villages for security reasons. The little that they are able to earn from scavenging meets a significant percentage of the food needs of their families⁷ (Bernstein 1999).

Improving environmental conditions in cities and towns helps in reducing poverty directly as well as indirectly (Bartone 2000). As a direct impact, improvement in solid waste conditions can lead to better health which in turn, can help to improve productivity and increased incomes. An indirect impact of improved solid waste conditions can lead to decreased health problems and hence, savings from spending on health. The savings and better living environment per se would provide the poor with resources, time, and most importantly a 'better quality of life' to enrich their skills (and thereby increase their capabilities) to earn higher incomes, and fight poverty. Further, an increase in incomes would also enable the poor to pay for the basic environmental services they need.

Many other aspects of MSWM closely relate to poverty. Poverty is closely associated with low levels of garbage generation and waste collection as well as high levels of waste sorting, re-use, and recycling. Poverty also is associated with residential proximity to dump sites as well as exclusion from municipal services.

There are, however, important environmentally sound lessons that can be learned from the poor with respect to both the reduction of waste and its re-use. In poor communities of Mardin, for example, most upper income groups do not engage in any sorting whereas all lower income residents make use of plastic materials, paper, cardboard and tin cans. Among the poor, for example, paper waste is used as a fire starter for stoves, leftover bread is given to milk sellers or to bran manufacturers and plastic bags are used for carrying food or storing bread (Bernstein 1999).

Levels of economic development and household income are important determinants of the volume and composition of wastes generated by residential and other users, as well as the willingness and ability to pay for a particular level of service. Similarly, the characteristics of other waste generators (for example, artisan shops, schools, government offices, bars) determine their ability and willingness to pay for MSWM services. It is often assumed that the poor would both be unable and unwilling to pay for improved MSWM services. The evidence from the water and sanitation sector strongly points in the opposite direction (Cernea and Kudat 1977). Indeed, the poor are often unable to have regular access to municipal services and, and must pay a disproportionately higher share of their income to pay for alternative service arrangements.

2. Institutions, Rules and Behavior

⁷ A waste picker say: "I am fourteen years old and we live near the landfill. I have been collecting waste for four years. I usually collect scrap, cans and plastic bags. I sell these things. A big pile of collection is worth US\$2. I give the money to my father" (Bernstein 1999:11).

Assessment of the relationship between organizations and institutions, those formal and informal rules of the game, is very important for the SA, and is typically carried out in a form of institutional analysis. The institutional analysis in the SA complements those carried out for the technical, economic, and financial assessment of the project. It focuses on the feasibility of the proposed measures for targeting the poor or some other social group, and on the sustainability of the proposed arrangement for public participation during project execution. Institutional analyses carried out by social scientists also identify local institutions, including NGOs or CBOs that can help mobilize stakeholders to achieve project objectives. The following are important in addressing both institutional and social organizational issues.

Obstacles to Equitable Access

The poor and vulnerable groups (for example, women, youth, and older people) who are among the intended beneficiaries of a solid waste management project initiative may encounter difficulties in accessing the improved solid waste services. The reasons are varied: formal and informal institutions, local customs, patterns of social organization, inter-group relations, social institutions (for example, family, kinship groups, tribal or ethnic affiliations), formal and customary laws and regulations, property rights, subsidy arrangements, central and local government agencies, and information and communications systems. The SA, therefore, determines whether systematic, structural blockages exist, and, if so, proposes mechanisms to overcome them (see below).

In the specific case of MSWM systems, the analyses of the role played by informal organizations are of utmost importance. For instance, in many countries, waste picking is widespread and the “rules of the game” for their operations are well defined. The waste collection, transfer, separation, recycling, and/or disposal activities of informal waste collectors constitute economically valuable services. “In general, however, the marginalized and unstable social and economic circumstances of informal waste workers make it quite difficult to integrate their contribution into the MSWM system” (Schubeler 1996). For example, attempts to change the conditions of work for waste pickers may well be detrimental to their ability to make a living and even lead to exclusion of some groups, particularly women, while creating inefficiencies in waste collection and sorting.

Macro-Institutional Issues and Implementation Arrangements

Local-level and informal rules, including norms, values, and belief systems that shape the attitudes and behavior of social groups, may affect project implementation arrangements. For example, the intended beneficiaries of the solid waste project may believe that it is the government’s responsibility to provide public services, and therefore they are not willing to contribute in cash or kind to supporting the system. The SA institutional analysis, therefore, will not only identify whether structural obstacles exist, but also will propose modifications to existing arrangements or even entirely new institutional structures to overcome them.

It is important to stress that the SA cannot provide all of the institutional analyses required to design and implement a project. Rather, its task is to help design the social engineering required for poverty reduction and social inclusion. The SA aims to strengthen local level and community institutions, enhance self-help capacity, and remove institutional constraints to inclusive practices. The SA incorporates the institutional concerns that are directly pertinent to the achievement of social development objectives, including those that deal with mitigation of adverse impacts. Similar institutional analyses would be required for environmental, financial, technical, and other aspects of projects; specialized teams normally address these institutional concerns.”

A competent SA defines the specific responsibilities and monitorable contributions of each stakeholder group--central ministries, municipal governments, NGOs, citizen groups, the formal and the informal private sector, and donors --to enhance ownership and commitment to inclusive policies. These are policies that promote equity in access to services and in the provision of goods and services required by the system as well as those that eliminate discrimination against individuals or groups on account of gender, race, age, beliefs, etc. The stakeholder dialogue helps determine implementation options including institutional changes, capacity building, targeting, sequencing, subsidies, and incentives. The implementation plan would also include a joint evaluation of the social development outcomes--benefits as well as risks, conflicts, and costs.

Community participation in the implementation of MSWM projects promises great success. Box 2 summarizes some of the relevant lessons learned in various parts of the world. The role of the informal sector in service provision can be equally significant. For example, local waste authorities may be able to legitimize and integrate the informal sector into the formal solid waste management system. An informal enterprise can be contracted to work on collection, resource recovery, and recycling. Experience in Cairo and Ciudad Juarez illustrate how informal groups have been successfully converted into recycling cooperatives and granted concessions for the collection and recycling of solid waste (see chapter 4).

**Box 2. International Experience in
Community Participation in MSWM**

The role of the community in MSWM is the focus of a study by SANDEC (Department of Water and Sanitation in Developing Countries in the Swiss Federal Institute for Environmental Science and Technology). The study focused on 18 participatory schemes in Asia, Africa, and Latin America where MSWM schemes were operated and managed at the community level. The different types of participatory approaches ranged from community-based schemes (CBOs) in Indonesia, China, and in some parts of Africa, to schemes in Peru and Colombia operated and managed by micro-enterprises (MEs). Despite the considerable cultural differences prevailing between the different countries and even between cities within the same country, the study indicates that non-governmental primary refuse collection is suitable for increasing service coverage in low-income neighborhoods and it has a potential for easing part of the burden of responsibility for public authorities. The two main models for non-governmental solid waste collection are micro-enterprises and community-based.

The micro-enterprise (ME) approach is increasingly applied in Latin American cities. The main actors involved are the beneficiaries, the collectors organized in the form of a small private enterprise, and the legally responsible municipal authority. Loans as well as technical and financial assistance are provided by a financial institution and an NGO. The service, which is contracted out by the local government to the small enterprise, is based on a written agreement defining the tasks and duties of both the operator and the municipality. These MEs are a legally constituted cooperative of about 12 to 16 collectors recruited from within the community. This cooperative offers its primary refuse collection service (and occasionally also secondary collection) within a specific municipal perimeter of around 50,000 inhabitants. The necessary starting capital for equipment and other expenditure is provided in the form of a loan by financial institutions of development funds. The operating costs, including amortization of interest are commonly covered through property taxes or user charges collected by the municipality. Support and consulting services in technical and financial matters are given by an NGO, particularly during the initial phase of the scheme and during the first few months of operation. The study further reveals following potentials and limitations:

- Community involvement in the establishment and operation of these schemes is basically limited to: (a) selecting collectors through a free electoral procedure, (b) establishing the very basic task of the households with respect to carrying waste to the roadside on specific days, and (c) paying for the service through taxes. Since the appointed collectors are generally known by the beneficiaries, the micro-enterprise is accepted and participation in the scheme as well as achieved coverage is high.
- A clear advantage of this system is its commercial approach. The ME is obliged to adopt a commercially-oriented behavior that generally improves operational efficiency of the scheme.
- Successful implementation of this model is dependent on the good cooperation between the ME and the municipal authority.
- Cost recovery for contractual payment is carried out by the municipality through taxes. But this may not be the best financing method because the centralized system may allocate the resources for other purposes. Moreover, the community may not be willing-to-pay.

The community-based approach includes systems managed at community level by CBOs or individuals. Most schemes comprise of one of the two models applied quite successfully throughout Indonesia for nearly two decades and in some parts of Africa during the past decade. Both models involve beneficiaries and refuse collectors as main actors. In most cases, the refuse collection scheme is also managed by a community member or organization. Financial and managerial support is often provided by formal and informal community leaders who mainly work on a voluntary basis. The responsible municipality, which plays a minor role, is active only as initiator of a scheme entrusted with the issuing of regulations, or as supporter in terms of providing access to handcarts or loans. The service is supplied by individual collectors usually recruited from within the community itself. The area generally covers between 1,000 and 10,000 inhabitants which are usually served by a house-to-house collection. The collected waste is then transported to communal collection points or transfer stations for secondary collection by the municipal system. The required equipment is often financed by external funds either from individual community members or from the municipality. The operating costs, particularly the salaries of the refuse collectors, are covered by user charges or fees which are collected from the households by the management, special fee collectors or by the garbage collectors themselves.

The two models differ only with regard to their financial system and degree of formal corporate structuring. In one model, the CBO collects fees directly from its members and makes payments to its own salaried collectors or its contractors. In the second model, the municipality manages the MEs but the municipality may elect to either directly pay the fees or have individual households directly pay the fees to

the MEs. The study further reveals following potentials and limitations:

- Community involvement is generally limited to recruiting collectors, paying for the service, and carrying the refuse to the roadside (except in very few schemes where residents bring it directly to collection points). Real community based schemes involving the community not only in operation but also in management of the system, are not widely spread among the case studies. Most schemes are in fact operated by few appointed refuse collectors and managed either by the lowest administrative governmental unit or by local community leaders.
- The institutional links with the municipality are usually weak or non-existent, and support from the municipality is limited to occasional provision of handcarts or loans. Thus the model is not entirely reliant on a cooperating municipality and might prove advantageous where authorities are unable or unwilling to contribute.
- Management usually rests with a motivated community leader or with a community level organization such as youth group or an informal neighborhood committee. Where one motivated individual is in-charge of management the scheme is vulnerable and may collapse on the withdrawal of such person.
- The cost recovery system based on fees seems to be more advantageous than the taxing system. The beneficiaries pay directly for the service and it creates a direct linkage to the service delivered ensuring some type of quality control. Nonetheless, the salaries of collectors are generally very low and the recovery proceeds are not sufficient to finance secondary collection.

The SANDEC study presents the following conclusions relating to community participation in MSWM. First, with respect to collaboration between public authorities and non-governmental actors, it is important to integrate non-governmental primary collection with municipal secondary collection, support and coordinate promising initiatives with public authorities, and the establishment of service-oriented collaboration is fundamental to the success of initiatives. Further, successful primary collection requires user participation in choosing a system, as well as an assessment of user capacity and willingness to contribute in cash or kind. Public information and education are critical to raising awareness and creating user demand for service. In selecting affordable and sustainable technologies, simple and low-cost solutions are a prerequisite for successful primary collection systems by MEs and CBOs. For example, manually operated handcarts or tricycles for areas with limited access, and user contribution in kind to lower costs are options to lowering cost. For easy transfer, the ME or CBO should ensure compatibility of carts and communal storage systems with secondary collection vehicles.

Source: Pfammatter and Schertenleib (1996)

3. Stakeholders

Identification of Stakeholders

The stakeholders include various social, business, and environmental groups, as well as formal and informal agencies in both the public and private sectors, including non-governmental organizations (NGOs) that can affect as well as can be affected by the project. The groups and agencies that are most directly concerned with MSWM can be developed through a review of secondary literature and consultations with policy-makers, representatives of central and local government, knowledgeable local and international social scientists, and local NGOs. This step

requires a good understanding of the broader issues in social development, as well as the technical options that may be possible in the project.

It is also important that stakeholder identification be closely linked to the key social issues identified. For instance, if ethnicity is identified as a key social issue, stakeholders should include representation from the relevant ethnic groups. Similarly, if women's roles in solid waste reduction and/or recycling are important, representation of women's NGOs should be assured. As mentioned, especially in countries where population aging is a visible trend, representation of associations of pensioners and of NGOs dealing with problems of the elderly would be required.

Unfortunately, many projects are initiated with stakeholder seminars and stakeholder consultations without adequate social analyses. Thus, only a standard list of central and local government representatives, a few outspoken NGOs, and formal private sector representatives are consulted. Often, these consultations do not address the key poverty and social development issues because of the weakness of the SA. Box 3 presents a list of principal stakeholder groups that are likely to be most relevant to MSWM in any country.

Box 3. Key Stakeholders in Municipal Solid Waste Management

National Level: Ministry of Public Works, Ministry of Local Government, Ministry of Public Health, Ministry of Finance, Ministry of Environment

Local Level: municipal authorities, solid waste agency, local politicians

User Groups: residential (apartment buildings, private houses, communal living arrangements, urban versus peri-urban), commercial, institutional, industrial, medical facilities

Waste workers: employees of municipal solid waste service, waste pickers, municipal sweepers, private sweepers, domestic workers, janitors

Vulnerable Groups: residents living near transfer stations or final disposal sites, women or children who are responsible for disposing of household waste, waste pickers

Waste Recycling Industry: regional industries, city level main dealers, neighborhood dealers, waste hawkers

Non-Governmental Organizations: local environmental organizations, church groups, youth groups

Community-Based Organizations: local groups that may be responsible for management of neighborhood services

Private Sector: private enterprises that use recyclables, private waste collection firms, chambers of commerce

Trade Associations: associations having an interest in any aspect of solid waste

Other Stakeholders: media, educational institutions

With the broad social development issues clarified and the key stakeholders identified, the SA proceeds to focus on how the participation of the poor and vulnerable groups may be affected, and how their participation may affect project ownership and sustainability. The SA proposes specific analyses of potential gains and adverse impacts, with a view toward how specific stakeholder groups may facilitate or hinder the participation of the poor in the development initiative. More general issues, such as social cohesion, equity, social capital, social diversity, job creation, economic opportunity, social organization, and social exclusion may also be identified, if they pertain to the project.

Integrating Stakeholder Inputs into MSWM Planning and Implementation

Planning and implementing responsive and cost-effective MSWM systems requires an understanding of user preferences and needs. The SA can help identify waste-related practices, including: patterns of recycling; household perspectives on MSWM activities and service levels; current tariff charges for solid waste collection and the extent to which households and other users (for example commercial, institutional and industrial establishments) pay for MSWM; and current willingness and ability to pay for improved solid waste services. The SA also would identify perspectives of other groups that generate waste (such as industry), that collect waste (for example, sweeper communities, used paper or metal collectors), that sort waste (that is, waste pickers), that trade in waste (that is, second hand materials dealers), or even manufacture with waste (that is, artisans). The following are some of the important questions that will need to be answered in designing MSWM systems that meet user needs and preferences:

- (a) Practices. Households, formal and informal industries, commercial enterprises and other institutions generate waste. Their current practices point to their needs, to behavior patterns that require change, and constraints within which new MSWM systems will need to be designed or improved. Important questions to be answered are: Where do households and other stakeholders store their garbage? What products get recycled? What wastes are sold and then recycled? If the government is not providing an effective service, to whom do they turn to for help? What are current payment levels for MSWM? Who is paying for MSWM? How much do the different stakeholder groups participate in solid waste reduction, and through what participation forum? What motivates their participation?
- (b) Perceptions, attitudes, and values. Are the people and institutions aware of the need to manage solid waste better? What bothers them the most about the solid waste service? How would they rate inadequate MSWM among other urban environmental problems? What kind of public education is needed to improve the environment of cities? What might motivate households of different socio-economic groups (the poor, those in urban peripheries, those belonging to different ethnic groups, etc.) to reduce their wastes (prevent litter, prevent pollution, conserve resources, reduce taxes)? What are the relevant perceptions of different business groups?

- (c) Potential for participation. To what extent will households cooperate in separating their waste for composting or recycling programs? What type of incentive is needed to encourage them to do so? How should these incentives be designed for different types of households? Does the population practice any kind of waste reduction? How do they differ from one another in this respect and what socio-economic characteristics account for this? How do the formal and informal enterprises within the tourism, transport, construction, and other sectors behave in this regard? What sectors of the economy tend to be sensitive to waste reduction, re-use, recycling, etc.? How could they be encouraged to develop greater environmental sensitivity? How does the civil society participate in MSWM? Do the schools have youth programs? Do communities take ownership of highways, streets, or other segments of their communities? What roles do NGOs play in this regard? What set of incentives would further enhance civil society involvement in environmental cleaning?
- (d) Vulnerable groups. What is the nature and extent of informal solid waste picking? Are there segments of the population engaged in informal recycling as a principal means of income? Are there any social groups that are consistently left out of the municipal solid waste service (for example, ethnic minorities living in certain parts of the city or urban periphery)?

4. Participation

The SA incorporates two types of participation. First, there is the participation of the poor and vulnerable groups, which is a principle objective of the SA. Second, there is the participation of the broader group of stakeholders – residential users, commercial users, institutional users, governmental and non-governmental organizations, donors, and other partners in designing the new or improved MSWM system, particularly with regard to planning service levels; siting facilities; and/or introducing new technical, financial, or institutional aspects.

Broad stakeholder participation is critical for building ownership among all users of the system as well as for ensuring that the poor and/or other vulnerable groups participate in the system as illustrated in Box 4.

Box 4. Social Assessment for Tehran City Solid Waste Management Project Pointed at the Importance of Effective Stakeholder Participation

Inadequate management of production of solid waste, collection, storage and transportation of waste material and recycling by the municipality of Tehran has become one of the main problems of the city. The SA process showed that the key sector stakeholders perceived the city municipality as failing to fulfill its responsibility towards the citizens.

Tehran, with its current population of 8.5 million people, 700 sq.km area, 22 districts and 120 sub-districts, in 2003 produced more than 2.3 million tones of household waste, 125,000 tons of industrial and 25,000 tones of hospital solid waste. The SA showed the extent and magnitude of

unprecedented increase in production of solid waste that required a sound system of transportation, disposal and recycling. It raised serious concerns of the city's population as well as the city's officials and the central government thus calling for immediate action. The SA clearly pointed to the importance of effective stakeholder participation in the design and implementation of the SWM.

Source: Proposed Tehran City Solid Waste Management Project (2004)

Both levels of participation are important in developing support for the specific project proposals and institutional arrangements identified in the first two steps of the SA. Effective participation includes participation of beneficiaries in project design and implementation as well as participation in the opportunities created by the project. Therefore, the SA must examine the degree to which social groups affected by a project can participate in the opportunities created by the project as well as assess existing modes of participation that help to design modes of effective participation.

The effectiveness and sustainability of MSWM systems depends on the degree to which the served population and institutions identify with and take ownership of the systems and facilities. The "system," includes households, workplaces, formal and informal activities that all form a complex web of relations generating, sorting, disposing, storing, and recycling waste. Populations that are not served need to be included. To this end, it is important that the different stakeholders of the system be involved from the initial planning of any new or improved waste management systems to be designed, because they are the ones who must ultimately carry out their waste management responsibilities, pay for the system, benefit or be adversely impacted by it.

The underlying attitudes of the urban population and these factors are themselves influenced by the social and cultural context. Programs to disseminate knowledge and skills or to improve behavior patterns and attitudes regarding waste management must be based on sound understanding of the social and cultural characteristics. Fast growing low-income residential communities may comprise considerably diverse social and ethnic groups, and this social diversity strongly influences the capacity of communities to organize local waste management. Urban migrant communities often preserve rural traditions of mutual self help and cooperation that significantly enhance the potential for successfully designing and implementing community-based waste management operations.

The level of education and environmental awareness can have an effect on the types of products purchased as well as whether unused objects are discarded, recycled, or sold. These factors also may affect the means by which households recycle waste products (for example, refilling containers) and the extent to which they pay their solid waste-related tariffs or charges. An experiment conducted to determine the relative effectiveness of commitment and incentive techniques in promoting newspaper recycling in U.S. communities showed that households that signed a formal contract to recycle were more highly motivated than those who were provided tokens as incentives. Those who made a commitment to conserve resources were more likely to

do so than those who were offered different types of incentives, but were also more aware of expanding their conservation efforts (Katzey and Pardini 1988).

Household and community participation in the proper operation and maintenance of waste collection and disposal system may be promoted by broadly conceived awareness building programs dealing with general public health and environmental issues, as well as focused information campaigns on specific MSWM issues. Formal education courses, school programs, dissemination of teaching and learning materials, and directed training and motivational programs for CBO and local leaders are effective means for improving awareness and user participation in MSWM. A systematic information/communication (I/C) component could cover all these concerns and should be an integral part of MSWM projects and programs. Specific issues may require targeted information campaigns, whereas routine concerns could be integrated into training, education, and reporting arrangements.

While designing specific campaigns for MSWM issues, it is useful to refer to the nine basic steps of environmental communication planning (Kudat 1994). These consist of

- (a) Gathering the facts concerning the solid waste issue to be dealt with (that is, low levels of re-use);
- (b) Identifying the goals and the objectives of the campaign (e.g., enhancing re-use);
- (c) Identifying target audience (e.g., high income groups);
- (d) Determining the main message;
- (e) Identifying the channel and format (e.g., distributing brochures to high income neighborhoods);
- (f) Pre-testing the message.
- (g) Developing strategy for message transmission and reception (e.g., frequency, length, impact, etc.);
- (h) Transmitting the message; and
- (i) Evaluating results.

Although these are relatively simple steps to follow, many campaigns are designed without adequate fact finding, strategy development, pre-testing, and results evaluation.

The SA process also involves the design of an information and communication strategy to ensure stakeholder ownership of the development proposals. This strategy usually has three main elements:

- Mechanisms to share the information from the social surveys and institutional analyses with the broader group of stakeholders and partners (including national and international governments and NGOs);
- Mechanisms to ensure the participation of key stakeholders, where feasible;

- Feedback mechanisms that facilitate stakeholder response to the information provided;
- Procedures to involve stakeholders in monitoring and evaluation.

A public participation plan or strategy should outline a general framework for encouraging participation during the planning and implementation of a MSWM investment and should be continually updated throughout project implementation. Preparing a public participation involves the following steps:

- Step 1: Identify the most important stakeholders, their roles, interests, conflicts between stakeholder groups, and the level of participation required by each stakeholder group in the project- for example, information dissemination, consultation, collaboration. The process of identifying stakeholders is described above.
- Step 2: Identify the important project and social issues for which participation will be needed (for example, size and location of bins, siting of solid waste facilities, willingness and ability to pay for improved services, impacts on waste pickers). Describe how public participation activities will be used to influence project implementation.
- Step 3: Identify key points for public involvement in the implementation of each project component, where applicable. For each component, the plan should identify key actors, the level of participation required for each actor (that is, one-way exchange, two-way exchanges, shared decision making, and project ownership), and the methods through which these actors will participate (for example, information dissemination, including methodologies such as media communication, brochures; public meetings and workshops, in-depth interviews), as well as processes and appropriate mechanisms for resolving disputes.
- Step 4: Determine the types of information that will be disseminated at each stage for the important stakeholder groups as well as awareness raising and training that would be needed for relevant stakeholder groups (box 5).
- Step 5: Identify NGOs or institutes that can contribute to MSWM activities through the design and management of public education and outreach activities (this will require an assessment of NGOs' abilities to organize and teach environmental education in schools and to the public at large); develop public outreach strategies, organize public information campaigns; and write, design, and disseminate both project and general conservation information (for example, brochures, school materials, field guides, promotional materials).

- Step 6 Describe how public involvement and participation activities will be monitored and evaluated (the plan should include a list of criteria and indicators for monitoring and evaluating changes in socioeconomic factors and community participation that are relevant to project success and sustainability).
- Step 7 Estimate the costs that would be required to initiate and sustain these activities and develop a budget.

**Box 5. Examples of Public Information and Awareness Raising
Activities Involving Main Stakeholder Groups**

Residents. Public education, beginning early in the school systems and continuing through on-site vigilance and education efforts of public health inspectors, is essential. In addition, clean-up campaigns can sensitize residents about the difficulty in cleaning wastes hazardedly discarded in open drains and lots. Nigeria conducted clean-up campaigns (called Environmental Sanitation Days) for more than ten years, initially on a weekly basis and eventually on a monthly basis, in most urban areas. On these days, all residents were requested to participate in city cleaning and industrial/commercial establishments were requested to donate their trucks and drivers to haul the wastes cleared from drains, open lots, and roadsides. The overall public cleanliness and hygiene awareness following Nigeria's clean-up campaigns has been significant and a number of other African countries (e.g., Ghana and Sierra Leone) replicated their example with comparable success. Workshops at the neighborhood level, involving non-government organizations or community groups, are necessary to involve people in the planning and decision-making process, especially when any new methods of collection, new private sector partnerships, new facilities, or new cost recovery mechanisms are being considered.

Children. Anti-littering campaigns targeted to children can influence behavior of two generations simultaneously. In Thailand, for example, such a program involves children policing adult solid waste behavior. Street theatre in Ghana; art workshops in Colombia; and comic and coloring books, as well as happy jingles on refuse collection trucks, in Ecuador are other examples of how cities reach out to children for their help to improve city cleansing and increase recycling.

Solid Waste Workers. As part of making people aware of the value of solid waste management and the efforts of the service providers, workers in the solid waste system should have clean and brightly colored uniforms to upgrade their status and to make their presence (and work) more noticeable and easily monitored.

Government Personnel and Union Representatives. As a part of privatization, personnel from the government solid waste department, including any labor union representatives should be consulted in the process. This is particularly important if the privatization is likely to lead to down-sizing or reduction of redundant staff. Workshops with public and private sector representatives should review proposed contracting, procurement, and regulatory requirements, as well as performance monitoring measures, as has been done in Ghana and Indonesia.

Sources: Obeng and Cointreau-Levine (1997), Cointreau (2001)

In some countries, where direct participation may not be feasible (as might occur when the development initiative is very broad), social surveys and institutional analyses (Steps 1 and 2) can provide important information about the views of the poor and vulnerable populations. In other instances, the nature of the project may preclude democratic representation in the determination of the mechanisms for key stakeholder participation. In either instance, the SA will still develop specific mechanisms to facilitate the direct involvement of users, particularly the poor and vulnerable groups, in the design, implementation, and monitoring of the

development initiative. In the interest of effective service delivery and cost efficiency, moreover, solid waste management authorities should seek ways to establish partnerships with residential communities and user groups as well as the private sector (Box 6). Where municipal capacities are weak and low cost solutions may be necessary, the responsibility for local solid waste collection can be assigned to the communities themselves as long as there is adequate problem awareness and organizational capacities (Schubeler 1996). NGOs can be effective in building the community's capacity to participate.

In the case of siting new solid waste facilities, especially new waste disposal facilities, open public meetings are required as part of the environmental assessment process so that the views of residents can be incorporated into the design of impact mitigation measures prior to project implementation. Chapter 2 provides specific guidance in carrying out public consultations as part of the facility siting process.

**Box 6. Public Participation in Solid Waste
Management in Conakry, Guinea**

Context: The City of Conakry established in 1987, UPSU, a municipal agency responsible for the collection and disposal of solid waste generated in the urban area. The World Bank provided financing on a declining basis part of the operation and maintenance costs until 1994. During this period, UPSU collected about 50 percent of the solid waste generated in the city. After 1994, the situation deteriorated steadily and the collection ratio plummeted from 50% to less than 20% in 1996, the number of trucks from 39 to 12 in 1997. In the meantime, the population of Conakry has increased at a rate of about 5% per year. As a consequence, the sanitary conditions worsened and several cholera outbreaks occurred in the vicinity of the open dump during the rainy seasons.

The Government and the municipality requested World Bank assistance to improve the overall situation by the end of 1996. A new approach was developed based on an enhanced partnership between the municipality and the local private sector with clear delineation of responsibilities between the two parties. Principles underlining the new arrangement developed after public consultation and pilot testing, included: (i) collection can be better handled using low cost equipment and labor intensive means, (ii) increased and sustainable coverage for collection can be achieved on a cost recovery basis through user fees commensurate with households' willingness to pay, (iii) households are ready to pay if services are effectively provided, (iv) households are more prone to pay services to private providers than to public ones, (v) cost recovery for disposal can not be achieved in the short term, and (vi) households are more ready to pay for the services if the selection process of the operators is transparent.

Therefore, the local private sector was charged with the collection. SPTD, a leaner and more effective municipal agency was created in 1997 by replacing UPSU, with total staff reduced from 353 to 80, was in charge of transfer and disposal of solid waste collected by the private sector. 27 selected private operators were granted a three-year franchise agreement to operate in 30 districts covering the entire city after a transparent competitive bidding process.

After two years of implementation of the new arrangement, solid waste collection ratio went from less than 20% to 53% in October 1998. The number of "connected households" went from less than 500 households before the program to 16,241 households in July 1997 and to 30,515 in October 1998. Volume collected changed from 218,380 m³ in 1997 to 342,294m³ in 1998. Payment recovery moved from 28% in September 1997 to 80% in October 1998.

Participatory Approach: This major change of the institutional set up with a larger involvement of the

local private sector happened because of the genuine political commitment from the higher decision-making levels of the central Government and the sustained support of the Governor of the city.

Support from the entire population was needed to introduce user fees for collection services in a city where services have been free for decades. This was implemented thanks to the participatory approach, in-depth willingness-to-pay surveys, and the information and communication campaign that were carried out.

A participatory approach was designed by a team of representatives from the Ministry of Urbanism, the City, the local private sector and a local consultant. The approach was managed by a local NGO who was selected as the executing agency of the program. This approach was used to introduce the new model and explain the roles of the local private sector and the municipality as well as how the private operators are going and have been selected. A new sanitary ordinance was prepared and enacted by the City. Main clauses of the ordinance were explained by the sanitary inspectors and discussed with the population during town hall meetings and house to house visits.

Households willingness to pay was assessed following studies conducted in 1992 and had indicated that the inhabitants were not satisfied with the quality of the services that were provided and they were also willing to pay if services are reliable. Information provided by the study was used to develop the program, propose types of equipment that can be used and service level that can match households' willingness to pay.

Communication program: Communication and information to the population were paramount to the introduction and the success of the new arrangement. The main message focused on the need for the households to contract out the collection of their waste to the operator working in the district and to pay for the collection of the waste directly to this operator. By so doing, the households were in a better position to monitor the quality of the services and the performance of the operator.

Districts 'chiefs were contacted and informed on the new institutional arrangements and after having them on board, meetings were organized in the neighborhoods with representatives of the communities, communities' leaders and representatives from the city and the district governments.

In order to reach all the population, mass media were extensively used. 12 Television and radio advertisements were prepared with the help of a communication specialist and were aired during 90 days. The main messages are related to the health risks associated with unsanitary conditions as a consequence of deficient solid waste collection. Extension workers were recruited by the private operators to conduct house to house visits and explain to the population what will be frequency of collection, the cost of the service and have households sign on contracts for waste removal.

About US\$300,000 was spent for the information and communication campaign. 12 large billboards were installed on the busiest sections of the city as well as 1411 banners were used for two months, about the same number of tee shirts and caps were distributed in the neighborhoods and 1350 posters were used for the same period. Twelve shows were prepared and aired on the national broadcasting network.

The main issue faced during the communication program was the lack of consistency in the different messages due to the weak capacity of the professionals selected to prepare the advertisements and the limited resources devoted to the communication campaign itself as production costs were relatively high.

Next Steps: A well designed public information and communication program is essential to introduce major changes if television and radio are used, and if the new service providers are actually effective in delivering the services. This approach should be associated with appropriate and enforceable regulation. The implementation of the Third Urban Project in Conakry will support the continuation and expansion of the information and communication program as well as build the capacity of the private sector and SPTD.

Source: Eustache Ouayoro (1999), Cointreau (2001)

There is a variety of participatory methods and tools which can help determine the public's technology preferences, and which facilitate their involvement in decision-making regarding such issues as siting, operation and maintenance, and cost recovery. Intermediaries may often be needed, but in many countries they may not have the capacity to provide services on a large scale.

There can be some pitfalls to using participatory approaches. Support from government agencies is crucial, yet many are still not convinced about demand-driven, participatory methods. Many still prefer the supply-driven mode, which gives them more control, although often with unsatisfactory results. Communities need accountable leaders, who will be transparent about decisions made on behalf of residents. Consumers need to receive adequate information about waste management technological options, costs, and implications. Project design must be adaptable, provide time for workable procedures to evolve and for "course corrections" to be made during the life of a project. Participatory, demand-driven approaches increase the chances for project sustainability. Systems which are designed on the basis of what people want and are willing to contribute to, and which involve users in decision-making, are more likely to be ones users will maintain. However, it must be stated that much remains to be learned about conducting demand-driven, participatory projects on a large scale.

5. Social Risk

All activities in solid waste management involve risk, either to the workers directly involved, or to the nearby residents. Risks occur at every step in the process, from the point where residents source segregate wastes into different components for collection and recycling, to the point of ultimate disposal (Cointreau 2000).

Health and Safety Risks

Health and safety risks from waste are caused by many factors and may include the following:

- The nature of raw waste, its composition (that is, toxic, allergenic and infectious substances), and its components (that is, gases, dusts, leachate, sharps).
- The nature of waste as it decomposes (that is., gases, dusts, leachate, particle sizes) and their change in ability to cause a toxic, allergenic or infectious health response;
- The handling of waste (that is, working in traffic, shoveling, lifting, equipment vibrations, accidents);

- The processing of wastes (that is, odor, noise, vibration, accidents, air and water emissions, residuals, explosions, fires);
- The disposal of wastes (that is, odor, noise, vibration, stability of waste piles, air and water emissions, explosions, fires).

Although it is not always possible to quantify health impacts associated with exposure to solid waste, poorly managed municipal solid waste can impose significant risks to the following groups:

- Refuse collection workers and waste pickers (including children) are directly exposed to excreta-related pathogens and intestinal parasites when they handle fecally contaminated refuse. They also are exposed to important indirect health effects result from the breeding of flies, rats, and other disease vectors at dump sites, open garbage heaps and waste-filled drains. These groups and those in the general public that are living close to dump sites would also have additional risks associated with exposure to toxic substances or hazardous materials that may enter the municipal waste stream.
- Waste pickers work and often live under socially precarious conditions and are subject to serious health risks.
- Municipal workers also are affected by high rates of worker illness and absenteeism due to poor hygienic conditions and the proliferation of disease carrying pests at open dumps.
- The public at large is affected by uncontrolled disposal of urban waste into water bodies. Open dumps and poorly designed landfills is a principal cause of surface and ground-water contamination. Similarly, while the exposure of communities closer to the dump sites is higher, there are broader public risks associated with air pollution as well. Air pollution occurs largely through inefficient local open air burning of wastes, through spontaneous combustion of refuse at dumps, and if waste is incinerated in plants that lack effective treatment facilities.

SAs that clearly show the relationship of residential proximity to landfills and health problems have yet to be produced. Nonetheless, a study in Southeastern Turkey indicates that there may be a close relationship (Bernstein 1999), particularly for the poor. The residents say that there are a lot of diseases because they have to live close to the landfill. “Our children are playing with syringes and bottles. They are dirty. Our children are sick, and there is no doctor. We don’t have money. We suffer from all Mardin’s waste. The State must solve our problem,” the residents cry. Residents of communities also add: “The wind spreads plastic bags from the landfill. Our cattle are ill because they eat these plastic bags. This is very important for us because these are not only our animals but our income and our food.”

The SA carried out in Turkey also shows that the health impact of picking waste is often severe. Most pickers use their hands for sorting waste and are exposed to medical waste and hazardous objects. One of the children collecting waste in the landfill said “I cut my hands several times. We suffer from various diseases. One of my friends and I got typhoid, and these two boys got hepatitis. Other boys cut their hands with broken glass.” (Bernstein 1999).

Finally, the SA undertaken in Bosnia and Herzegovina (2002) demonstrated that external factors, like civil war, put additional pressure on the environment and health of the local communities by contributing to the mismanagement of existing landfills and emergence of new areas for waste disposal, including those in and around abandoned home and public buildings⁸.

Perceptions and NIMBY (Not in My Backyard) Syndrome

The planners of solid waste management systems often face strong public opposition, frequently characterized as NIMBY. In planning the participatory aspects of the SA, traditional means of waste management communication need to be examined. First, the SA team should take into account that there may be a misconception among many waste managers and planners that NIMBY is no more than an irrational reaction to a complex issue and that it is unique to waste management facility siting issues. A review of the literature and different waste management scenarios suggests otherwise. The public's intuitive perception of risk and risk management commonly has validity. Solid and hazardous waste treatment facilities as well as any “change,” be it prisons, homeless shelters, or any other perceived societal change (even public libraries were ill viewed by the public in one study) are all subject to NIMBY type responses from surrounding communities. Treating it as an irrational response does nothing to rectify the situation (ISWA Working Group on Communication and Social Issues, 2000).

In the case of MSWM systems, public concerns may be well justified. Past examples of poor environmental performance, management, and treatment have given waste management a poor reputation in many regions. Unfortunately, these horror stories can affect even programs that have been more responsible. How the public is included within the waste planning process can influence social response

Mitigation of Risks and Adverse Impacts

MSWM projects could result in resettlement and asset/land acquisition for several major reasons. For example, the construction of new facilities or the expansion of existing ones requires new land that may lead to forced relocation of existing residents (whether owners, tenants, or squatters). Because facility proximity to urban areas is typical to minimize waste transportation costs, land acquisition for new facilities may also require nearby residents to relocate to avoid environmental health impacts. Similarly, where streets are too narrow for the waste to be collected through new mechanized procedures or for larger capacity waste transfer trucks, land acquisition may be necessary. Under these conditions, mitigation measures must be defined to address any significant adverse impacts, particularly for vulnerable groups. For

⁸ Social Assessment for Bosnia Solid Waste Project (The World Bank, 2003)

example, assistance to maintain community relations may be essential, especially for the poor whose only social safety net may be such relationships. If these lands requiring acquisition are cultivated, it may necessitate compensation for lost investment in the land and future income, as well as new livelihood assistance for the affected populations. If these relevant efforts are financed by the World Bank, there is a formal requirement to apply Operational Policy (OP 4.12) on Involuntary Resettlement.⁹

The objective of the World Bank's Involuntary Resettlement Policy is to ensure that the population displaced or experiencing livelihood damage by a project receives comparable or greater benefits from it. Involuntary resettlement is an integral part of project design and should be dealt with from the earliest stages of project preparation. In the case of MSWM, where the "project" may require a new landfill, construction of new transfer routes or transfer stations, and/or to the expansion of existing collection routes, the OP advocates the following principals:

- (a) Involuntary resettlement should be avoided or minimized;
- (b) Where displacement is unavoidable, resettlement plans should be developed;
- (c) Community participation in resettlement planning and implementation should be encouraged;
- (d) Resettlers should be integrated in the host communities; and
- (e) Adequate compensation should be provided for affected assets.

The development agencies, as well as many governments, have become increasingly sensitive to resettlement issues. Land acquisition and resettlement implications of MSWM projects are relatively modest in contrast to highway or large dam projects. Nevertheless, any SA carried out for a MSWM project would be required to pay particular attention to the relevant mitigation issues. If and when resettlement is involved, the Bank guidelines require that:

- (a) The legal framework and the organization responsibilities with respect to land acquisition and resettlement are clearly defined;
- (b) Measures to ensure community participation are identified;
- (c) A socio-economic survey is carried out; land tenure and transfer conditions are established;
- (d) The valuation of and compensation for lost assets are calculated;
- (e) Shelter, infrastructure, social services, training, employment and credit needs of those resettled are established;
- (f) Host communities' environments would not be adversely impacted; and
- (g) Implementation schedule, monitoring, and evaluation plans be prepared together with estimated costs of all of the above.

Facility siting, transfer routes, and transfer stations may have other adverse impacts beyond those directly social and economic in nature. Such impacts could, nonetheless, affect the social fabric of the community and increase social stress. In some cases, while no land

⁹ The Bank's OP 4.12 is also used by many other donors. In addition, a large number of governments have national legislation that governs land acquisition and resettlement.

acquisition or resettlement may be involved, the water resources, aesthetic beauty, access to natural open space, air quality, noise level, or air quality of some communities may be affected. The construction of a new landfill or transfer station also can have significant impacts on cultural property or affect the livelihoods of indigenous peoples. These adverse impacts are dealt with in the context of the Environmental Assessment and Environmental Action Plan for MSWM initiatives.

6. Quantitative and Qualitative Methods and Tools

A range of quantitative and qualitative techniques can be used to identify the social dimensions of MSWM in any context so as to strengthen the social sustainability of MSWM investments. The following briefly describes these techniques.

- (a) Collection of Secondary Data. The data related to physical and demographic characteristics, land availability, standards in terms of area and population for different type of services, etc at various levels should be gathered from secondary sources. This data can be collected at ward, town, district, and state level.
- (b) Household surveys. These relate to choosing a random or stratified sample of households, and compiling gender specific household statistics on size, structure, assets, education, employment, income, and health. Surveys will also focus on the transport elements of day-to day activities in and around the village and on travel patterns and trip purposes outside the village; utilization and availability of transportation means and costs incurred. Household information needs to be collected across different social groups to ensure that the data is representative.
- (c) Socio-economic surveys. Similarly, a socio-economic survey can be administered to collect baseline and gender-specific information on the target or beneficiary population to assess the socio-economic benefits of MSWM services and to establish a set of indicators aimed at measuring the social impact of a MSWM project. Suggested data to be collected include:
 - Demographic information of a sample population (i.e., ethnicity/caste, gender, age, religion).
 - Forms of livelihood (i.e. land holdings, land cultivated, income, type of crops, non-farm employment including migration).
 - Data on solid waste collection service (that is, location and access to collection point, frequency of collection, level of satisfaction with system, i.e. average daily load, distance and time to and from the nearest road).
 - Data on solid waste-related health conditions (that is, diseases, access to medical care, days lost due to waste-related condition in the previous year).

- (d) **Semi-structured interviews:** An interview questionnaire should gauge households' perceptions regarding their perceptions of their solid waste conditions and institutions, priority problems with MSWM services, priority needs for improvements in the system, and willingness to pay in case or kind to improving solid waste conditions in the respondents' city. The questionnaire should also reveal existing waste disposal options and services available to user groups, frequency of usage, costs of such services and their impact on household income, and preferences for transport options. These interviews also can be used to assess the needs of user groups, promote an appropriate low-cost system, and determine the acceptability of a potential site for locating a solid waste transfer or disposal facility.
- (e) **Focus Group Discussions:** These discussions may involve village leaders, district/local government representatives, residents, and other key informants to obtain baseline data about the community and an overview of its solid waste collection system needs and preferences. Focus group discussions are held separately with each stakeholder group, including those of various income levels, genders, and ethnic groups, as well as those living in different parts of cities, to draw their experience and knowledge of the issues involved in project selection, preparation, and implementation.
- (f) **Willingness-to-Pay Surveys:** These surveys are administered among a select and representative group of beneficiaries and user groups to determine the willingness to pay for and/or maintain improved MSWM systems. A willingness-to-pay survey would need to be accompanied by an analysis of affordability. Commonly, people need to be surveyed before and after receipt of solid waste services to fully understand their willingness to pay. It is difficult for people to imagine the benefits of good service and anticipate their worth prior to receiving service.
- (g) **Service Monitoring Survey:** A questionnaire is distributed to key solid waste collection service providers to understand the nature of their constraints in service delivery and to estimate the level, frequency, and quality of service resulting from MSWM system improvements. Annual surveys may help the service provider understand how to improve service, and may also have the important side benefit of helping them to justify their budgetary or tariff setting requirements.
- (h) **Participant Observation** A fieldwork technique is used to collect qualitative data and to develop in-depth understanding of people's motivations, perceptions and attitudes. In-depth participant observation can reveal the influences on people's preferences and can lead to a better understanding of their constraints and incentives.

- (i) **Participatory stakeholder workshops**: Workshops are conducted with beneficiaries and key stakeholders to present findings of surveys, focus group discussions and interviews; to establish and agree on priorities in a transparent manner, and to achieve consensus around project objectives. A workshop output is to recommend how to incorporate stakeholders' priorities and perceived constraints into project design.

Additional data gathering and outreach methods and procedures as well as detailed methodological tools for affordability and willingness to pay studies are provided in Chapter 3.

7. SA Quality

The quality of a social assessment depends on various factors, such as the adequacy of the terms of reference, and the availability of resources and time to carry out the necessary social surveys and analyses. In the case of a World Bank investment, a Bank staff often prepares the terms of reference for an SA while the Borrower is responsible for preparing the SA report that is reviewed by the Bank.

Notwithstanding the above criteria, the ultimate test of a good SA is its impact on project design and implementation, and this depends in large measure on the specificity of recommendations for achieving social development objectives. For example, the SA carried out for World Bank-financed Tashkent Solid Waste Management Project had a significant influence on project design and implementation. The SA indicated that more than half of the population of Tashkent, the capital of Uzbekistan, viewed inadequate solid waste management as a priority urban environmental problem, and would be willing to pay about four times more than the amount they were currently paying for the service if they were assured that their collection service would improve. The SA also highlighted the risks of the collection point arrangement to both women and children, including the public's desire for closer, more well-lit and attended collection points, and shorter bins to facilitate access for children who have an important role in family waste management. The SA provided critical information on consumers' willingness to pay which the Hokim (mayor of the city was immediately able to use in justifying a decision on a long overdue tariff increase for solid waste collection from households. The SA also led to inclusion of pre-fabricated concrete slabs on which collection bins would be placed so as to maximize public safety, particularly for children. In 1998, the World Bank approved a loan to the Government of Uzbekistan to help finance the Tashkent Solid Waste Management Project.

8. Resources the Borrower Needs for Social Assessment

On average, for lower-income countries, the cost of a full SA using local sociology and psychology consultants is modest provided that land acquisition in densely populated areas for the landfill and for transport routes are not involved. The cost can be higher or lower depending on the number of project areas and specialized social assessment activities. Follow-up beneficiary assessments can be considerably less expensive, and may even be carried out for several thousand dollars. For example, the beneficiary assessment to determine user reactions to

a particular solid waste management facility can be as little as a few thousand dollars. On average, however, the cost for a beneficiary assessment ranges from \$20,000 to \$40,000 per BA. A full fledged SA, involving all entry points as well as mitigation plans can cost well over \$100,000. Carrying out an SA for a MSWM investment involves expertise in: anthropology, sociology, survey research including sampling design and statistical analysis, and solid waste management. Other local costs include those for hiring additional personnel, expenses (food and lodging), travel, photocopying, and office supplies.

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2. DEFINITIONS

The following are common social development terms used throughout this document.

Social Assessment (SA)

SA is an instrument that enables a municipal agency (or Borrower, in the case of an International Financial Institution (IFI) financed MSWM investment) to examine sustainability of the project and to incorporate measures to enhance the project's sustainability. SA involves examining the project's socio-cultural, institutional, historical and political context, and stakeholders' views and priorities. In the context of an investment in MSWM, the SA is a type of feasibility analysis that complements economic, financial, technical, and environmental analysis. It can be used to identify important stakeholders and analyze relationships among them. Because development involves behavior changes, the SA establishes patterns of existing behavior and creates social engineering tools to provide incentives for desired changes. The SA also can be used to identify household solid waste practices and problems, assess user needs and service preferences, determine current payments for solid waste services, and assess willingness and ability to pay for an improved MSWM system.

Because MSWM systems create significant opportunities for stakeholder involvement, the SA establishes a framework for public participation appropriate to local conditions to help reach consensus on many aspects of MSWM, including proposed facility siting. MSWM systems receive formal and informal feedback from a range of stakeholders which need to be incorporated into the design and operation of MSWM investments. While relevant expertise is needed to monitor engineering, financial, and other technical aspects, there also is a need to measure development effectiveness of programs/projects to ensure that the intended benefits are appropriately targeted and that vulnerable social groups are not excluded. The SA can thus help identify social development monitoring indicators and participatory procedures to assess the social impacts of MSWM investments.

Social Analysis

Social analysis is undertaken in connection with a lending program to determine the suitability of programs or projects proposed for international financial institution (IFI) financing. Social analysis enables the IFI to assess whether the proposed program or operation is likely to meet its social development objectives and to recommend measures to help meet them. Social analysis uses five "entry points" or dimensions of inquiry including: social diversity and gender, institutions, rules and behavior, stakeholders, participation, and social risk.

Community Participation

Community participation in MSWM refers to a range of activities that members of a beneficiary community can do to assist in planning and/or implementing a solid waste management project. Strong community organizations may be able to provide solid waste

collection services through self-help approaches, contracting with private enterprises, or establishing collectives to perform the service. Such direct participation of the community is generally limited to activities associated with primary collection of domestic refuse. Examples of some of the most common roles that communities could undertake are:

- Managing waste within the household and removing them from the premises;
- Reducing waste production and facilitating recovery for the purpose of recycling;
- Keeping public areas around the neighborhood clean;

Application of Five Entry Points of Inquiry in the MSWM Projects

Social Diversity and Gender

Designing effective MSWM strategies or plans requires an understanding of the social diversity and behavioral aspects as well as other characteristics of the key stakeholders. These aspects affect the patterns of materials use, waste generation, and waste disposal of the population and the associated needs and demands, as well as user and community-based organization and participation in MSWM, community-based waste management activities; and the social conditions of solid waste workers.

Social Diversity

The most important social diversity issues that can have a direct or indirect effect on the effectiveness and sustainability of a MSWM system are: poverty, affordability and willingness to pay, gender, age, ethnicity, and other demographic characteristics, as well as the health and safety of especially vulnerable groups, and public awareness and perceptions.

Community and institutional characteristics are as important as household characteristics in determining the role of stakeholders in MSWM. Often the poorest communities, such as those that are of low caste or ethnic status, and those that are new immigrants of urban peripheries, are either excluded from MSWM services or may be adversely impacted. Dump sites may be located near the most vulnerable communities, thus subjecting them to health problems. Their voices may not be strong enough within the urban political structure to affect positive changes in their environmental status. For instance, the recently conducted Tehran City Solid Waste Management Project (2004) demonstrated that a thorough assessment of socio-economic, demographic and migratory characteristics of the project population was an important analytical tool that helped formulate recommendations for the improvement of the MSWS in the city. These improvements were directly derived from the findings of the SA¹⁰.

Thus, the design and implementation of MSWM systems require both an adequate analyses of existing behavior of key stakeholders (including their attitudes, perceptions, and values), and a thorough understanding of adverse impacts of all elements of the system (including siting and cost recovery). Social considerations are relevant for all aspects of MSWM (Box 1).

¹⁰ Social Assessment for Tehran City Solid Waste Management Project (2004) Almizan Institute for Social Research and Planning

2. WILLINGNESS TO PAY SURVEY

Introduction

This chapter of the toolkit provides guidance for carrying out a willingness to pay or contingent valuation survey. It begins with a general introduction, followed by (a) a description of the research methodology; (b) a detailed explanation of the contingent valuation method concept, including the basic theory and validity threats; (c) discussion of how to use focus group discussions in supporting willingness to pay surveys; (d) guidance in developing the survey instrument; and (e) guidance for carrying out survey data analysis. This chapter also includes four appendices. Appendix 1 presents the survey framework for the development of the questionnaire for a contingent valuation survey carried out in the Philippines (Tingloy), Appendix 2 presents the survey questionnaire, Appendix 3 provides supplemental and alternative survey questions, and Appendix 4 includes guidance on mathematical determination of the sample size.

What is a Willingness to Pay or Contingent Valuation Survey?

One important way in which economic analysis of a public service can contribute to public policy is to ascertain whether the population receiving the service value that service enough to justify the costs of the service. In the case of solid waste services, the goal of the economic analysis is to identify whether the households served would collectively be willing to pay enough of their own money to finance the costs of the service. It also can be used to determine whether the benefits exceed the cost.

Households make choices of this type all the time about consumer goods for themselves. For example, a consumer shopping at a market can look at a shirt priced at \$10 and decide whether that shirt is worth \$10 to her. She may decide that she cannot afford \$10 for a shirt, she may decide she simply does not like the shirt, or she may decide she likes it better than the \$6 shirt, but doesn't like it enough to justify spending the additional \$4. Alternatively, she could decide that she likes the shirt enough to justify spending \$10 of her own money, and buys it.

If we observed the behavior of this shopper, we could learn whether she valued the shirt at \$10 or more by watching her behavior. If she examines and then buys the shirt, her behavior reveals that she thinks the shirt is worth at least \$10. If she examines it, then walks away without buying, her behavior reveals that she thinks the shirt is worth less than \$10. Most economic analysis of consumer goods is based on this type of observation, and this is called revealed preferences. By analyzing data about the purchasing decisions of many shoppers, consumer preferences can be aggregated into a demand function.

The policy analyst who wishes to find this same shopper's preferences about household solid waste services generally would not be able to examine her behavior to identify whether she thought a particular service was worth \$7 per month. In order to find out whether she would buy this service at this price, the analyst would most likely need to ask her what she would do in a

hypothetical situation: if this service were available to you and it would cost you \$7 per month, would you choose to buy it? The analyst also will need to examine how much this consumer may already be paying for a substitute service. This method is referred to as contingent valuation--it is a valuation contingent upon a hypothetical choice.

To appreciate the nuances of this method, consider a contingent valuation of this person's decision whether or not to buy a shirt that costs \$10. The shrewd shopper would want to know about the specific qualities of the item she might be buying: the size, color, style, and fabric. If she had a picture of it, such as in a catalog, that could be more informative than a description of the style or color. Also, it would be important for her to know what other choices were available. If she needs a shirt and this is the only one available, she might decide that it was indeed worth \$10: when given a choice between this shirt at \$10 and no shirt at all, she chooses to spend \$10 on the shirt. But if she were shopping in the marketplace, she would get a chance to see what other shirts were available and how much the alternatives cost. As in the earlier example, she might decide that she would prefer to have the less attractive \$6 shirt than the more attractive \$10 shirt. Thus, in choosing between shirt A for \$10 and shirt B for \$6, she prefers to spend \$6 and purchase shirt B. In order for the contingent valuation of her decision to reflect her true preferences, the scenario presented to her must represent the true choice she faces as accurately as possible.

In the case of solid waste service, this means that all the relevant aspects of the proposed service(s), as well as the alternative(s) available if the service is not provided, must be conveyed to the consumer in order for her to make an informed choice. If this is done properly, then this survey method can make a very important contribution to policymaking. In this regard, it lets the analyst know what choices the affected citizens would make if empowered to make the choice themselves over how to spend their incomes and how much they would spend for the service under review. If the survey is properly designed, the data from a large sample of survey subjects can be used to estimate a demand function to describe aggregate preferences of the population of interest.

The economic analysis outlined in this document is aimed at asking the following question of citizens: if this were your money, would you choose to spend this much on this particular level of solid waste service? The methods that follow are most easily understood, and the survey when implemented will have the most valid results, if the analyst keeps this goal in mind. This interpretation can directly contribute to the public participation needs of a project evaluation by showing how consumers would "vote" on a policy proposal compared to an alternative. The economic analysis makes use of the same information to provide a social benefit measure. The value of the service to households, aggregated over the entire population to be served, provides a benefit estimate that can be used to fulfill part of a cost-benefit analysis.

Research Methodology

Before the survey can be undertaken, it is necessary to know the specific waste management options that are under consideration and the population that is to be surveyed. Once

this is known, the following steps will help ensure that the survey provides valid estimates of consumer willingness to pay.

Before the field visit, the majority of the survey can be taken from the sample survey questions in Appendices 2 and 3 (discussed later), translated into the local language, with questions modified to reflect local conditions as best known at that time. Then the steps to be taken in the field study should include focus groups, pretests, and the final survey.

There will generally be a specific solid waste service or a limited choice of a few possible levels of solid waste service at the time of the study. Even so, understanding of issues related to solid waste management that concern local residents are likely to be enhanced by holding focus groups with stakeholders. Interviews with local officials and employees involved in waste management may also be included at this stage. If there are specific groups within the population of concern, or concern that some segments of the population (for example, women, ethnic minorities, low income households) may be reticent to speak in large mixed groups, focus groups composed exclusively of a particular demographic group may also be included.

Meetings of about an hour's length can provide sufficient time to cover the topic well. The population samples need not be random or rigorously selected, but the broader the representation of the overall population, the less likely it will be that key issues are overlooked.

After the findings from the focus groups are understood, the initial survey may be written. Much of the survey is likely to be standard form that may closely follow the sample survey included in Appendix 2, and the program managers can have a draft with them before arriving at the locale. Information from the focus groups can be used to identify key issues that may need to be included in the questionnaire. In addition, the wording and specific options for particular questions in the survey will come from the focus groups.

It is important to pretest the survey instrument. Any number of problems with the survey may not be apparent in advance, and it is best to use pretests as trial runs to refine the survey instrument. Common issues that are often discovered in pretests can include excessive interview length, unclear questions, poor translation, insufficient information about the proposed improvements, and any number of other problems.

The pretest is likely to be longer than the final survey instrument; some questions may be found to have nearly identical answers from all respondents, some questions may be found to not work well at all, and others may be found to be of minor importance. Alternative wording for various components of the survey might also be tested where there is concern for clarity.

It is also important to learn about the distribution of willingness to pay values in the population from the focus groups and the pretests to ensure the use of the most useful prices in the willingness-to-pay questions of the final survey instrument. At least fifty pretests would be recommended. If the final version of the pretest is the same as the final survey instrument, the pretest data may be used as part of the data analysis. In addition, sections of the survey that are

unrelated to refining the willingness-to-pay questions may be used as part of the final data analysis. For example, if willingness-to-pay questions are changed during the pretest, but questions on current SWM practices are not, the pretest responses to the questions on current practices can be included in the final data analysis for any topics not related to willingness-to-pay.

During the focus groups and pretests, project leaders will want to participate in order to experience first hand how local residents feel about their local solid waste conditions and services, and what issues they consider to be most important. Participation in pretests will also help to identify problems in the content of the survey and potential problems in the way the survey is administered. Administration of the pretests will also help to train the interviewers before the final survey is implemented. In the final stage of the survey, the interviewers will be working on their own. They should be local, native speakers of the local language.

A training session with the interviewers will help to ensure that they understand all instructions and understand all questions on the survey. They can also be guided on how to code specific questions and how to respond to specific issues that are likely to arise during interviews (some of which may have been experienced in pretests). If all of the final interviewers participate in the pretests, then they can contribute by asking about how to deal with situations they experienced in the pretests. Common training and instruction can also help to reduce interviewer effects in the surveys. An hour or two with the interviewers as a group before the pretest and another hour with the group before the final survey can be sufficient.

Surveys will typically be administered in face-to-face interviews in the home. The sample survey included in Appendix 2 required 40 minutes to administer, but the survey used in a specific study can be longer or shorter depending on the number of questions used. Shorter surveys generally have higher participation rates.

The Contingent Valuation Method

The CV method is commonly performed by phone interview, written survey returned by mail, or face-to-face interview, with the latter considered the most reliable. In most developing countries and transitional economies, however, face to face interviews are recommended. The respondent is presented with material that includes the following three elements (Mitchell and Carson 1989):

1. A detailed description of the good(s) being valued and the hypothetical circumstance under which it is made available to the respondent. The market scenario presented should be as realistic as possible. It should include descriptions of the baseline level of service, the availability of substitutes, the means by which the good is to be provided, and the payment method. In order to construct a demand curve, several different price service levels may be presented to the respondent for valuation.
2. Questions which elicit the respondent's willingness to pay for the good(s) being valued.

3. Questions about respondents' characteristics, such as age, income, race, education, gender, etc., and questions about respondents' preferences relevant to the good(s) being valued and their use of the good(s). Parts of this information may be elicited before and after the presentation of the scenario. These variables are included in regression equations to estimate a valuation function for the good. If the valuation function includes coefficient estimates consistent with theory, then the findings of the study have more credibility.

The CV method is controversial within the economics profession, but it is indispensable in the valuation of goods not widely available in markets. In practice, it generally seems that respondents in CV methods have a tendency to state higher willingness to pay values than they would exhibit in actual market behavior. This bias is noted by a prominent panel assembled by the U.S. National Oceanic and Atmospheric Administration (NOAA, 1993), who presented their findings after having examined numerous studies carried out up to that time. Their study focuses specifically on environmental damage assessment, but the issues apply generally to CV studies of environmental issues. This finding is evidenced in studies in which respondents' preferences were elicited in a CV study, and then compared to the actions of other respondents who were actually given a chance to contribute to an environmental group (Duffield and Patterson, 1991) or buy the good described in the CV study (Dickie, Fisher, and Gerking, 1987). While these findings do not necessarily invalidate the CV method, they highlight potential pitfalls and identify procedures to enhance the credibility of any individual study. The NOAA panel recommends, and best practice since that time includes, several strategies to address these concerns.

The first is that the studies should be conservative. The researcher must understand that there is likely to be a bias in respondents' answers toward higher statements of willingness to pay than the respondents would demonstrate in an actual market. Statistical estimates should be interpreted conservatively. Respondents should be reminded of the costs of the proposed goods and of other goods on which they or government bodies might spend their money.

A second means to enhance the validity of a CV study's findings is to estimate a valuation function that is internally consistent and consistent with theory and the findings of other studies. For example, willingness to pay for solid waste services and environmental amenities should be increasing in respondents' incomes. Respondents should have a higher willingness to pay for a proposal with a higher level of service than they do for a proposal with a lower level of service. Respondents who have greater need for waste disposal services (for example, because they have fewer alternatives available or have more waste to dispose of) should have a higher willingness to pay for improvements in waste management services, other things equal. Of course, respondents will have many reasons for favoring or opposing the policy proposed to them, but statistical relationships similar to these examples promote greater confidence in the survey's findings.

A. The Basic Theory. In a typical CV survey, a respondent is given a choice between two consumption bundles. One is typically the status quo and the other a policy that the public agency is considering for implementation. Under the status

quo the respondent has an income of Y_0 and is able to enjoy an level of environmental service of Q_0 . Public officials consider a program to raise the level of environmental services to Q_1 . The goal of a CV study is to identify how much the respondent is willing to pay for the increase in services from Q_0 to Q_1 . Presumably, the respondent will be happier with the higher level of service provision than he is with the lower level of service, if he could get the service for free. To identify willingness to pay, the CV study seeks to answer the question, “how much less income could you have, after this improvement is implemented, and still be exactly as happy as you were before the improvement occurred?” Represented mathematically, the CV study aims to identify:

$$U(Q_0, Y_0) = U(Q_1, Y_0 - WTP) \quad (1)$$

The left hand side represents the respondent's utility under the status quo and the right hand side shows the maximum amount of income (WTP) the respondent could sacrifice to purchase the service improvement while remaining as well off as he was under the status quo. The question being asked might seem simple and straightforward: “What would you be willing to pay to have this improvement implemented?” There are many issues that arise in trying elicit this information from respondents, and the CV method draws on cognitive psychology, economics, survey methods, and other fields to identify the most effective means of doing this. All of the discussion that follows is essentially how to most reliably elicit this information.

Validity Threats. The following are several important threats to the validity of a CV study. The issues are described here and further addressed in the discussion that accompanies the sample survey questions. For further discussion, see Choe (1994), NOAA (1993) and Mitchell and Carson (1989). The threats presented here are those that are most likely to arise for a beginning CV researcher.

Non-representative sample. As in any study based on a sample of the population, the ability to generalize to the larger population from the sample depends on the validity of the sampling method. This issue is addressed in another section of the manual. The analysts should use a selection method that ensures randomness and selects from the entire population with equal probability (or, if stratified, from each stratum) to the greatest extent possible. Moreover, once a household is selected, repeated attempts should be made to contact that household to ensure that selection bias is not introduced at this point.

Empathy with the interviewer. Respondents know that the interviewer is seeking information about possible changes in solid waste services. They are likely to infer that the interviewer and/or the organizations that the interviewer represents think that changes need to be made in solid waste management and that the interviewer and/or these organizations endorse the services that are proposed in the survey. Respondents may therefore fear that they will disappoint the interviewer by answering no to the willingness-to-pay questions or by answering other questions counter to their expectations about the interviewer's beliefs.

It is common practice to include in the survey statements a statement that the only correct answers are the respondent's honest opinions. At least a brief training session with interviewers is generally provided to ensure that they understand this goal and ensure that their overall techniques are inviting of honest responses and to minimize other possible interviewer effects.

1. Incomplete Understanding of the Proposed Service. The respondent may not be familiar with the changes in service that are being proposed. All the important components of the service need to be conveyed in the scenario, including any implications for the household. In addition to text, illustrations of the types of containers to be used, a diagram of what a waste collection point may look like, and a map that shows where the collection point is likely to be located can help. Photos from similar programs in use elsewhere can also help to make the scenario more tangible.

2. The Form of the Willingness to Pay Question. The preferred format for the willingness to pay question is dichotomous choice. The respondent is offered two alternatives and asked to indicate which he or she prefers. For example, the choice might be between the status quo and some improved level of solid waste service that may cost an additional amount of money per household per month. The respondent is asked whether he or she would prefer the new policy if it means having to pay that additional amount of money per month. This type of question is much easier for the respondent to understand and provides much more reliable answers than other question formats (NOAA, 1993, Choe, 1994). Especially to be avoided are open-ended willingness to pay questions such as “how much would you be willing to pay per month for this service?”

3. Use of the dichotomous choice format has a disadvantage in that less (although much more reliable) information can be elicited from an individual respondent. The respondent might be asked, “would you favor implementing this policy if it means that your household and all other households in your neighborhood would have to pay an additional 25 rubles per month?” With an affirmative answer, the interviewer learns that the respondent's willingness to pay is at least 25 rubles per month, but how much higher than that is not known. In face-to-face interviews (or telephone surveys), it is possible to include a follow-up question based on the respondent's answer to the first willingness to pay question. If the respondent says yes to 25 rubles, for example, this might be followed with a question such as “there is uncertainty over the exact cost of this program. It's possible that the cost might be 35 rubles per month. Would you still favor the program if it meant that you and all other households had to pay .35 rubles per month?” This provides an additional piece of information, either that the respondent's willingness to pay lies between 25 and 35, or that it is 35 or more. The second willingness to pay question is generally not as reliable as the first; the probability of saying yes to 35 as the second question is likely to differ from the probability of saying yes if 35 is the first willingness to pay question. Choe (1994) provides a good discussion of the literature on starting point bias and finds in her own study

additional evidence that starting points affect final willingness-to-pay estimates in repeated bid formats.

4. With respect to the research design for a dichotomous choice CV study, a rule of thumb is to randomize prices among the respondents and ensure that there is a minimum of 30 respondents at each price at each site. Thus if residents of 2 different towns are involved in the survey, and there are 5 different prices, it is necessary to include 300 households in the sample ($2 \times 5 \times 30 = 300$).

Incomplete Understanding of the Cost. The survey must make explicit to the respondent the means by which the proposed program will be financed, and the respondent should be able to easily identify what the cost will be to his or her household. Any non-monetary inputs that would be expected from households should also be clearly stated in the scenario. For example, if the household would be required to sort and store recyclable materials for separate disposal, that should be clearly conveyed. If the household would be required to carry waste to a central collection point, the likely location of that collection point should be conveyed. In practice, with actual waste management programs, there is evidence that households do not completely understand the rules and schedules (Scheinberg, Muller, and Tasheva, 1998). The understanding of a proposed program is likely to be even murkier.

Even if the scenario presents all of the costs clearly, the respondent might not fully process the implications to the household of paying the fee. Questions that help the respondent think about the household budget and what other goods might have to be sacrificed to pay the fee can make this cost more salient. If this cost is not completely understood, then the benefit estimate is likely to be too high. There are additional problems if the program is to be self-financing and the survey overestimates willingness-to-pay. Households may be unable or unwilling to pay the fees required to maintain the program, and the program will not be sustainable.

Possible Scenario Rejection. The ultimate objective of a CV study is to interpret the answers to the willingness-to-pay questions as representing the subjective valuation that the respondent attaches to the proposed service. The inherent interpretation of the willingness to pay questions is therefore along the lines of "is the proposed service worth at least X pesos per month to you?" If the respondent would rather have the additional income than the proposed service, or the respondent doesn't think he or she could afford the proposed service, then the interpretation is correct. However, the respondent may be saying no for other reasons and it is important to identify these other reasons if they exist. This situation can be referred to as scenario rejection.

One form of scenario rejection can be a form of a protest vote; the respondent refuses to accept the responsibility for paying for the service. Even if the respondent does value the service at X pesos or more per month, the respondent does not feel that it is his or her responsibility to pay for it. A negative answer in this instance would be "I don't think I should pay this amount (or possibly any amount) for this service; it is someone else's responsibility." It is important to gauge the extent to which respondents hold to this belief through focus groups and pretesting, and make

clear in the scenario presented in the survey that there will be collective responsibility for proposed program. The survey must also include questions to help determine whether this belief is present. Such beliefs are directly important to policymaking, possibly indicating that an education program is needed to explain to people how they individually contribute to the solid waste problem. It is also important for the willingness to pay study because, despite a negative response, the respondent may indeed value the proposed policy by at least X pesos per month. If the program is to be self-financing, then knowing this information is also helpful in projecting compliance in paying fees.

Another form of scenario rejection can result if the respondent does not believe that the scenario can actually happen. The CV method is explicitly saying to the respondent: "Assume that the service as described occurs. Would you be willing to pay X pesos per month for it?" If the respondent does not believe that the government (or non-governmental or private sector) organization identified in the scenario will be capable of providing the service as described, the respondent may have difficulty accepting the premise. In this case, a negative response to the willingness to pay question does not say "I do not think this service is worth X pesos per month;" rather, it says "I don't believe this scenario will happen." It is therefore important to present the scenario specifically and clearly, and follow-up negative responses to understand the respondent's reasoning. Distrust about the agency designated to implement the policy is an important piece of information to consider in the policymaking process. It is also important that such protest votes be identified in order to better estimate the willingness to pay for the service, if the service were truly to be implemented. Focus groups and pre-testing of the survey instrument can provide general information about respondents' expectations and should be used in designing the survey instrument. Questions should also be included in the survey to help identify this reasoning for negative responses (NOAA, 1993). Since the contingent valuation method appears to have a net positive bias in its estimates of willingness to pay, in standard practice adjustments are typically not made for these types of answers. However, the contingent valuation scenario and willingness-to-pay questions are typically pre-tested and modified if necessary to minimize this problem.

(1) Issues for Focus Groups

Focus group discussions can help the willingness-to-pay survey in several ways. The first is to verify the understanding of the different components of current waste management practices and attitudes toward waste management. The second is to garner information that affects the content of specific survey questions. This is especially relevant to the values used in the willingness-pay-question and the choice of payment vehicle for the survey instrument. The third way in which the focus group discussion can help is in allowing the survey instrument to ask some open-ended questions, with likely responses identified in advance to facilitate data encoding. References are included to specific questions of this type in the sample survey. The following are some of the issues that can be addressed in the focus group discussions.

Identify the appropriate payment vehicle. The selection involves consideration of two issues. The first is to choose the appropriate vehicle to use to fund the new service when the

project is implemented; the second is to choose the appropriate vehicle to use for the contingent valuation scenario.

In choosing the appropriate vehicle for implementing the planned improvements, a great number of public finance issues are important, including whether to finance out of general taxes or a specific user fee. The ease of collection and enforcement need to be considered in addition to the distribution of the tax burden and whether adequate revenues will be raised. Those issues will not be addressed here. The focus groups, however, provide the appropriate forum to find out what the citizens think about the particular payment method under consideration.

For the purposes of the contingent valuation study, it might be desirable to specify an alternative payment vehicle. When asking the willingness-to-pay questions, information is sought about the value of the new services to the respondents. It is desirable to have a payment vehicle that satisfies several criteria:

- Respondents accept the payment vehicle as a reasonable method of paying for the service.
- Each respondent can readily understand the cost of the service to himself or herself.
- Each respondent can clearly understand the collective responsibility; e.g., that all households will be paying or that businesses will be responsible for paying for their own waste.

A common payment method used in CV surveys is a monthly fee on a utility bill (if households typically pay such a bill). The respondent is familiar with this method of payment and understands its effects on disposable income. Moreover, if there is already a water or sewer bill being paid, imagining the waste services fee as an add-on has the added advantage of there being some connection between the proposed service and a fee that is also related to environmental services. Through the focus group discussion the analysts should identify a payment vehicle that satisfies the needs of the CV study and that citizens accept as a reasonable method. The payment method to be implemented to finance the plan should also be discussed, and if participants take issue with that method, the report should acknowledge this fact. If there is controversy, then questions could also be added to the survey to elicit respondents' attitudes towards alternative payment vehicles. If such questions are included on the survey, then it would be best to ask them after the willingness-to-pay questions.

If the system is to be self-financing, depend on household payments of some kind, and the payment method has already been determined, then the most useful CV study is probably to use this payment method for the CV scenario, even if it changes the interpretation of the findings. If a significant number of households take issue with the planned payment mechanism, then the CV findings would not represent willingness-to-pay for the service, but willingness-to-pay for the

service with this particular payment mechanism. The willingness-to-pay estimates could be a more accurate predictor of what actual payments will be, taking nonpayment into account.

Identify Key Willingness-To-Pay Values. For use of single question dichotomous choice, fitted in a probit model, it is important to identify where the tails of the willingness-to-pay distribution lie. Common models include 4 or 5 different prices offered, with the highest price typically about where at least 90% of the respondents give a negative response and the low price where at least 90% of the respondents give a positive response. The additional prices offered are then spaced between the high and low prices. Some information about these key price points can be found in the focus groups and additional information can be obtained through the pretesting. Additional issues that should be explored in the focus groups to aid the CV survey include:

- Identify the range of current SWM practices.
- Identify the degree of understanding of the issue and the degree of understanding of household responsibility and contributions to the problem.
- Identify the level of confidence in the scenario.
- Identify whether private market alternatives are available, what they cost, and whether any members of the focus group samples use them, and why or why not?

Issues for Pre-Tests

A number of questions are answered in the pretest. The first question related to how long it takes to administer the survey. Participation rates fall as survey length increases, so it is important to ensure that the survey instrument is of a reasonable length. It also is recommended that prospective respondents be told how long the survey is expected to take (UNCHS, 1995), and the pretest addresses this question.

Debriefing is helpful in the pretests. It is appropriate to ask pretest respondents what they thought of the survey instrument. Did they think the survey was too long? Did they feel they understood the proposal well? Could the presentation be improved with different wording or additional information, pictures, or maps? Is there any specific pieces of information the respondents would have liked to have? Sometimes it can help to have sample respondents think aloud while answering questions where researchers are especially concerned about misunderstanding.

The answers to specific questions can be used to update later versions of the survey. If respondents give near-unanimous responses to a particular question, then it's reasonable to consider whether the question is needed on the final survey instrument; the results from the pretest could be mentioned in the final report if the question is not needed for the valuation function but is still policy-relevant. If respondents are saying no to the willingness-to-pay

questions and their stated reasons constitute a form of scenario rejection, it might be worthwhile to test a different form of the willingness-to-pay questions. The percentage of respondents answering affirmatively to specific willingness-to-pay amounts should also be used to verify the correct amounts to use for the final survey.

Survey Instrument

Sample survey questions are presented in the appendices. Appendix 2 of the toolkit contains the entire survey questionnaire used in a solid waste study in Tingloy, Philippines as well as some possible additional questions. The discussion below follows the Tingloy survey. In addition, the rationale used by the designers of the Tingloy survey is included in Appendix 1 and their discussion also follows section-by-section through the Tingloy survey.

The survey should begin with the interviewer providing a proper introduction and description of the project. The opening to the Tingloy study provides an excellent example (Question 1). Surveys in the United States typically reserve all personal questions about the household (including income questions) for the end of the survey, because respondents may become suspicious if such questions are asked up front. However, the Tingloy survey asks some non-intrusive questions to confirm that the respondent is within the population to be sampled, including a subtle way to confirm that the respondent is old enough to be considered an adult. It also provides a bridge before the survey questions. In developing the survey design, moreover, analysts should take into account local culture and reserve the questions that may seem especially personal or intrusive until after asking the willingness-to-pay questions.

A question like question 1 in Appendix 3 could follow question 8. Such a question can help establish a broader public policy context. As noted earlier, one of the most common criticisms of the CV method is a concern that findings on average may overestimate true willingness to pay. There may be any great number of public policy issues that people would like to see governments devote more resources to. This question, from a study of a water quality management program for Galveston Bay (Whittington et. al., 1993), provides an example of a strategy to remind people that there may be other policy issues that they might think are also important. This can help them to understand that spending more money on solid waste may mean that they forego an opportunity to devote more resources to other important public sector activities. The specific issues offered in this question reflects issues that had been identified from local television, newspapers, and preliminary interviews and are specific to the local area. That the options be exhaustive or mutually exclusive is not important; what matters is that they remind the respondent of other important local public sector activities that may be of concern to the local population.

Sections II and III ask questions about current household practices and attitudes toward solid waste management. It is appropriate to include these questions before the willingness to pay questions because it prompts the respondent to think about the nature of current solid waste management practices and the monetary and non-monetary contributions that the household makes in disposing of waste. These questions also help the respondent to think about the consequences of current waste management practices and whatever nuisances, public health

threats, and environmental harm current practices may cause. These questions should reflect prevailing practices in the location that is being studied. Project leaders should have a good idea of what the local practices are before writing the survey. In addition to information from other reports related to the project, questions about current practices should be discussed in focus group meetings to generate all the likely responses to questions about current practices.

Sections II and III provide an opportunity to ask questions about all current waste management practices that are of interest to policymakers, whether directly required for the willingness to pay study or not. If there are currently publicly provided solid waste services and the proposed program would make changes to these services, Questions 3, 4 and 5 from Appendix 3 could be added to this section. They provide an attitudinal assessment of value to policymakers. Higher levels of satisfaction with current services would also be consistent with lower willingness-to-pay for service improvements and, if significant in a multiple regression, could help to demonstrate the validity of the study. Low levels of satisfaction could also indicate scepticism about the successful implementation of the proposed program, but this could be verified by examining the correlation between the answers to these question and the sceptical response to Question 36 (response d.)

If only one willingness-to-pay amount is asked per respondent, then the willingness-to-pay amounts must be randomized among the respondents. For example, if four different payment questions are to be used, the interviewers could be instructed to rotate through the payment amounts, and choose the payment amount before starting the interview. A master list could be used to keep track of which payment amount was last used and which should be used next. If a follow-up payment question is to be included, then the interviewer should be prepared with the numbers to ask following a negative or positive response for each starting value.

There are questions about household income and expenditures included in this section, and they are asked before the willingness-to-pay questions. However, there is a tradeoff to be made here. Many of the respondents may not have a good notion of what their income is, and asking the expenditure questions helps to remind the respondent of the household budget before the willingness-to-pay questions are asked. This also helps to remind the respondent that some other private or public expenditure will be foregone to pay for the new service. The analyst should also be aware of any reticence or discomfort respondents may have in discussing such topics and take appropriate care in the survey design.

The willingness-to-pay questions here use the recommended dichotomous choice format. In places where people are accustomed to voting on public sector issues, the question could be phrased as a referendum. This is demonstrated in Questions 8, 9, and 10 in Appendix 3. This form of the question is widely used and preferred by many researchers, but it is only used where people are accustomed to voting.

NOAA recommends allowing an explicit option of “not sure” in response to the willingness-to-pay questions. This creates some issues in estimation (discussed in the estimation section), but it can make the answers more reliable. If there are follow-up willingness-to-pay

questions as there are here, the follow-up to a “not sure” response should include a lower price. Further, NOAA recommends that a response of “not sure” is followed by a question asking why the respondent is not sure, with answers coded to indicate approximate indifference between the two options, a feeling that there is insufficient time or information to make a decision, preference for some other alternative, or boredom with the interview and a desire to just get it over with.

There is concern that answers to successive willingness-to-pay questions may be biased by the amount of the first willingness-to-pay question. Generally, the first answer is more reliable than later answers. As worded in the Tingloy survey, the respondent may also feel that he or she is in a negotiation game and possibly behave strategically. Alternative wording of the willingness-to-pay questions may reduce that risk. The scenario could point out that there is uncertainty about exactly how much the proposed program would cost. Then the willingness-to-pay questions could be expressed as in Questions 9 and 10 in Appendix 3.

Question 36 in the Tingloy survey is asked if the respondent says no to the first willingness-to-pay amount. This helps to uncover the reason for the negative response, and whether the respondent's answer is addressing the value of the service, responsibility for paying for the service, or doubt as to whether the service would indeed be provided as described. This is important for the validity of the estimation of willingness-to-pay as well as an important attitudinal indicator for policymakers to be aware of. The NOAA panel recommends that this question be asked as an open-ended question without prompts, and the respondent's answer should be coded to match the alternative(s) that best expresses the respondent's reasoning.

The supplemental data in section 5 are important for evaluating the representativeness of the sample included in the survey. Some of the questions also may aid in demonstrating the internal validity of the survey; for example, a higher level of education may correlate with a greater understanding and appreciation of environmental issues and also correlate with income. A positive coefficient on educational attainment in a valuation function could help demonstrate validity. Likewise, higher expenditures on water or electric services may increase willingness-to-pay because they demonstrate an acceptance of similar services and could be consistent with a higher willingness to pay for solid waste management.

Questions 58 to 61 ask the interviewer for information about the interview and the interviewer's assessment of the quality of the interview. Following the survey is the sheet used by the interviewers in the Tingloy study to record the respondents' answers. Recording the information this way facilitates data entry and verification.

Strategies for Selected Special Cases

Most of the discussion presented thus far specifically refers to a situation in which one specific policy is under consideration, with the key features of the policy amounting to an improvement in waste management. There are other issues that may arise under alternative policy scenarios.

Paying for a Service Once Perceived as Free. This may occur where responsibility for paying for solid waste services was not transparent to consumers. This means that the service proposed in the survey is one that households are or were accustomed to receiving with no special waste management fee; it was paid out of general revenue and there was no apparent connection to any cost to themselves. Two issues feature prominently here. The first is the potential for scenario rejection: the response to the willingness to pay questions may be negative because respondents feel that they should not pay. The second issue is clearly defining the alternative to the proposed policy.

Identification of the alternative to the proposed policy is worth a time investment here. The fact that an investment is under consideration means that the proposed policy is expected to provide better waste management than the status quo, and that the difference should be clearly identified in the scenario. In this regard, it is helpful to ask questions about the respondent's attitude toward current waste management practices. Questions about satisfaction, questions eliciting positive and negative aspects of current services, and suggestions for improvement and the like help the respondent identify undesirable aspects of current services that may have deteriorated over time. It may be helpful to encourage the respondent to project service quality into the future. It may be appropriate to describe this alternative as "if this (the proposed) policy is not implemented, you would continue to receive the quality of service you are experiencing now, and it is possible that service quality may degrade even further in the future." The goal is not to make the respondent accept the proposed policy, but to accurately represent the alternative scenarios and to ensure that the respondent understands the consequences of the alternative scenarios.

To help the respondent accept payment responsibility for the policy scenario, it may be beneficial to explain that society in general was paying for the service previously and that it is now up to the local government. "While waste management services were provided by Agency Y before, this responsibility now lies with the local government and all the people who live here. Public officials need to know what you think about this issue in order to determine what services to provide because these services will be paid for by you and all the other households in the city, and the services won't be provided if the city does not provide them."

Of course, if there is reason to believe that current services will continue to deteriorate, it is appropriate for the policy analyst to explain how the proposed services or service improvements will be provided as described and not deteriorate again over time, as they have in the past. In this regard, it is important to understand the reasons for the respondents' perceptions of the respondents. In some cases, there is a clear justification for the respondents' skepticism.

A related issue can occur where the service is financed by a property tax, and renters do not perceive that they pay a tax. With a properly constructed payment vehicle, this problem can be overcome as long as respondents understand the change in the level of service that is being proposed, and they understand that a monthly fee will be levied on them through a bill that they already pay (for example, a utility bill), the willingness to pay questions will be valid.

Multiple Service Levels Under Consideration. There may be several policy or service alternatives under consideration. The case may be that two levels of service, at two different costs are under consideration, or similar service levels provided different ways may be on the table. These options can be incorporated into the survey using the single payment question by randomizing on the service level as well as the payment amount.

This could be implemented by creating two sets of surveys, each with a different scenario to reflect the two policy options (or three sets if three are under consideration). The interviewers would be instructed on how to randomize the service level and payment amount before starting each interview. One method of randomizing is to alternate in successive interviews between service level A and service level B. Use the same payment amount for the two surveys, then move on to the next payment amount for the next pair of surveys, and so on. The interviewers would need to keep track of past and current scenarios and payment amounts on a master list.

Adding more options to the survey design in this manner also implies adding more surveys to maintain the same confidence level. As a general rule of thumb, at least 30 survey responses per survey design combination will be needed.. The number of combinations increases multiplicatively: 4 payment amounts * 2 scenarios = 8 combinations. With 30 surveys per combination, a minimum of 240 surveys would be required to maintain the same confidence level, whereas 120 would be needed if only one service scenario were used.

If multiple service levels were used in this way, then another validity test would also be possible. The valuation function, with probability of saying yes to a payment question as the dependent variable, would also include a dummy variable to indicate whether the payment question was for the higher level of service or the lower level of service. If the probability of saying yes to a given payment amount is higher for the higher level of service, this would provide further evidence of the validity of the survey findings, and would address what is known as the *embedding* problem (NOAA, 1993). Of course, this result should be expected only if one service level is unambiguously superior to the other. If there are additional household compliance costs, for example, or some other sacrifice associated with the otherwise superior service level, some respondents might not perceive the service to be superior.

Data Analysis

There are several pieces of information that can be estimated in the data analysis:

- A mean value of willingness-to-pay,
- A valuation function,
- Comparison of stated preferences and observed preferences,
- The percentage of households that would support the proposed program at its anticipated cost,
 - Willingness-to-pay and possible burdens on specific socio-demographic groups,
- Current waste management practices,

- Household attitudes on issues relevant to waste management and the proposed policy,
- Representativeness of the sample compared to independent socio-demographic data,
- Other issues.

Several of these help to meet the requirements for public participation and can provide other types of information. The key issues for the CV study are the willingness-to-pay estimates and demonstrations of validity. The valuation function and demonstration of the sample's representativeness are keys to this objective. In addition, comparison of CV findings to observed market behavior can be informative and help to verify the validity of the CV results.

For example, if there are some segments of the population that pay for private waste management services, perhaps segmented by geography or income, how does their willingness-to-pay compare with their observed behavior? The true value of the service to the respondents who hire private services must at least exceed the amount paid for the services. Yet, when asked to value a similar service from a public entity, the price they pay currently could become an upper bound on their willingness-to-pay for public services; at any higher price, they might prefer the less expensive substitute they already use.

Histograms showing positive response rates to varying prices, with a downward-sloping demand curve demonstrated, can help demonstrate validity. Similarly, downward-sloping graph of positive response rates versus income can help demonstrate validity. The sign, magnitude, and significance levels for the coefficients on income and price in the valuation function, if correct, provide stronger support for the validity of the survey.

Possible secondary income impacts could result. For example, if low income households receive a meaningful amount of money from recycling materials but the overall recycling rate in the community is low, then a program that mandates recycling could depress prices for recycled materials. If middle or upper income households have servants who manage household waste, then the servants may make money from recycling. Households or servants who sold recycled materials to junk dealers would then receive less income from recycling.

Are there possible impacts of the policy that were not anticipated? For example, if a particular demographic group or geographic area or housing tenure type shows markedly different responses to the willingness-to-pay questions, even after controlling for income, can a cause be identified?

Allowing respondents to say "not sure" in response to the willingness-to-pay questions makes their answers more reliable (NOAA), but it raises an issue when estimating mean values of willingness to pay. The two most reasonable treatments would be to delete the "not sure" responses from the data set while estimating mean willingness to pay or to treat "not sure" as a negative response. For the purposes of estimating the mean value, deletion of "not sure" treats the "not sure" respondents as having the same willingness-to-pay as the rest of the respondents

and the same probably of saying yes to the willingness to pay question. At face value, that does not seem unreasonable. However, given that stated willingness to pay tends to overstate true willingness to pay, "not sure" may be a signal that the respondent would find it difficult to endorse the offered price. An alternative is to treat all of the "not sure" responses as "no" responses. This is probably too conservative; the most likely scenario is that some fraction of the "not sure" responses would truly be positive, but at a lower probability than the rest of the sample. It is thus best to estimate statistics both ways and present the results as bounds around the best estimate.

An important use of the willingness-to-pay study is to estimate the benefit that households receive from the proposed improvement in solid waste services. The graph in figure 1 demonstrates this concept. The vertical axis shows the price offered to the respondent, and the horizontal axis shows the probability that the respondent was willing to pay the price offered for the service improvement. The graph shows a form of a demand curve; at each price it shows the proportion of respondents willing to pay that price in order to have the service improvement. The area under the demand curve provides an estimate of the average willingness-to-pay for a typical respondent in the sample. However the area under the curve does not tell the analyst how much will be recovered by the utility if they charge a given price and a given percentage of households will pay that amount.

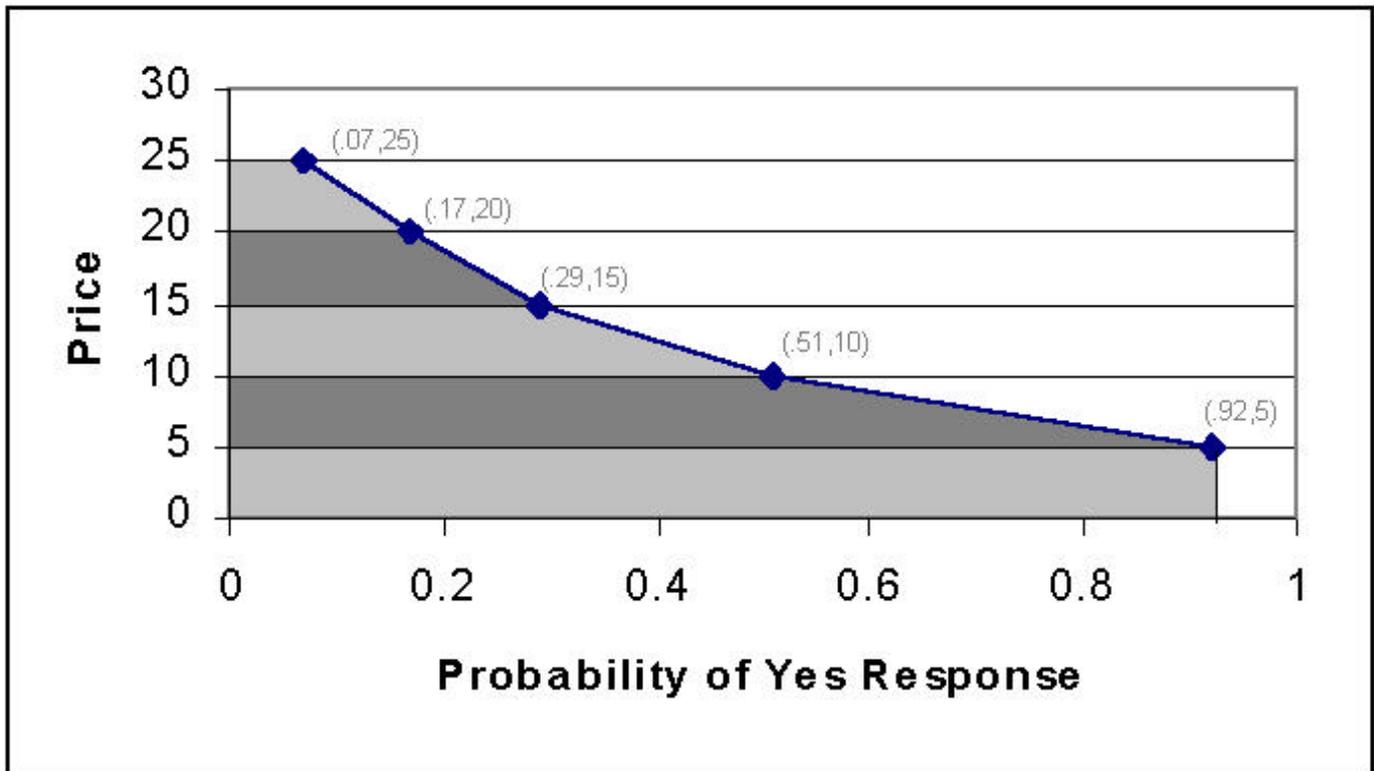
A probit regression can be used to fit a curve through the data. This method is discussed below, as well as how to estimate the area under the demand curve from the probit regression. The probit regression will fit a curve through the data and estimate the curve through the tails of the distribution, which are the regions where the price is above 25 or below 5.

A cruder form of estimation is possible directly from the graph in figure 1. Here the data points have been connected in a piecewise linear plot. The entire shaded area provides a rough estimate of the mean willingness to pay for a typical respondent in the sample. The shaded area does not include the tails, and so is likely to be a conservative estimate (although not guaranteed – it depends on the fit of the curve through the data). The area can be measured by taking the area of the trapezoids bounded by the successive prices on the top and bottom, the vertical axis on the left, and the demand curve on the right. The area of a trapezoid is given by the formula:

$$\text{Area} = .5(b_1 + b_2)h$$

Where b_1 and b_2 are the lengths of the top and bottom of the trapezoid, and h is the height,

Figure 1



One type of model appropriate for use with the dichotomous choice willingness-to-pay questions is the Random Utility Model (McFadden, 1974; Hanemann, 1984). The respondents are given discrete choices as to whether they support a service change at a given price, and the model can develop estimates of willingness to pay based on the answer to this question and the responses to other questions. Suppose that the two choices are the offered service or the status quo. The respondent either accepts (ACCEPT=1) or rejects (ACCEPT=0) the service when offered at a specific price, and the status quo is the default if the new service is rejected. Each observation includes the price offered to the respondent as well as variables representing all other relevant factors that would affect willingness to pay. A probit or logit model is used to estimate the probability that a respondent accepts the service at the offered price. ACCEPT is the dependent variable and a probit or logit regression is run using all the appropriate independent variables. Many statistical software packages include a probit regression procedure.

The results of the regression can then be used to conduct validity tests. The two most important validity tests are to demonstrate that the probability of accepting the service improvement is increasing in income and decreasing in the price offered. If multiple service levels have been included in the survey, then a dummy variable can be used to indicate the higher service level, and a significant positive coefficient on its coefficient in the regression would give

further support to the validity of the results. From the regression results, an estimate of the mean willingness-to-pay value can also be estimated. The regression results can be represented:

$$\text{Pr } ob(\text{vote} = \text{yes}) = a + by - cP + dW \quad (2)$$

Where p represents the price (usually expressed as a monthly fee), y represents household income, and W is a vector of socio-demographic variables that enter into the utility function. The variables a, b, c, d, are the estimated regression coefficients. From equation (2), following a derivation from Hanemann (1984) and a form used in Whittington, et. al, (1993), it can be shown that the expected WTP of respondent i is:

$$WTP_i = \frac{(a + by_i + dW_i)}{c} \quad (3)$$

Taking the mean of WTP_i over the entire sample gives an estimate of the mean willingness-to-pay of the sample households. If the sample is random and unbiased, then this provides an unbiased estimate of the populations' mean willingness-to-pay. This can be considered as transferring the benefit estimate of the study group to the population as a whole. Equation (3) can also use mean population values as its arguments in order to estimate the populations' mean willingness-to-pay. In this case, the benefit function is transferred to the population and the function is evaluated with population parameters.

B. *The willingness-to-pay of particular groups within the population can also be estimated based on equation (3) by evaluating the equation for a representative household. For example, the expected willingness-to-pay of a low-income household can be estimated using the income value of interest and selecting representative values for each socio-economic variable in the vector W. Note that expectations for willingness-to-pay of subgroups will have more variance and be less reliable than the estimate of mean willingness-to-pay for the population as a whole.*

C. *Appendix 4 contains an alternative means of estimating willingness-to-pay, based on the questions from the survey presented in Appendix 2. The estimation method uses the maximum willingness-to-pay value from each respondent and estimates a valuation function using Ordinary Least Squares regression. If the sample size is constrained, the greater efficiency of this method may be preferred. For sufficiently large sample, the greater reliability of the single question dichotomous choice method is generally preferred.*

D. *Validity Tests*

The best demonstration of validity is a valuation function that is consistent with theory and shows reasonable amounts for household willingness-to-pay. As noted earlier, improvements in solid waste management services can have private and public benefits simultaneously. More frequent and convenient collection provides a direct private benefit to a particular household if

the household members do not need to store waste as long or carry it as far. If everyone in the neighborhood receives this service improvement, then any particular household benefits not only from its own improved convenience but also from the reduction in litter, odor, and threats to the environment and public health from improved waste management in the entire neighborhood. Thus, other things being equal, a household would most likely be willing to pay more for a service upgrade to the entire neighborhood than it would for a service improvement exclusively for itself.

A validity check can be gleaned from the decision to hire a private service or not. For example, consider a respondent who offers positive responses to willingness-to-pay questions that significantly exceed the cost of paying someone to handle one's waste. A reasonable question to ask is why this respondent doesn't pay a private provider already. Information from the pre-tests and focus groups can address this question, as can a follow-up question to a positive response to the willingness-to-pay question. The respondent can be asked why he or she would be willing to pay for the indicated service. Responses can be coded to indicate private benefits (such as greater convenience), as well as public benefits that the respondent might enjoy (for example, less litter, less odor from neighbors' or communal collection sites).

The CV study performed here is not going to be of academic quality, but is useful for policymaking. An academic quality study could require substantially more resources in order to achieve a degree of confidence which might not be necessary for policymaking. However, any efforts to demonstrate validity will justify external evaluators having greater confidence in the study findings. Any information that the researchers are able to gather that shows the reasoning of respondents and demonstrates confidence that respondents' stated answers are likely to reflect their actual behavior will help toward this end.

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APPENDIX 1: SURVEY FRAMEWORK FOR THE DEVELOPMENT OF THE QUESTIONNAIRE FOR TINGLOY¹¹

Demand assessment and willingness to pay survey framework for solid waste services in Tingloy, the Philippines

Name of surveyor: _____
Date of interview: _____

1. Survey statement

Questionnaires are usually designed with an opening statement to be read by the interviewer to the respondent. This statement usually explains (UNCHS, 1995):

- what the survey is all about;
- why it is being conducted;
- how the respondent was chosen to be interviewed;
- how long the interview will take;
- assurance that the responses will be confidential;
- a request for permission to begin asking the questions.

Survey description and target could be stated as: "The principal component of the research study is the development and implementation of a household survey intended to elicit three types of information, namely the perceived level of existing solid waste services and based hereon the possible improved service options, households preferences and attitudes regarding these services, and their affordability and willingness to pay for improved services."

If the survey statement is defined, for instance as is in the case of Tingloy, then the survey statement might look like: "Good morning/afternoon. Can I have a moment of your time? My name is (*name of interviewer*) and I am conducting a survey for the Integrated Sustainable Waste Management Project in Tingloy. I would like to ask you some questions that would assist the project team in determining how to improve solid waste services to your neighbourhood. Your opinion is therefore very important to be heard. The questionnaire will only take about (*estimated time*) minutes and all answers are treated confidentially. Moreover, there are no wrong answers because everyone has a different opinion."

2. Determination of the area

In order to have a clear insight in the geographical location of each household or entrepreneur and the total number of responses of each *poblacion*, the next step is to localise the target area. This will come down to a very simple question, being

¹¹ This appendix taken from Marchand, 1998. Used with permission.

“Let me first ask you two questions to identify the location of your house/enterprise (*ask the questions*).”

- (a) Household is identified as being a resident of poblacion number. (*13, 14, or 15*)
- (b) The respondent is a citizen of the described poblacion of Tingloy. (*yes/no*)
- (c) How long have you been a resident of Tingloy? (*number of years*)

3. Determination of the current situation of solid waste disposal

The next group of questions is related to the existing situation of solid waste services and disposal found in the survey area. To be able to formulate these questions, the questionnaire designer must have an understanding of the actual situation. The questions are thus formulated to discover (the frequency of usage of) these services.

The questions and possible answers differ from every other situation but may come down to:
“I would like to ask you some questions regarding the usage of solid waste services as being provided in your neighbourhood (*ask the questions*).”

Household or private entrepreneurial participation in current solid waste service system could be described by means of:

- (a) the way and frequency in which households or small scale enterprises discard their waste;
- (b) the frequency of the solid waste service are provided to the respondents.

4. Demand assessment of respondents with respect to solid waste disposal

Before turning to the demand assessment of the stakeholders, the survey needs to indicate to what extent the respondents are aware of the environmental problems they are exposed to when no improvement of the actual waste system occurs. It is quite significant for the researcher to understand the potential level of participation and support for all kind of waste related activities. The reason is that a higher degree of familiarity increases the readiness to physically and financially contribute to environmentally supporting activities.

To promote the awareness of the local population an extensive promotion programme could be planned which focuses on the basic hygiene behaviour and the according public health dangers. The actual promotion material, however, varies from programme to programme and from location to location. Nevertheless, all "mobilization" programmes should emphasize long-term environmental and health impact on the one hand, and the behavioural changes necessary to alleviate these hazards on the other. From a social marketing point of view, it asks for a method to increase the awareness of the beneficiaries, *i.e.* all persons benefiting from the improved quality of living, and a mobilization of these people to actually take affordable action, *i.e.* a way of creating real demand for improved services.

The statement could look like: “As you know in your neighbourhood there are problems of discarding solid wastes. If nothing is undertaken to lift these problems, you might be faced not only with a decrease in quality of your living area but also with a threat to public health. I would therefore like to ask you some questions related to these environmental problems (*ask the questions*).”

The questions determining the degree of awareness could take as indicator:

- (a) the specific problems as indicated by the respondents themselves;
- (b) support and participation of existing activities in the field of combating environmental problems.

Then, after having visualised the situation and the environmental problem indication in the survey area, the questionnaire is aimed at identifying the preferences of the stakeholders. Only in accordance with their needs an improved waste system will be successful. Thus questions must be developed to monitor their demand and attitudes towards the existing waste service system. Here also, it is impossible to specify each question *ex ante* although several criteria can be distinguished that measure the preferences of the stakeholders.

“I would also like to know your opinion about the present provision of solid waste services. This is of vital importance because otherwise we would not be in the position of understanding your true preferences and problems (*ask the questions*).”

The demand assessing questions could be based on the following aspects:

- (a) the preferences on the present provision of solid waste services;
- (b) the formulation of the most serious problem encountered by the respondents;
- (c) the identification of the least provided service;
- (d) the desired results from the improvement of these services within the technically viable;
- (e) framework.

5. Measurement of the affordability and willingness to pay for waste services

Without any information on the affordability to pay of stakeholders, there is a serious drawback in the determination of the willingness to pay for the improved services provided. Not knowing the affordability to pay implies the danger of a failure of recovering the full costs of the service system. It is therefore vital to measure it. To be able to estimate the affordability to pay to financially contribute for waste services, one can ask a number of questions that relate to the expenditures on existing services, living expenditures or just income. The choice merely depends on the easiness to gather this information, the budgetary limitations, and the available time to conduct the survey.

“Now I would like you to think carefully, for the following questions are not easy to answer. The questions I am about to ask relate to your daily/weekly expenditures on existing services, if any, on cost-of-living, or income (*ask the questions*).”

The questions that intend to measure the affordability-to-pay will depart from the following indicators:

- (a) the current level of expenditure on existing solid waste services;
- (b) the level of primary cost-of-living expenditures;
- (c) the level of income or saving.

Note that the order of indicators is taken such that the first is considered to be the easiest to measure.

To ascertain the voluntarily financial contributions for the new or improved services, several steps have to be taken into account. The first step involves the explanation of the service options for solid waste to the respondent. These appropriate based options imply alternatives that are practical, environmentally and economically viable, that they satisfy the needs of the users, and that they are socially acceptable.

After the description of the options, the next step is to emphasize that the provision of these services involves costs, generally involving costs of procurement, costs of operation and maintenance, and costs of depreciation and financing. And as with all products and services, they have to be funded in one way or the other. Thus, as this service is no exception, the surveyor must clearly state to the respondent that if he or she desires the improved service, he or she must pay the price attached to its consumption. Moreover, the interviewer continues to stress that this obligation involves a trade-off between waste services on the one hand and other goods or products on the other. This reminder is important because it forces the respondent to think hard about his income constraints, eliciting the true preference for the improved service provided.

The third step is to clarify the payment "vehicle" to the respondent or put differently, the way in which the payment will occur. Again this reminder is to emphasize the seriousness of the payment for the service offered.

Finally, the respondent is asked his or her opinion about the maximum amount he or she is willing to pay voluntarily. When applying the contingent valuation method several ways to elicit the true willingness to pay can be distinguished, such as the bidding game, dichotomous format, payment card format or just open-ended questions as has been portrayed in chapter 2. One has to make a choice between the most effective and efficient method based on each pros and cons.

After describing the viable options and reminding the respondent to the expenditure constraints involved, the interviewer can start asking the willingness to pay preferences. Then the willingness-to-pay statement might look like:

“As you know the new or improved waste services are being provided to your neighbourhood. For the new system to be operational all costs must be recovered. In order to estimate the total

recovery I would like to know your preferences about the amount you are voluntarily willing to contribute (*ask the questions*).”¹²

1. “Are you willing to pay $_{(x)}$ amount each day/week/month in order to receive the service option ?”

- a. yes, I will pay $_{(x)}$ amount each day/week/month (go to 2)
- b. yes, I would like to receive the service but I want to pay less than (x) amount (go to 5)
- c. no, I do not want to pay for the provided service (go to 4)

2. “Are you willing to pay $_{(x+1)}$ amount each day/week/month in order to receive the service option?”

- a. yes, I will pay $_{(x+1)}$ amount each day/week/month (go to 3)
- b. no, I do not want to pay $_{(x+1)}$ amount for the provided service (go to 6)

3. “Are you willing to pay $_{(x+2)}$ amount each day/week/month in order to receive the service option?”

- a. yes, I will pay $_{(x+2)}$ amount each day/week/month (go to 6)
- b. no, I do not want to pay $_{(x+2)}$ amount for the provided service (go to 6)

4. “What is the reason that you do not want to pay for the service option?”

- a. can't afford to pay the full cost (go to 6)
- b. don't consider the service important enough to pay for (go to 6)
- c. believe that the municipality should cover the cost of the service option (go to 6)
- d. don't trust the new service option (go to 6)
- e. prefer another service option

5. “What is the reason that you prefer to pay less than $_{(x)}$ amount?”

- a. can't afford to pay the full cost (go to 6)
- b. believe that the municipality should cover a part of the cost of the service option (go to 6)

6. “What is the maximum amount that your household would be willing to pay each day/week/month for the service option?” maximum of $_{(y)}$ pesos each day/week/month

6. Supplemental information of household/entrepreneurial stakeholders

To be sure of the validity of the survey results additional information is needed. Namely, the willingness to pay varies from household to household, and from small scale entrepreneur to small scale entrepreneur so that information on variables that influences the willingness to pay is a necessity in order to infer the true commitment to pay for the improved services provided. It is this final part of the survey that addresses to this information.

¹² For a detailed outline, see also AGuidelines for conducting demand assessment and willingness to pay surveys for solid waste collection and disposal services \cong , World Bank 1989.

“I will soon be ending this interview. Before I do, however, I would like to ask you some questions about you and your family (*ask the questions*).”

The additional data recorded is generally based on:

- gender; because it makes a difference who is responsible for the daily expenditures, or who is involved in the promotion activities as indicated in Part 4.

- age; because younger people might be more eager to participate while elderly might tend to leave things as they are.
- education; because the level of education elicits the environmental and health risks caused by low quality of services.
- household size; because the size of the household determines the expenditure pattern and therefore perhaps the amount one is willing to pay.
- tenure/owner house; because the status quo of house property is an indicator of the awareness of environmentally sound surroundings, and perhaps an indicator of income.
- profession/employment; because the level of income determines the willingness to pay.
- expenditures on a) existing services, b) cost-of-living, or c) income; idem.
- commercial activity (when being entrepreneur); because the type of activity involved influences the type of waste produced.

Finally, “thank you very much for your contribution to this survey. Do you have any questions or comments that you would like to ask me?” (*record the question(s) and/or comment(s)*).

“Thank you very much for your cooperation. We hope to use these results to determine how best to provide affordable and desirable services to the people of your neighbourhood. Good bye.”

APPENDIX 2: SURVEY QUESTIONNAIRE¹³

1. Introduction

Read the following introductory statement

“Good morning/afternoon. Can I have a moment of your time? My name is (*name of interviewer*) and I am conducting a survey for the Integrated Sustainable Waste Management Project assisted by the Batangas Social Development Foundation in Tingloy. I would like to ask you some questions that would assist the project team in determining how to improve solid waste services to your neighbourhood. Your opinion is therefore very important to be heard. The questionnaire will only take about 40 minutes and all answers are treated confidentially. Moreover, there are no wrong answers because everyone has a different opinion.”

Let me first ask you some questions to identify the location of your house (*ask the questions*).

1. Gender of the respondent?

- a. male
- b. female

2. Are you a permanent resident of the attended neighbourhood of Tingloy?

- a. yes (go to 5)
- b. no (go to 3)

3. Can I interview someone else of this household who is a permanent resident and is present today?

- a. yes (go to 1)
- b. no (go to 4)

4. Can I come back tomorrow to continue this survey questionnaire?

- a. yes (go to end)
- b. no (go to end)

Record the address and/or family name: _____

5. How long have you been a resident of the attended neighbourhood (*13, 14 or 15*) in Tingloy?

- a. less than a year
- b. more than a year but less than three years
- c. more than three years but less than ten years

¹³ This appendix taken from Marchand, 1998. Used with permission.

d. more than ten years

6. What is your age?

_____ years

7. Is the person being interviewed the head of the household?

a. yes

b. no

8. Is this a single-headed household?

a. yes

b. no

II. Existing situation regarding solid waste disposal

“I would like to ask you some questions regarding the situation of solid waste in your neighbourhood (*ask the questions*).”

9. How do you discard the waste that is no value to your household?

a. burn it

b. leave it on the street

c. throw it in the river

d. throw it in the sea

e. discard it in the communal containers

f. bury it in the backyard

g. bury it on the seashore

h. bury it near the riverbank

i. bring it to the dump site

j. leave it to be collected from the house

k. don't know

10. Is the solid waste collected from your house?

a. yes

b. no (go to 12)

11. How many times per week is your solid waste collected from your house?

a. daily

b. twice a week

c. once a week

d. now and then

e. there is no collection

f. don't know

12. Who is handling your solid waste?

- a. father
- b. mother
- c. children
- d. other relatives

13. What do you do with your recyclable products?

- a. discard them with other solid waste
- b. separate them for selling to junk shop collector
- c. separate them for own reuse
- d. separate it and give it away to others who will use it again
- e. don't know

14. What do you do with your organic waste?

- a. use as compost
- b. feed the animals
- c. leave it to be collected from the house
- d. discard it in the communal containers
- e. discard it in the street
- f. throw it in the sea
- g. don't know

III. Assessment of respondent's demand: disposal, separation at source and resource recovery

“I would also like to know your opinion about the present situation of solid waste services. This is of vital importance because otherwise we would not be in the position of understanding the true preferences and problems of you and your neighbourhood (*ask the questions*).”

15. What is your opinion about the current situation of the disposal of solid waste in your neighbourhood?

- a. I'm doing it because everyone else is doing it
- b. there will be problems in the end
- c. nothing is wrong with what I'm doing now
- d. no opinion/don't know

16. What do you consider the most urgent problem related to the disposal of solid waste in your neighbourhood?

- a. personal health
- b. pollution of living area and playgrounds for children
 - c. littering of solid waste in the neighbourhood
- d. it will endanger the fishcatch
- e. nothing is wrong
- f. no opinion

17. What is your opinion about the current green communal containers in your neighbourhood?
- a. they are too far away from the house
 - b. they are too small to contain all solid waste
 - c. they produce unpleasant odours
 - d. the size is sufficient (go to 19)
 - e. nothing is wrong with the communal containers (go to 19)
 - f. no opinion (go to 19)

18. What would you prefer as a solution?

19. What is your opinion about the present site where you dispose your waste?
- a. anyone can throw his waste there
 - b. anything can be thrown there
 - c. the site produces foul odours
 - d. nothing is wrong with the site
 - e. no opinion/don't know

20. What do you consider the most urgent problem related to the present site in your neighbourhood where you dump your waste?
- a. public health risk
 - b. groundwater contamination
 - c. it becomes an eyesore with unpleasant odours
 - d. uncontrolled dumping at the area
 - e. nothing is wrong with the dump site (go to 22)

21. What would you prefer as a solution?

22. Are you currently separating recyclable goods?
- a. yes (go to 24)
 - b. no

23. Would you be willing to separate recyclable goods?
- a. yes
 - b. no

24. Are you currently separating compostable goods?
- a. yes (go to 26)
 - b. no

25. Would you be willing to separate compostable goods?

- a. yes
- b. no

26. Would you be willing to contribute to the safe disposal of the solid waste in your neighbourhood?

- a. yes
- b. no

(go to 28)

27. How would you be willing to contribute?

- a. bringing my own garbage to the communal container as whatever the neighbourhood identifies as container
- b. bringing my own and my neighbour's garbage to the communal container as whatever the neighbourhood identifies as container
- c. separate recyclables
- d. separate organic waste
- e. cleaning litter around the communal containers as whatever the neighbourhood identifies as container
- f. cleaning litter around the site where the containers are emptied
- g. paying for an amount agreed upon by the community for a solid waste collection system

28. Why not?

IV. Willingness and affordability to pay measurement

“Now I would like you to think carefully, for the following questions are not easy to answer. The questions I am about to ask relate to your daily/weekly expenditures and to an integrated solid waste service to be implemented in your neighbourhood (*ask the questions*).”

29. Can you indicate what your daily and monthly expenditures are?

- a. yes, I can
- b. no, I can't

(go to 31)

30. Give a subscription of your expenditures on:

Expenditures' item:	Daily/weekly/monthly	Amount in pesos
1. food products		P
2. house rent		P
3. fuel/transport		P
4. water consumption		P

5. electricity and gas		P
6. education (<i>of children</i>)		P
7. clothes		P
8. taxes		P
9. social events (<i>savings</i>)		P

31. What is the reason you can't indicate your expenditures?

- a. don't want to
- b. have no idea what the expenditures are
- c. afraid someone will come to know the information
- d. private information
- e. don't know

32. What is your monthly household income in pesos?

- a. 1000-1499
- b. 1500-1999
- c. 2000-2499
- d. 2500-2999
- e. 3000-3999
- f. 4000-4999
- g. 5000-5999
- h. 6000-6999
- h. 7000-7999
- i. 8000-8999
- j. 9000-9999
- k. 10000 and above

“Now I would like to present to you the identified solid waste service which might be implemented in your neighbourhood. The Mayor, the council members, and the barangay captains are aware of this solid waste alternative and support the idea of this integrated solid waste system. In order to receive the service you are also asked to pay a small fee per month.”

An integrated solid waste service for Tingloy

“The solid waste service that can be identified regarding waste management in your neighbourhood has the following aspects (*show the drawings*):

1. You need to segregate all your solid waste at source into recyclables, which are items that can be used again to generate other goods, and into biodegradable waste, which is mainly your kitchen waste, plants, leaves etc. that can be used for composting, and into waste that remains.
2. You have to bring your biodegradable waste to a communal compost pit in your own barangay, and subsequently bring your recyclables together with your remaining waste to the closest garbage bin in the main street of your barangay where it is stored for further collection by a collector the same day.
3. Each barangay will collect its recyclables and remaining waste from the main street daily to an identified site outside the poblacion where recyclables are stored separately from the remaining waste.

4. The site will be called a *redemption centre* and is managed by a trained individual who will also see to it that no littering takes place. This site is already been located and agreed upon by the Mayor and council members.

5. The to-be formed municipal waste body will be responsible for the management of this solid waste service and the whole neighbourhood will contribute to the service system.”

33. Are you willing to pay P10 (P20) each month in order to receive the service option?

- a. yes, I will pay P10 (P20) each month
- b. yes, I would like to receive the service but I want to pay less than P10 (P20) (go to 37)
- c. no, I do not want to pay for the provided service (go to 36)

34. Are you willing to pay P15 (P25) each month in order to receive the service option?

- a. yes, I will pay P15 (P25) each month
- b. no, I do not want to pay P15 (P25) for the provided service (go to 38)

35. Are you willing to pay P20 (P30) each month in order to receive the service option?

- a. yes, I will pay P20 (P30) each month (go to 38)
- b. no, I do not want to pay P20 (P30) for the provided service (go to 38)

36. What is the reason that you do not want to pay for service option?

- a. can't afford to pay the full cost (go to 38)
- b. don't consider the service important enough to pay for (go to 43)
- c. believe that the municipality should cover the cost of the service option (go to 43)
- d. don't trust the new service (go to 43)
- e. prefer other solid waste alternative (go to 43)

37. What is the reason that you prefer to pay less than P10 (P20)?

- a. can't afford to pay the full cost
- b. believe that the municipality should cover a part of the cost of the service option
- c. no comment

38. What is the maximum amount that your household would be willing to pay each month for the service option? maximum of _____ pesos each month

39. Do you think it is realistic that you could reduce your expenditures on these items by this amount every month in order to pay for a solid waster service system in your barangay?

- a. yes (go to 41)
- b. no

40. What do you think is a more realistic amount that you could actually afford every month for an improved solid waste service ?

- a. revised amount _____ pesos per month

41. If you wish to receive the service option, what other goods would you give up?
- a. don't want to give up other goods
 - b. want to substitute food products (go to 43)
 - c. want to substitute other products, like ... (go to 43)
 - d. want to substitute savings (go to 43)
42. How would you pay for the provision of the service option if you don't want to give up other expenditures?
- a. use of savings
 - b. generate extra income
 - c. don't know

V. Supplemental Data

“I will soon be ending this interview. Before I do, however, I would like to ask you some questions about you and your family (*ask the questions*).”

43. How many persons live in your household, *i.e.* how many persons eat, drink and sleep in your house on a regular basis?
- a. _____ adults (15 years and older)
 - b. _____ children (under 15 years)
44. What is your level of education in number of years in school?
- a. _____ years in primary school
 - b. _____ years in high school
 - c. _____ years in university
 - d. _____ years in professional courses
45. What is the level of education of the most educated member of your household in number of years?
- a. _____ years in primary school
 - b. _____ years in high school
 - c. _____ years in university
 - d. _____ years in professional courses
46. What does the principal income earner do?
- a. fisherman
 - b. craftsman
 - c. teacher
 - d. employee
 - e. owner of business
 - f. tricycle rider
 - g. driver

- h. cook
- i. worker on passenger boat
- j. unemployed

47. Where does the principal income earner work?

- a. Tingloy
- b. mainland
- c. abroad

48. How many other people in your household contribute regularly to the household income?

_____ number of people

49. Who makes decisions for the daily expenditures?

- a. father
- b. mother
- c. other relatives

50. Do you own your house?

- a. yes (go to 53)
- b. no, I am a tenant
- c. no, I am taking care of the house

51. What is your monthly rent? _____ pesos per month

52. How do you pay your rent?

- a. in cash and directly to the house owner
- b. in cash and directly to the caretaker of the house

53. Does this house have electricity?

- a. yes
- b. no

(go to 55)

54. What was your household's electricity bill last month?

_____ pesos

55. How much are you more or less paying for your water consumption per month?

_____ pesos

56. Does your household have a business here in the house?

- a. yes
- b. no

(go to end)

57. What type of business is it?

- a. grocery shop
- b. candy shop
- c. butchery
- d. barber shop
- e. selling cooked food
- f. bakery
- g. video shop

End

“Thank you very much for your contribution to this survey. Do you have any questions or comments that you would like to ask me? (*record the question(s) and/or comment(s)*).

Thank you very much for your co-operation. We hope to use these results to determine how best to provide affordable and desirable services to the people of your neighbourhood. Good bye.”

**For the enumerator only
evaluation questions**

Evaluation questions

58. Was the person who answered the questions irritated or nervous during the interview?

- a. yes
- b. no

59. Do you think the respondent made an effort to tell the truth about his/her willingness-to-pay questions?

- a. yes
- b. no specify

this: _____

60. How would you rate the overall quality of the interview?

- a. good
- b. fair
- c. poor specify this: _____

61. How many people were listening while you conducted this interview with the respondent?

- a. other family members
- b. non-family members

For the enumerator only

Name of Enumerator :
Barangay :
Date :
Time start :
Time finish :

Answers to the questionnaire

1. A B

2. A B

3. A B

4. A B

Record the address and family name:-

5. A B C D

6. _____ years

7. A B

8. A B

9. A B C D E F G H I J K

10. A B

11. A B C D E F

12. A B C D

13. A B C D E

14. A B C D E F G

15. A B C D

16. A B C D E F

17. A B C D E F

18. _____

19. A B C D E

20. A B C D E

21. _____

22. A B

23. A B

24. A B

25. A B

26. A B

27. A B C D E F G

28. _____

29. A B

30. Give a subscription of your expenditures on:

Expenditure Item:	Daily/weekly/monthly	Amount in pesos
1. food products		
2. house rent		
3. fuel/transport		

4. water consumption		
5. electricity and gas		
6. education (<i>of children</i>)		
7. clothes		
8. taxes		
9. social events (<i>savings</i>)		

31. A B C D E

32. A B C D E F G H I J K

33. *amount P* _____ B C

34. *amount P* _____ B

35. *amount P* _____ B

36. A B C D E

37. A B C

38. *maximum amount P* _____

39. A B

40. *revised amount P* _____

41. A B C D

42. A B C

43. A _____ *adults (15 years and older)*
 B _____ *children (under 15 years)*

44. A _____ *years in primary school*
 B _____ *years in secondary school*
 C _____ *years in high school*
 D _____ *years in university*

45. A _____ *years in primary school*
 B _____ *years in secondary school*
 C _____ *years in high school*
 D _____ *years in university*

46. A B C D E F G H I J

47. A B C

48. _____ *number of people*

49. A B C

50. A B C

51. _____ *pesos per month*

52. A B

53. A B

54. _____ *pesos*

55. _____ *pesos*

56. A B

57. A B C D E F G

58. A B

59. A B *specify*

60. A B C *specify*

61. A B

APPENDIX 3: SUPPLEMENTAL AND ALTERNATIVE SURVEY QUESTIONS

(to follow question 8 in Appendix 2, from the Galveston Bay study)

1. In your opinion, which **two** of the problems in the box below are the most important for state and local governments of Texas to solve in the Greater Houston-Galveston area? Please write a "1" next to the **most important**, and a "2" next to the **second most important**.
 - a. ___ Unemployment
 - b. ___ Poor Economy
 - c. ___ The AIDS epidemic
 - d. ___ Crime
 - e. ___ The quality of public schools
 - f. ___ Pollution
 - g. ___ Traffic congestion in and around cities
 - h. ___ Other (please specify) _____
 - i. ___ Not sure/no opinion

(to follow Question 13)

2. (If answer to 13 is b) Approximately how much money per month do you receive from selling recyclable products to junk shop collectors? _____

(The following 3 questions could follow question 12)

3. In your opinion, has the overall quality of solid waste services been getting better, getting worse, or staying the same over the last two years? (Circle respondent's answer)
 - a. Getting better
 - b. Staying the same
 - c. Getting worse
 - d. I don't know
4. Do you feel that improving solid waste management is important? (Circle yes or no, then read follow-up question.)
 - a. No, I don't feel that improving solid waste management is important.
 - b. Yes, I do feel that improving solid waste management is important.
5. How satisfied are you with current waste management services? Please rate from 1 to 5, where 1 means you are not satisfied at all, and 5 means that you are very satisfied.

(The following two questions could follow question 14)

6. Do you currently pay any special fees or taxes to government agencies for waste disposal?

- a. Yes. Approximately how much money per month? _____
- b. No
- c. don't know.

7. Do you currently pay any money to individuals or businesses to assist you in disposing of your waste?

- a. Yes. Approximately how much money per month? _____
- b. No
- c. Don't know.

(alternative phrasing of willingness-to-pay questions)

8. Suppose that implementation of this program would cost your household 10 pesos per month on your water bill? If you were given an opportunity to vote on this program, how would you vote: Yes, No, or Not Sure?

- a. ___Yes (go to 9)
- b. ___No (go to 10)
- c. ___Not Sure (go to 10)

9. There is some uncertainty concerning exactly how much this program will cost. The program might be more expensive than first estimated. Suppose it would cost your household 15 pesos per month, to be added to your water bill. How would you vote on this program if it cost 15 pesos per month: Yes, No, or Not Sure?

- a. ___Yes (go to xx)
- b. ___No (go to xx)
- c. ___Not Sure (go to xx)

10. There is some uncertainty concerning exactly how much this program this will cost. The program might be less expensive than first estimated. Suppose it would cost your household 5 pesos per month, to be added to your water bill. How would you vote on this program if it cost 5 pesos per month: Yes, No, or Not Sure?

- a. ___Yes (go to xx)
- b. ___No (go to xx)
- c. ___Not Sure (go to xx)

APPENDIX 4: MATHEMATICAL DETERMINATION OF THE SAMPLE SIZE¹⁴

To determine the sample size, Paragraph 2.9 already identified the necessary parameters. In order to facilitate the quest for the correct number of questionnaires, the following mathematical analysis can be applied immediately.

For a percentage rate of r the variance v^2 can be formulated as $r(100-r)$ indicating the heterogeneity of the population. If no guess can be made about the composition of the survey population, r can be equalled to 50, the maximum value reached serving as a safe upper limit. Translated into plain words, when one has no idea about the corresponding population characteristics influencing the dependent variable, it is safe to take the population as completely heterogeneous. As a consequence the required sample size will be larger than when the population is considered homogeneous.

Now the required sample size can be obtained from the following formula:

$$(1) n = k^2 r(100-r)/e^2$$

where

n = the required sample size

k = the value of the "converted" confidence limits of a normal distribution function

v^2 = the variance of the variable of interest among the population

e = the margin of error (or sampling error)

In Table 7 the sample sizes required to determine samples of varying degrees of accuracy are listed. The figures in this table are calculated such that we can be 95 percent confident that the results from the whole population will be the same as in the sample plus or minus the margin of error. Thus, for instance, if in a sample of 2401 cases a percentage of 53 percent was found of respondents voting for, say, the Labour Party, we can be 95 percent certain that 53 percent plus or minus 2 percent of the population intends to vote Labour.

Table 7. Required sample sizes for various sampling errors at 95% confidence level^{a)}

Sampling error (%)	Sample size	Sampling error (%)	Sample size
1.0	9604	6.0	267
2.0	2401	7.0	196
3.0	1067	8.0	150
4.0	600	9.0	119
5.0	384	10.0	96

¹⁴This appendix taken from Marchand, 1998. Used with permission.

a) the sample sizes are drawn from a complete heterogeneous population: $r = 50$
 Source: De Vaus (1996), Moors (1991), Casley and Kumar (1988)

There are several things to note about the relationship between sample size and accuracy. First, when dealing with small samples a small increase in sample size can lead to a substantial increase in accuracy. Typically, increasing the sample size from 119 to 150 reduces the sampling error from 9.0 to 8.0 percent, whereas with larger sample sizes an increase does not pay off that well. To reduce the sampling error from 3.0 to 2.0 percent an increase of 1334 respondents is needed. And second, the size of the population from which the sample is drawn, is largely irrelevant for the accuracy of the sample. It is the absolute size of the sample that is significant (Casley and Kumar, 1988). That is why the exogenous variable N , *i.e.* the population size, is left aside in equation (1). However, a problem presents itself when the survey population N becomes quite small, say for instance smaller than the sample size corresponding with a 4 percent sampling error in Table 8. We are not able to use formula (1) anymore and are thus forced to look for another viable way. Fortunately statistics brings us the solution in the following formula (Agro Vision, 1997):

$$(2) n = k^2 N r (100-r) / \{e^2 (N-1) + k^2 r (100-r)\}$$

where

n = the required sample size

N = the survey population

k = the value of the "converted" confidence limits of a normal distribution function

v^2 = the variance of the variable of interest among the population

e = the margin of error (or sampling error)

As is clear from equation (2) the survey population is now taken into consideration, and thus useful when we are faced with a small population size. In table 8 the sample sizes with corresponding sampling errors have been calculated for N equals 400. Typically, when we require a very small sampling error of 1 percent, the corresponding sample size of 384 almost matches the population size of $N = 400$ in contrast with a large population size. In other words, if we desire a high level of accuracy for small survey areas, almost everyone of the survey population needs to be interviewed.

Table 8 Required sample sizes for various sampling errors with N=400 at 95% Confidence Level^{a)}

Sampling error (%)	Sample size	Sampling error (%)	Sample size
1.0	384	6.0	160
2.0	343	7.0	132
3.0	291	8.0	109
4.0	240	9.0	92
5.0	196	10.0	78

a) the sample sizes are drawn from a complete heterogeneous population: $r = 50$

Source: De Vaus (1996), Moors (1991), Casley and Kumar (1988)

3. PUBLIC PARTICIPATION IN SOLID WASTE FACILITY SITING

Introduction

Good practice in the siting of new waste facilities (landfills, combustion centers, recycling centers, and transfer stations) is one of the most important determinants of a successful waste management strategy. It is also one of the most complex aspects of developing a new waste system because it involves not only technical issues, but social, economic, and political issues as well:

- **Environmental and health risks.** These include ground water pollution, air quality, and transportation of materials.
- **Economic issues.** These include effect on property values, construction and operating costs, impact on local industry, and future land uses.
- **Social issues.** These include equity in site choices, effect on community image, aesthetics, effect on cultural heritage sites, alternative and future land uses, impacts on waste pickers.
- **Political issues.** These include local elections, vested interests of community groups, responsibility for site management, and local control).

Landfill siting can have widespread social and environmental consequences on nearby communities and on specific groups. Landfill construction will inevitably produce dust, noise, and increased traffic. The landfill facility itself, if not properly designed or maintained, can cause health problems and even bring about injuries to workers and neighboring settlements.¹⁵ Residents living in developed and developing countries alike have long opposed landfill sitings in their communities. While often recognizing the need for solid waste management, they simply do not want waste accumulating in their backyards (known as the “Not In My Back Yard” syndrome or NIMBY. Politicians also suffer from the NIMTO Syndrome: “Not In My Term of Office” syndrome.

This chapter provides guidance to policy makers, site managers, Environmental Assessment (EA) consultants, Project Managers, and Social Scientists in planning a public participation strategy for landfill and transfer station siting. The guidance provided is consistent with World Bank environmental policies, which are recommended as good practice for both World Bank and non-World Bank funded facilities. The chapter covers the following topics: the World Bank’s policy on environmental assessment, developing a public participation plan for each phase of the facility siting process, techniques for involving the public, and approaches to communicating risks to the public and the mitigation of negative impacts.

¹⁵ Injuries to communities, for example, can come about by sliding landfills built on overly steep slopes. For a full discussion of solid waste related health impacts, see Cointreau 2000.

The World Bank's Environmental Assessment Policy

The primary objective of the World Bank's Safeguard Policies is to ensure that the Bank's Operations do not cause adverse impacts. For Landfill projects, the key Safeguard is Operational Policy (OP) 4.01 on environmental assessment. This Safeguard distinguishes projects according to their potential environmental impacts. Projects are assigned one of four categories: A, B, C, or FI. A proposed project is classified as Category A if it is likely to have "significant adverse environmental impacts," or impacts that are broader than the immediate physical works. Projects involving the construction of a new landfill (or an entirely new area of a landfill adjacent to an existing dump or landfill) are almost always classified as Category A.

A project is classified as Category B if it is likely to have environmental impacts that are site specific, reversible, and easily mitigated. Projects that upgrade or refurbish an existing waste management facility are generally classified as Category B. The Category C rating is reserved for projects such as technical assistance or institutional development that are likely to have minimal or no adverse environmental impacts. Category A projects require a full EA; Category B a partial EA; and for Category C projects, no EA is required.

A proposed project is classified as Category FI if it involves investment of Bank funds through a financial intermediary, in subprojects such as waste management facilities, that may result in adverse environmental impacts. In these projects, the subprojects must be screened and assigned a ranking of either A, B, or C. The assigned subproject must then follow the requirements of OP 4.01 at the level which it has been rated.

OP 4.01 spells out specific public consultation requirements. For Category A projects, it is necessary to do the following:

- Consult with project-affected groups and local NGOs and take their views into account;
- Consult with these groups shortly after environmental screening and before the terms of reference for the EA are finalized; after the draft EA is prepared; and throughout project implementation as necessary to address EA-related issues that affect them;
- Provide a summary of the proposed project's objectives, description, and potential impacts to the project-affected groups and local NGOs prior to the first consultation;
- Provide a summary of the draft EAs conclusions prior to consultation on its content;
- Provide the relevant material in a timely manner prior to consultation and in a form and language that are understandable and accessible to the groups being consulted.

Category A projects often have impacts that trigger other Bank Safeguard Policies as well. New waste facilities projects often have widespread environmental and social

impacts, including resettlement, effects on indigenous peoples and other vulnerable populations, and on cultural property. For example, the construction of a new facility may require land inhabited by tribal peoples or squatters, or it may intrude upon, or even destroy, a cultural heritage site, such as an archaeological dig, historical settlement or monument. Guidance for addressing issues related to resettlement, indigenous peoples and cultural property are stated in Operational Directives 4.30 and 4.20, and OPN 11.03, respectively.

Following the Bank's Safeguard Policies assures a minimum, basic level of public consultation. Practitioners are encouraged to go beyond minimum participation levels mandated in the policies. A good way to initiate a public consultation process that meets or exceeds the Bank's Safeguard requirements is by developing a detailed public participation plan.

Public Participation Plan

Planning for public involvement at the beginning of the siting process may preempt costly delays, misunderstandings, and conflict. Public consultation is sufficiently difficult and complex that ad-hoc approaches are not enough. Through planning, it is possible to ensure that the appropriate stakeholders will be involved, that they will be involved sufficiently early in the process (box 1, box 2), and that their involvement will improve facility siting and public acceptance.

**Box 1. Liepaja Region Solid Waste Management Project
(Latvia): Using a Communications Expert to Develop the
Public Consultation Plan**

A communications expert was hired to participate in the project preparation of the Liepaja Solid Waste Management Project. The communications expert joined the first mission to Liepaja, where for two weeks, the team visited municipal and regional authorities, toured the main Liepaja landfill site, and other smaller existing sites in the region. Independently, the expert met with the City public relations head, local journalists, TV, radio, and other media agencies to discuss public relations issues, and met with local NGOs to discuss environmental and social concerns connected to the proposed landfill site. He also attended a meeting of nine municipalities where he explained the objectives of the project.

Having assessed the situation, the expert concluded that, while no major social issues were likely to surface, attention needed to be paid to a well-developed participatory process in order to encourage changes in attitude and behavior vis-à-vis waste collection, processing, and management. The consultant

Several hundred families lived in the colony during the spring and summer months. He recommended that a review should be conducted of the colony, to establish its numbers, seasonality, and level of institutionalization.

Subsequently, the expert prepared a broad public participation and communications strategy for the project consisting of four main parts: research and training, consultation, coordination and planning.

Research and training:

- **Train staff in applied communication and animation techniques;**
- **Prepare training materials for local staff to use in training other personnel;**
- **Conduct a social assessment of the summer colony;**
- **Make an inventory of media channels and outlets in Liepaja City and Region; and**

Consultation:

- **Establish a hotline to City Hall and develop a parallel or shared mechanism for Liepaja region;**
- **Create a more permanent mechanism for consultation with NGO and professional community, including environmental organizations;**
- **Establish a media working group; and**
- **Solicit regular input into the educational planning process.**

Coordination:

- **Establish links with the Feasibility Study; and**
- **Coordinate with national strategies for inclusion in environmental programs and projects.**

Planning

- **Build project into City media relations work and briefings and link to hotline;**
- **Further develop the participation and information strategy, including detailed breakdown of audiences and stakeholders in relation to communication channels; and**
- **Prepare cost estimates and needs for external support.**

A public participation plan should describe in detail the activities to be conducted, their sequencing and timing, and responsibilities for carrying out the plan. It should allow for different kinds of involvement and permit people with varying interests and expertise to participate in the siting process. Participation plans are flexible documents that can be modified if new issues arise. The plan should include the following:

- The objectives of public consultation;
- The appropriate stakeholders to fulfill the objectives;
- Identification of key social issues;
- The information exchange needed at each step;
- Appropriate participation techniques for fulfilling the objectives; and
- A consultation budget.

Determine the Objectives of Public Consultation For each phase of the siting process and for each individual consultation exercise, it is necessary to determine the objectives of the public involvement exercise. Public consultation objectives include the following general categories: ensuring public understanding, eliciting public concerns, generating alternatives, and making decisions.

Identify Important Stakeholders. Project siting decisions should involve a wide range of stakeholders. Key stakeholders include, but are not limited to: residents living near the site, waste pickers, environmental groups, concerned citizens, and public officials. Other stakeholders include: waste management professionals, local developers, and manufacturers.

Identify Key Social Issues. Issues of social concern are usually connected with the vested interests of each stakeholder group. Once the stakeholders are identified, the next step is to ask: “how are they likely to be affected, both directly and indirectly?” Brainstorming a list of potential issues and formulating questions before asking stakeholder groups about their concerns is helpful for pinpointing specific issues and directing the response. It is especially useful when speaking with citizens who are not able to articulate all of their concerns. The Social Assessment is an ideal tool for identifying the stakeholders, bringing social issues to the forefront, and making recommendations for integrating public views into project design.

Determine Information Exchange Needed at Each Step. This involves asking, “what kinds of information do you want to present to the public and what kinds of information do you want back from the public?” For example, you may want to inform the public about the process by which the list of sites were developed and the criteria used in identifying the sites. In return, you may want to find out if the process used is acceptable to the public and whether any additional sites should be included (EPA 1990).

Select Appropriate Participatory Techniques. Public involvement can take place at three different levels: information dissemination, listening, and collaboration (involving the public in decision making). Additional information about specific participation methods at each of these levels is provided in Appendix 1 of this chapter. The choice of techniques depends on the following considerations:

Box 2. Finding Landfill Sites in Sulawesi Indonesia

Through the Sulawesi - Irian Jaya Urban Development Project and the Second Sulawesi Urban Development Project, the World Bank assisted in landfill development in the cities of Kendari, Tana Toraja, and Manado (in addition to several other communities). In all three examples, the search for a new site and operations were most affected by community consultation, or lack of adequate consultation.

In 1993, construction of a new site in Kendari began in 1993. A good site in an appropriate location was built, but after repeated efforts it was still not fully operational. After the site was built and vehicles started using the site, local residents objected. The municipal government has not been able to assuage the resident's fears and does not have the ability to overcome local opposition. The city takes its waste to a much poorer disposal site, farther from town and a good site sits idle. A new community consultation program has been launched in the hope of using the new site.

In Manado, the experience was similar. As early as 1990, it was agreed that Manado's dump was in a poor location (that is, on a steep ravine slope, at the headwaters of an important stream, and on top of active springs). The local government, cognizant of the difficulties associated with finding a new site, deferred finding a new site and continued operating the existing site. As part of the Second Sulawesi UDP, finding and developing a new site was emphasized. A technically sound and professional site selection process was undertaken, resulting in the identification of three possible sites. The first ranked site, however, was not selected because it was anticipated that the local government would have more difficulty acquiring the land for that one than for others. Much of the difficulty in finding a new site could be traced to the poor operating conditions (for example, fires, traffic, flies) at the existing site.

Development of the new site has been accompanied by a thorough discussion of neighboring communities, both at the new and existing locations. One of the key communities were the waste pickers at the existing site who expressed much concern and regret that the site would move – and with it a livelihood for some 30 families.

Tana Toraja with its unique land ownership traditions and rugged topography is an especially difficult area for siting landfills. With the assistance of international advisors, the Region of Tana Toraja began a community consultation forum to assist with development of a new landfill. An effective dialogue was established, which had spin-off benefits such as encouragement of waste minimization, recycling, and composting.

The process appears to have been 'short circuited' from perceived timing constraints and a new site established. It is not clear what the role of the community forum now is or what the long-term ramifications of a relatively arbitrary site selection process will be.

These examples provide a few common lessons: (i) community consultation at all stages is critical for siting and operating landfills, (ii) arbitrary siting decisions by politicians usually causes problems, (iii) a rational, publicly vetted, and technically sound site selection process is the best way to find new landfill sites, (iv) political support for the site selection process is critical and needs to be maintained at all stages, (v) local communities can be affected in many ways, some of which are not always apparent (for example, waste pickers at existing sites), and (vi) poor operating practices at existing landfills (many operated as dumps) makes looking for new sites far more difficult because the public believes new sites will be operated in the same manner.

Source: Dan Hoornweg (2000)

- Public use of various media such as newspapers, radio, television, and the internet;
- The literacy and education level of the project-affected groups and local NGOs;
- The complexity of the content of the public consultation exercise;
- The objectives of the consultation exercise, e.g. inform, listen, or empower; and
- Local customs about how collective decisions are made.

The bottom-line standard for choosing a participation technique is that it allows the project-affected groups and the local NGOs to understand the proposed facility and how it will impact their lives and the environment. It is appropriate to send literate populations newsletters, reports, and other written information about the proposed facility. Much more care must be taken with illiterate populations. With these stakeholders, direct contact (for example, through small meetings, focus groups or interviews), is the preferred way to ensure that the bottom-line standard is achieved. The general pattern of public consultation during site selection is an iterative process of information dissemination followed up with listening and collaboration.

Develop a budget. A comprehensive public participation plan can be expensive. When developing the budget, bear in mind: staff time organizing public meeting; photocopying, printing, and mailing of materials; consultants' fees, fees associated with renting of buildings; transportation fees for site visits, and costs for project-affected groups and local NGOs to be involved, which should be paid for by the project.

Planning for Regional and Local Siting

The participation plan should address the two main phases of the facilities siting process: (1) regional siting and (2) local siting. Regional siting is the process of developing a list of possible project sites within a given region or country, and then narrowing the list down to the most promising site. Local siting is the process of determining whether the selected local site is

technically viable and acceptable to the public. Local siting includes consultation during scoping, as well as after the completion of the draft EA.¹⁶

Regional Siting

The issues involved in regional siting are sometimes too broad and general to generate public interest (Noble 1992). Nonetheless, public consultation at this stage is still of vital importance. There is a big difference between public consultation starting after the technical solution and the site already have been determined versus engaging the public early in an ongoing dialogue about the waste problems, possible solutions, and site selection. Public involvement from the beginning is the most effective way to build the consensus needed to “get beyond the inevitable vocal stage which occurs when the site is selected” (Noble 1992).

Objectives of Public Consultation During Regional Siting. The objectives at this phase are to:

- Help the public to confront their current and projected waste management problems, including their economic and environmental costs;
- Help the public to learn about and commit to practices that lower overall trash volume and hence make eventual solutions more cost effective and sustainable;
- Introduce the public to the concept of solid waste management planning and discuss how alternatives are developed and evaluated;
- Engage the public in the siting process using mutually developed and accepted evaluation criteria; and
- Develop and alternative mitigative measures that could address public concerns.

Identifying Stakeholders for Regional Siting. During regional siting, the general public in the area served by the new facility are the key stakeholder. They need an opportunity to become informed about current and projected waste management issues and informed about the proposed facility. In addition to the “undifferentiated public,” regional siting is a good time to engage others who might be interested or influential to the process, e.g. NGOs, engineering or business associations, local universities, and the press.

Participation Techniques for Regional Siting. All three basic participation techniques are needed to achieve the objectives of regional siting. *Information dissemination* techniques such as formal information sessions or newsletters can be used to educate the public about the nature of the waste problem and possible alternatives. *Listening* techniques, such as surveys and

¹⁶ The term “scoping” refers to the process of prioritizing environmental and social issues for further study in the EA.

meetings are needed to learn public perceptions about waste, alternative solutions, and willingness to pay for improved service or environmentally sustainable solutions. *Collaborative* techniques, such as problem solving meetings or advisory groups, can be utilized to select siting criteria, alternative waste management technologies, and alternative sites.

Local Siting

There is much greater interest in siting once one or two specific sites have been selected (Noble 1992). It is at this phase that the NIMBY syndrome fully engages local interest. However, if the public has been actively engaged during regional siting, then they are already educated about the costs of the existing situation, better informed about the proposed facility, and therefore should be more ready for a constructive dialogue.

Public Consultation Objectives for Local Siting. At the scoping phase the objectives are to ensure that project-affected groups and local NGOs:

- Understand the project and its possible impacts;
- Have an opportunity to suggest possible impacts that should be investigated during the EA; and
- Have an opportunity to suggest ways to mitigate project impacts.

For public consultation around the draft EA, the objectives are to determine whether stakeholders perceive that their concerns are adequately reflected in the EA and what changes they wish to see in the final EA report.

Identifying Stakeholders for Local Siting. If a social assessment is conducted, this will provide an excellent information source for identifying stakeholders. A social assessment is particularly useful for helping to identify ways to overcome the obstacles blocking fuller participation of potentially affected groups whose opinions are often not heard, such as ethnic minorities, women, and the poor.

Once a site is selected, it is useful to refine the stakeholder list by asking the following basic questions (ERM 1998):

- Who will be directly affected?
- Who will be indirectly affected?
- Who might have an interest or believe that they are affected?
- Who can have a large impact on the facility?

Participation Techniques for Local Siting. Meeting the range of objectives for local siting requires a range of public consultation techniques. Information techniques are needed to help the project-affected groups to understand the nature of the proposed facility and its social and environmental impacts. Listening and/or collaborative techniques are used to obtain the views of project-affected groups and NGOs about

priority impacts and ways to mitigate them. The project staff should follow a comprehensive approach, utilizing and combining a wide range of participation techniques, as in the Naboro Landfill in Fiji (box 3).

Box 3. Naboro Landfill in Fiji: Combining a Broad Mix of Public Consultation Methods

The public consultation process began prior to the start of the economic impact assessment with a half day educational seminar with 20 participants who had been invited from government departments, non governmental organizations, health authorities and town councils. With the help of audio-visual aids, the consultants presented the concept of an engineered landfill and the specific case of the Naboro Landfill. Following the presentation there was a vigorous discussion as the participants posed questions, sought clarification, and made alternative suggestions.

To ensure that the general public was informed about the landfill, and to invite written responses, a paid advertisement was put in the Fiji Times.

The consultants then targeted information to concerned agencies, organizations, and individuals. They developed a comprehensive list that included Environment Organizations, Government Departments, Aid Agencies, Parliamentarians, Non governmental organizations, Statutory bodies, Women's groups, Religious Bodies, Heath Authorities, and Town Councils. An information sheet on the proposed landfill, was sent to each stakeholder on the list. These stakeholders were invited to submit written comments and were later invited to a meeting where they again had the opportunity to raise their concerns.

The consultants met with government officials at national and local levels and came to agreement on a number of issues, including, for example, that proper Fijian protocol should be followed in dealing with the Fijian villages.

Later the consultants and key government officials, including the Minister of the Environment, held a meeting with a village close to the proposed site. The residents were unanimous in opposing the facility but were still "happy and grateful" for the way the government was handling the project, i.e. with environmental impact studies and public consultation. During the meeting, the villagers and the government initiated discussion on compensation, including the possibility of landowners having shares in the company that would run the landfill.

Source: Sinclair Knight Merz Consultants. 1997. *Naboro Landfill Environmental Impact Statement.*

Scoping phase. The content of participation plans should vary depending on the local context (box 4). Nonetheless, a good general model for many situations is one-on-one visits with members of the affected community followed by community meetings. For the one-on-one visits, a good rule of thumb is to meet with all community members living within one mile of the proposed facility (Noble 1992). The emphasis of these visits should be on listening to each person's concerns. The spirit of quality listening is captured by the following types of questions:

- I just want to be sure I have heard all of your concerns.
- Can you think of any other points we haven't covered?
- If you think of anything else, will you be sure and get back to me? (Noble 1992)

Local meetings can begin once these face-to-face visits are completed. The first meeting can begin with a presentation of the proposed project:

- Its purpose;
- Its proposed location;
- The EA process;
- The mechanisms by which the community can influence project decision making;
- Avenues for appeals (Nagarajan and Okot-Uma 1999).

The presentation should be followed by a question and answer session and small group sessions. Findings from the small groups can then be presented in a wrap-up plenary session.

Draft EA Phase. Key stakeholders should be sent a copy of the draft EA report and given plenty of time (for example, 30 days), to read and develop a response before holding a public meeting. With illiterate project-affected groups, the results of the EA can be presented in small community meetings. Depending on the local culture, question and answer sessions and small group breakout sessions may be appropriate ways to allow community members an opportunity to respond.

Box 4. Eastern Caribbean: Solid Waste Management Project Public Consultation Improved the Quality of Scoping

The objective of the Solid Waste Management Project for the Organisation of Eastern Caribbean States was to support the establishment of port reception facilities for ship-generated waste, improve domestic collection and its enforcement, and upgrade dumps to sanitary landfills on each island. In the initial stages of project preparation, representatives from government, business, and NGOs were briefed about the project objectives and proposed activities. After a preliminary report was produced, it was proposed to the governments to hold a series of public meetings to announce the locations of the proposed sites and obtain feedback.

Meetings were held in all six island countries with participation from the national and regional project coordinators. Some were held in the small communities closest to the landfill site and others in the capital city. Many were televised on radio and television programs that allowed viewers and listeners to call in and voice their concerns.

The meetings helped increase awareness for the project, gave citizens an opportunity to share their concerns with government, and helped cleared up misunderstandings. In the case of Grenada, the public meeting was instrumental in bringing to light an important issue overlooked by the EA for the island – the presence of the endangered Grenada Dove in the area of the proposed landfill site. As a result, experts were hired to undertake further studies of the areas and propose measures to protect the dove.

Source: Partridge (1994)

Risk Communication

The NIMBY (“Not in My Back Yard”) syndrome is common in communities where residents perceive all the risks associated with the siting of a landfill facility or transfer station and do not see any of the benefits. NIMBY is very often the product of three factors: a problem of trust, a problem of information and a problem of flawed decision-making processes (Petts and Eduljee 1994). People may have a distrust of institutions and persons overseeing the siting process or managing the waste facility, such as government officials, environmental regulatory authorities, and operators. They perceive that profit motivation overrides good safety practices. Inadequate, incomplete, or overly technical information also contributes to negative public perceptions about the siting process and heightens risk perceptions. “Top-down” siting processes, such as the traditional “decide-announce-defend” model tend to be made in isolation of the people most likely to be affected by the decision. In such cases, authorities adopt a defensive posture and seek to minimize the risks – often contributing to public suspicion rather than allaying it.

One important way site managers and/or authorities can reduce NIMBY syndrome is by communicating the risks of the landfill or transfer station siting with the public. Communicators need to convey to the public what is known about potential risks and about the precautions being taken to reduce those risks (EPA 1990, p. 62). Rather than merely educating the public about risks or selling the idea of the facility, a risk communication strategy involves a two-way dialogue between the site managers and the public (Sloan 1983, Petts and Edulijee 1994, Noble 1992).

Site managers will want to present information about the nature of the risks (the hazards, probability of exposure to each hazard, total population at risk, etc.) the nature of the benefits (characteristics of the benefits, who benefits and in what way, total benefit, etc.), information on alternatives (alternatives to the hazard, effectiveness of each alternative, risks and benefits of each alternative and not acting, etc.), uncertainties in knowledge about risks (weaknesses of available data, assumptions on which estimates are based, sensitivity to changes in estimates, etc.) and information on management such as who is responsible for the decision, what issues have legal importance, what resources are available (National Research Council 1989). When done properly, risk comparisons are useful for quantifying risk estimates. The public is not likely to accept risk comparisons that compare voluntary with involuntary risks or messages that trivialize risks. Rather, it is most likely to accept risk comparisons that (Covello, Sandman and Slovic 1998):

- Compare the same risk at two different times (for example, before and after an additional measure is taken);
- Compare the risk with a standard (for example, comparing the risk of exposure from the proposed landfill with the risk of exposure from a landfill approved by international standards.)
- Compare different estimates of the same risk (for example, one developer's estimate of the risk compared to another developer's.)

Very often, the public assumes that the current situation is without risk (EPA 1990). A new or upgraded facility may pose fewer risks than the existing situation, but the public may not understand that some risks remain. In order to change this perception, people need to be told about the risks associated with the existing situation and risks associated with the proposed site.

Mitigating Negative Impacts

Negative impacts will invariably arise as a result of landfill and transfer station siting. It is therefore necessary to anticipate the mitigation issues early in the decision-making process. The chances for success are much higher when the public is involved earlier than later in the siting process. After any potentially adverse impacts have been identified, appropriate mechanisms to involve the public should be put into place, such as forums, public meetings, technical review groups, etc. These meetings should be integrated into the public participation plan.

Mitigation involves a process of identifying people's concerns and working to alleviate them by providing sufficient and credible information and ensuring general access to that information; and by negotiating with the public to arrive at an outcome that is acceptable to all parties. Mitigation can, and often will, involve providing tangible benefits to affected groups, such as road improvements, grants to offset construction impacts, and tax breaks. It is believed that individuals are willing to condone a risk-imposing activity if they are adequately compensated (Petts and Eduljee 1994). People will expect to receive compensation in an amount that is equivalent to the perceived risk.

Compensation is more effective when it is tied directly to the problem. For example, road improvements might reduce transportation risks and are likely to gain more support than an equivalent amount in cash (EPA 1990). Problems can arise, however, if the public feels that it is being bribed to keep quiet. This tends to be the case when the public perceives the risk to be unsafe. If the public feels that health and safety issues are genuinely at stake, they will almost never agree to compensation in any form as indicated in Diyarbakir, Turkey where local residents decided that any compensation was not worth the perceived health risks (box 5).

Box 5. Southeastern Anatolia, Turkey, Solid Waste Management Project: Local Residents Views on Compensation versus Perceived Health Risks

Diyarbakir is one of four cities to receive support from the World Bank for the building of a new landfill and two new transfer stations. The proposed landfill site is located on the Mardin highway in a depression on the slope of Kurt Rock. Located just 500 meters away is Kurtkayasi, a village of 200 households. According to recent legislation, a landfill site must be at least one kilometer from the nearest settlement; however, since the site had been selected before the law was passed, it is exempt under a grandfather clause.

Kurtkayasi village has strong kinship relations and some of the inhabitants are recent migrants. The village has no school, no sanitation services, and only low-voltage electricity. Villagers raise crops and animals on a subsistence basis. Talks with the *muhtar* and villagers revealed that they had not been informed about the proposed landfill. They strongly objected to the idea regardless of the sanitary precautions and public works offered as compensation. They believed the landfill would harm their children and animals, contaminate their water source and generate flies, noise and dust.

Subsequently, Diyarbakir residents were called to a meeting where they were informed that a transfer station would also be built in the locality. They had not heard of this idea before, and were concerned that the transfer station would interfere with their efforts to make the city beautiful by planting trees. During the meeting, officials offered compensation, such as improved public transportation, a park, and roads, but the majority of citizens refused. They stated that they were determined to protect their city and would resort to all legal means necessary to prevent the siting of the transfer station.

Source: Bernstein (1999)

In a studies of landfill sitings in Canada, Zeiss (1991) found that the public preferred prevention measures, followed by control measures, over compensation. The costs of prevention and control were of secondary concern. Communities responded well to the process of first stating their concerns and subsequently choosing from a variety of engineering options to find the most acceptable solution. Such a process allowed the public to feel that it played a key role in distributing costs and benefits fairly. Many public concerns about mitigation has to do with procedures or process (EPA 1990):

- Who makes the decisions?
- What opportunities does the public have to influence decisions?
- Who decides whether to close the facility if something hazardous happens?
- How much access to information (especially information about risks) is made available?

People want to know that the decision-making process is fair and transparent. If the public perceives that the process is unclear, the credibility of the authorities and institutions involved will be jeopardized. The most effective way of gaining citizens' trust is to give them representation in the decision-making process and control over safety issues. The public may demand higher levels of participation than can be ascertained from public meetings and access to a hotline. For example, they may want access to facility management so they can express their concerns, representation on the board of the facility, funds for an independent review of technical studies, funds for a monitoring system, or power to shut down a facility if unanticipated health or safety risks are uncovered (EPA 1990).

As mentioned earlier, the issues involved in landfill and transfer station siting can be complex and difficult to sort out. Yet, it is very often the case that residents living in one area of the country will have concerns similar to residents living in another area of the country. The table below provides a summary of issues that commonly arise in the siting process and strategies for mitigating them that go beyond the traditional public meeting.

Common Concerns and Mitigation Strategies

<u>Concern</u>	<u>E. Mitigation Strategy</u>
Ground and surface water Quality	Provide adequate geological studies Educate the public on modern landfill design Sponsor field trips to modern facilities with no adverse water quality impacts Explain to the public any risks associated with the landfill design Explain laws and regulations to the public and make sure mechanisms are in place to enforce them Establish monitoring programs to ensure safety Prepare a contingency plan early in the process
<u>Concern</u>	<u>F. Mitigation Strategy</u>
Negative Neighborhood Image	Design and landscape the site; surround the site with a park and provide trees to filter air pollution and screen viewing of the site operations Sponsor field trips to modern attractive facilities that do not adversely affect neighborhood image Build an attractive facility in the community, such as a recreation center or city hall Finance a study of how sitings have affected property values in

	<p>other areas</p> <p>Guarantee home values up to a certain threshold</p> <p>Build a training conference room at the site and invite school groups and community groups to visit the landfill operation and learn about its design and monitoring measures</p> <p>Guarantee that routine litter cleanup will be done along main access roads and that litter fences will be used at the landfill working face</p>
Traffic Safety/Congestion	<p>Increase the use of traffic attendants to ensure safe crossing</p> <p>Limit the number of trips to and from the transfer station</p> <p>Shorten the distance from the transfer station to the landfill</p>
Noise	<p>Adjust the facility's hours of operation</p> <p>Provide sound proofing equipment</p> <p>Identify alternative traffic routes to and from the facility</p>
Odor	<p>Minimize the size of the working face</p> <p>Cover all solid waste at the end of each work day</p> <p>Provide landfill gas ventilation with flares for combustion, if there are nearby communities that would be susceptible to experience noxious odors</p>
Dust	<p>Take steps to reduce dust and set up a hotline to monitor compliance with agreements</p>
All impacts	<p>Set up a hotline to monitor and respond to complaints</p> <p>Develop a community liaison person or group to conduct performance monitoring and be the communication link to the community</p>

Source: EPA 1990, Noble 1992, Zeiss 1991, and Cointreau-Levine 1999

Sometimes it is not possible to anticipate and avoid all negative impacts. If public controversy against the landfill or transfer station siting is high, a professional, independent arbiter may be necessary to resolve disputes. The arbitration process can be costly and time-consuming, however, resulting in significant delays and even disbandment of the siting. The most effective way of gaining the public's support is by involving a wide range of stakeholders early in the process.

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Annex 1. Techniques for Involving the Public¹⁷

Public involvement is a dialogue, a two-way communication that involves both getting information out to the public and getting back from the public ideas, issues, and decisions. Although they must fit together, techniques are divided into three categories: information techniques (getting information *to* the public), listening techniques (getting information *from* the public), and collaborative techniques (involving the public in decision-making). No single public participation method will fulfill all needs, and a combination of methods will be appropriate depending on the stage of the EA process, the objectives to be achieved, and the audience to be reached. Below is a brief description of techniques commonly used in community public involvement programs and the circumstances in which they are most helpful.

1. Information Techniques

Every good public involvement program includes a good public information campaign. In particular, the public needs to know why a solid waste facility is needed and what the consequences will be if no facility is sited. People need information about the alternatives to choose between them, and they need to know the facts about a proposed decision to decide whether they support it. Some techniques for communicating to the public are:

- **Briefings** – Briefings keep key elected officials or agencies informed of your progress. Briefings consist of a personal visit or even a phone call to inform people before an action is taken. Briefings often lead to two-way communication, because you may receive valuable information in response to your announcement. Briefing elected officials or agencies is particularly important if your actions might result in political controversy that may affect them.
- **Feature Stories** – A feature story is a full-blown news story, written by a reporter, not just an announcement based on a news release. Sending a news release to a newspaper is one way to get the media interested in your story. But often you are more likely to get someone interested if you make a personal contact with an editor or reporter who has an interest in the issue.
- **Mailing out Key Technical Reports or Environmental Documents** – Simply making technical reports available at libraries or other public places has not proven effective for getting the level of knowledge about these documents that you need for credibility. Instead, mail key documents directly to leaders of the organized groups and interests, including business, environmental, or neighborhood associations.
- **News Conferences** – A news conference is another way to stimulate the interest of the media in developing news stories. The particular value of a news conference is that your spokesperson will be speaking directly to the public, particularly on radio or television, either of which may carry short sections of the news conference as part of its news coverage. News conferences are usually reserved for major announcements or for a time when a well-known spokesperson is available.

¹⁷ This section on techniques was taken from EPA 1990, pp. 41-60.

- **Newsletters** – Siting a solid waste facility can take years, and newsletters can sustain interest throughout the process. Typically, newsletters target those people who are most interested in the issue, such as neighbors near potential sites, leaders of interest groups, elected officials, agency representatives, or anyone who has participated in public meetings or other public involvement activities. Newsletters provide far more information than the news media. A newsletter must be written objectively. If it is simply a promotion piece for the pre-determined position of a governmental entity, you will lose all credibility. To ensure objectivity and protect credibility, ask a citizen advisory group to review the newsletter because such a group is very sensitive to political nuances.
- **Newspaper Inserts** – One way to reach an entire community with the same information is to prepare a newspaper insert, which might be an effective means of informing the public about the need for a solid waste facility, or for discussing the overall strategy of mixing recycling, source reduction, incineration, and land disposal. An insert is not a good technique if you want to keep the whole process low key. The more that people know about the process, the more people will want to participate in the decision. But the analysis of many case studies show that the public’s resentment from feeling inadequately informed is a greater threat to the success of a siting process than the participation of more people.
- **News Releases** – News releases should interest the media in doing a news story on your issue. If you are in a smaller community, your story is likely to receive attention in the local paper. If you are in a larger community, you are competing with a lot of other news stories. As a result, news releases often need a slant or human interest feature to convince the media that readers/viewers would be interested.
- **Paid advertisements** – Paid advertisements are one way to make an announcement or present information to the public in newspapers or on radio or television. One major consideration in paid advertising is public reaction against the spending of public funds. Occasionally, people criticize large ads, even if they are providing information. Paid advertisements are useful when announcing public meetings.
- **Presentations to Civic and Technical Groups** – One effective way to communicate with people who are influential in the community is to make presentations to civic groups, business associations, environmental groups, and homeowner associations in neighborhoods near potential sites. One way to build credibility for your technical studies is to make presentations to professional societies of engineers, planners, or other professional groups involved in solid waste issues. Tailor your presentation to the technical interests of our audience. Such presentations help create a general perception in the technical community that you are doing a professionally competent study.
- **Press Kits** – It is an advantage for reporters to understand the background of the siting issue and the process you are following. That way, when a reporter gets a call from an irate citizen complaining about the siting process the reporter has a context in which to put that complaint. One way to help reporters is to prepare a press kit that summarizes key information on the siting study. Typically, a press kit consists of a folder with pockets for short summaries of the project need, the siting process, summaries of key technical studies, environmental documents, and newsletters.

Table 3. Public Information Techniques

Technique	Features	Advantages	Disadvantages
Briefings	Personal visit or phone call to key officials to announce a decision, provide background information, or answer questions.	Provide background information. Determine reactions before an issue goes public. Alert key people to issues that may affect them.	Requires time.
Feature stories	In-depth story about the siting study in newspapers or on radio and television.	Provide detailed information to stimulate interest in the siting study, particularly at key junctures such as evaluating alternative sites or selecting a preferred site. Often used prior to public meetings to stimulate interest.	Newspaper will present the story as editor sees fit – project component has no control over how the story is presented, except to provide full information.
Mailing out key technical reports or environmental documents	Mailing technical studies to other agencies and leaders of organized groups or interests.	Provides full and detailed information to people who are most interested. Often increases credibility of studies because they are fully visible.	Costs money to print and mail. Some people may not read the reports.
New conferences	Brief presentation to reporters followed by question and answer period, often accompanied by handouts of presenter’s comments.	Stimulate media interest in a story. Direct quotes often appear in television/radio. Might draw attention to an announcement or generate interest in public meetings.	Reporters will only come if the announcement is newsworthy. Cannot control how the story is presented, although some direct quotes are likely.
Newsletters	Brief description of what is going on in the siting study, usually issued at key intervals for all people who have shown an interest in the study.	Provide more information than can be presented through the media to those people who are most interested. Often used to provide information prior to public meetings or key decision points. Also maintain visibility during extended technical studies.	Requires staff time and money to prepare, print, and mail. Style of presentation can do a lot of harm – either too simplistic or overly technical or full of jargon.
Newspaper inserts	Much like a newsletter but distributed as an insert in a newspaper.	Reach the entire community with important information such as project need and alternative sites being considered. Is one of the few mechanisms for reaching everyone in the community through which you can tell the story your way.	Requires staff time to prepare insert, and distribution costs money. Must be prepared to the newspaper’s layout specifications. Potential negative reaction to use of public funds for this purpose exists.
News releases	Short announcement or news story issued to the media to get interest in media coverage of the story.	May stimulate interest from the media. Useful for announcing meetings or major decisions or as background material for future media stories.	May be ignored or not read. Cannot control how the information is used.
			(CONTINUED)

Technique	Features	Advantages	Disadvantages
Paid advertisements	Advertising space purchased in newspapers or on radio or television.	Effective for announcing meetings or key decisions. Story presented the way you want.	Can be costly. Radio and television may entail expensive production costs. to prepare the ad. Potential negative reaction to use of public funds for this purpose exists.
Presentations to civic and technical groups	Deliver presentations, enhanced with slides or viewgraphs, to key community groups.	Stimulates communication with key community groups. Can also provide in-depth feedback.	Few disadvantages except some groups may be hostile. Requires time.
Press kits	A packet of information distributed to reporters.	Stimulates media interest in the story. Provides background information which reporters use for future stories.	Has few disadvantages. May be ignored. Cannot control how the information is used.

Listening Techniques

Once the public has been informed, the next step is to provide forums or mechanisms by which the public can express feelings, thoughts, or concerns back to you. Again, a number of techniques are available.

- **Focus Groups** – Some organizations and agencies have begun to use focus groups as an alternative to polls, which can be costly. Focus groups are small discussion groups selected either at random or to approximate the demographics of the community. The focus group is conducted by a trained moderator who draws out people's reactions to a product or idea.

The focus group explores people's reactions – it is not a representative sampling of public opinion. Knowing these reactions, you may modify ideas or present them in a way that either appeals to or avoids extreme responses. Normally, several focus groups are held until the researchers are confident they have valid information. There is the chance that conducting focus groups may be seen as an effort to manipulate, rather than to learn from the public. Even if researchers gather useful information, the public does not see focus groups as a substitute for other forms of direct participation.

- **Hotline** – A hotline is a widely advertised phone number that gets the caller right to someone who can answer questions. Usually, a hot line has several lines so people do not get a busy signal. The number is published in newsletters, news releases, meeting announcements, or anyplace where people are encouraged to ask questions or comment on the siting process. The key to an effective hotline is to have the right person at the receiving end. Callers must get the feeling that the person taking their calls is really interested in what they have to say and is both knowledgeable and responsive. If the person answering a call does not have all the information, he or she must take responsibility to research the issue and get back to the caller.
- **Interviews** – People will always provide much more information in a one-on-one discussion than they will in a public forum. Although interviews cannot substitute for more public forms of participation, they often provide information that cannot be obtained any other way. In a siting process lasting several years, you might want to conduct a round of interviews near the beginning of the process to get information about what issues to anticipate and one or two other rounds of interviews at key junctures in the process to evaluate how things are going and identify ways for resolving issues.
- **Hearings, Meetings, and Workshops** – Probably the most widely used technique is the public hearing. Public hearings are formal meetings in which people present official statements of position and assertions of fact. Regrettably, public hearings are not always a particularly effective device for public involvement. They do a good job of meeting legal requirements by preparing a formal record, but they do a poor job of bringing people together to resolve problems. In fact, public hearings tend to exaggerate differences, because during hearings leaders of constituencies have to be seen as defending their constituencies' interests. As a result, positions taken by speakers during hearings are often more rigid and extreme than those expressed in

less formal settings. It may be necessary, legally, to hold a public meeting at the end of the siting process, but the genuine public involvement should be done by then.

Public meetings are useful forums for hearing all the different concerns and opinions and for having different groups listen to one another. But they are not necessarily reflective of the views held by the community. Very few rules govern the format of a public meeting, except to ensure that everyone gets a chance to be heard. For example, some public meetings use a large group/small group format in which, following an opening presentation, the audience breaks into small discussion groups. Afterward, spokespersons from each of the small groups make a short presentation to the full audience, summarizing the discussion in their small groups.

The first step in choosing a format is to clarify the purpose of the meeting. A meeting format that may be very effective for communicating information to the public may be very ineffective for getting information back from the public or for resolving issues. The meeting format should reflect the purpose of the meeting and the audience you expect to participate.

- **Questionnaires** – A polling of a statistically representative sample of the community will provide information about how the general public feels about an issue. It is important to keep in mind that polls tend to be expensive to implement and qualified interviewers are needed to design and administer the questionnaires.

Collaborative Techniques

The highest level of public involvement is to give the public a direct role in making siting related decisions. Collaborative techniques are especially appropriate for decisions about values and preferences, rather than purely technical issues.

- **Advisory Groups/Task Forces** – Next to public meetings, the technique most often used in siting studies is to establish an advisory group. Advisory groups are useful in providing citizens' perspectives throughout the siting process. Many organizational issues must be faced in setting up advisory groups. First, groups must be perceived as truly representative. They may require consulting with all the key interests while establishing the group to ensure that you include all the interests needed to make the group credible. Second, defining the limits of the group's authority is essential. If you imagined a scale with "purely advisory" on one end and "decision making" on the other, where would this group fall? Third, working with an advisory group requires a significant commitment of time and staff resources and should not be undertaken if you are not able to willing to commit the resources to make it work well.

You may want to establish several advisory groups to get the involvement of different audiences. For example, you may need a policy committee or steering committee of elected officials or agency heads from all the involved communities or departments. You also might have a technical advisory group of technical specialists from affected or reviewing agencies and the organized groups and interests. This kind of group can get directly involved in evaluating study methodologies and assessing the technical adequacy of the studies in a way that a citizens' group, or even elected officials,

cannot. Finally – and this is the most common kind of advisory group – you may want to establish a group composed of leaders of all the interested groups and interests.

Task Forces are a specific kind of advisory group. Although most advisory groups are set up to last the life of the siting process, task forces usually complete a specific task, then disband. A task force might, for example, recommend criteria for site selection. Or a technically oriented task force might rank all the sites on the various criteria. Once the task force makes its recommendation, then it ceases to exist. Part of the idea behind a task force is that it can commit the time to the assignment that policy makers cannot. Also, a number of issues may be resolved by consensus at the task force level, reducing the number of controversial issues policymakers must address. Unanimous task force recommendations may legitimize the recommendation and facilitate the policy board's approval.

The **workshop** has proven particularly effective in resolving issues. The workshop differs from other meeting formats primarily in that it has a stated purpose of completing a specific assignment. For example, a workshop might be designed to get agreement on the criteria that will be used to evaluate alternative sites. A workshop might be used to eliminate sites that do not meet the siting criteria or to get agreement on the actions that are needed to mitigate any negative effects of a facility.

Because workshops are highly interactive, they do not work well with very large groups. When the number of participants exceeds 20 people, achieving the kind of interaction you want is difficult. This means that workshops are often targeted at leaders of organized groups or vocal interests. To reduce the danger that the group is not representative, the participants in the workshop must represent the full spectrum of opinion in the community. Trying to reach agreement if key viewpoints are not represented in the discussion does not work.

Workshops are aimed either at policy issues or technical issues, with the participants changing depending on the purpose. If the workshop's purpose is to evaluate how well each site meets certain technical criteria, then it is appropriate for technical experts representing the interested parties to participate. But if the workshop requires decisions that weigh how important one criterion is relative to another, policymakers and leaders from the various interests should participate.

Table 4. Listening Techniques

Technique	Features	Advantages	Disadvantages
Focus groups	Small discussion groups established to give “typical” reactions of the public. Conducted by professional facilitator. Several sessions may be conducted with different groups.	Provide in-depth reaction to publications, ideas, or decisions. Good for predicting emotional reactions.	Get reactions, but no knowledge of how many people share those reactions. Might be perceived as an effort to manipulate the public.
Hotline	Widely advertised phone number to handle questions or provide centralized source of information about the siting.	Gives people a sense that they know whom to call. Provides a one-step service of information. Can handle two-way communication.	Is only effective as the person answering the hotline phone.
Interviews	Face-to-face interviews with key officials, interest group leaders, or key individuals.	Can be used to anticipate issues or reactions of groups. Can also be used to assess how the siting process is going.	Requires extensive staff time.
Hearings	Formal meetings where people present formal speeches and presentations.	May be used as a “wrap-up meeting” prior to final decision. Useful in preparing a formal public record for legal purposes.	Often of limited value in terms of both giving information and receiving comments. Exaggerates differences. Can do more harm than good in terms of credibility and trust if tempers are raised. Requires time to organize and conduct.
Meetings	Less formal meetings for people to present positions, ask questions, etc.	Highly legitimate form for the public to be heard on issues. May be structured to permit small group interaction. Good for identifying issues, scoping, discussing progress, seeking agreements.	Unless small group discussion format is used, permits only limited dialogue. May get exaggerated positions. Requires staff time to prepare for the meeting.
Questionnaires	Carefully designed questions are asked to a representative sample of the population	Effective way of determining concerns and issues and gathering comments. Useful for reaching a wider, non-vocal public.	Very expensive and requires skilled survey teams. Level of confidence can be low, especially with open-ended questions.

Table 4. Collaborative Techniques

Technique	Features	Advantages	Disadvantages
Advisory groups/task forces	A group of representatives of key interested parties is established. May be a policy, technical or citizen advisory group.	Provide oversight to the siting process. Promote communication between key constituencies. Anticipate public reaction to publications or decisions. Provide a forum for reaching consensus.	Potential for controversy exists if advisory recommendations are not followed. Requires substantial commitment of staff time to provide support to committees.
Workshops	Smaller meetings designed to complete a task.	Very useful for tasks such as identifying site criteria or evaluating sites. Permits maximum use of dialogue, good for consensus-building.	Limitations on size may require several workshops in different locations. Is inappropriate for large audiences.

4. SOCIAL PROGRAMS FOR WASTE PICKERS

Introduction

Waste picking is a widespread activity in nearly all cities of developing countries. . Men, women and children survive selling or using valuables from materials that households and enterprises throw away, such as food, paper, scrap metals, cloth, household goods and building materials. Some waste pickers work at a single site that holds an abundance of waste, like dumpsites or transfer stations. Others move from place to place, collecting materials from factories, offices, stores, schools, hospitals and residential areas, and dumpsters, vacant lots, canals, and rivers where people dump their refuse.

Waste pickers are often among the poorest of the poor. They are vulnerable because they have few assets and few alternative livelihood options if their earnings from waste picking are threatened. The vast majority are also independent, self-employed workers, so they have no social security or organizational support to help them through difficult times. In many countries municipalities take measures to formalize waste collection and recycling activities by organizing the labor often in teams or enforcing registration procedures. However, waste pickers are not provided with any benefits, i.e. health insurance or personal security, thus remaining extremely vulnerable to variety of social and health risks.

Waste pickers may be of any age. Many children scavenge. Some collect recyclables to supplement the family income. Others are abandoned and are simply trying to survive. Many older people also scavenge. In the countries of the FSU, majority of waste pickers are represented by single elderly who became extremely impoverished as a result of transition. At large, more women scavenge than men. Often they are single mothers, who bring their children to work with them.

Changes in collection and disposal practices of solid waste management systems can profoundly affect waste pickers and their livelihoods. Closing existing dumps and opening new ones further away, and mechanizing collection can restrict if not eliminate many opportunities for waste picking, causing extreme hardship for people who are poor and vulnerable. Closing dumps can also displace families who cannot afford other places to live. Waste pickers are among the key stakeholders of MSWM systems.

This chapter provides guidance on improving the income, working, and living conditions, and access to social services of those who depend on waste picking for an important part of their income. Doing this effectively requires a full understanding of the situation of waste pickers, their motivations for doing this work, the occupational and living conditions they face, and the organizational framework within which they work and live.

Social Conditions of Waste Pickers

Social conditions for waste pickers are nearly always poor, even for those with earnings above the poverty level. Many live at the dump site or in squatter settlements just outside dumps. Their homes tend to be poorly constructed, often of scavenged materials. Their education levels and work skills are lower than those of the general population. In Mexico, for example, 40 percent have no formal education, another 10 percent have completed less than two years of school, and only 4 percent have completed elementary school (World Bank 1994). However, in transition economies, many waste pickers come from different social and economic backgrounds and are forced into scavenging as a result of dramatic loss on incomes and employment opportunities (Latvia Solid Waste Management Project, 2001)

Box 1: The Latvia Solid Waste Management Project

The SA conducted for the Project concluded that that scavenging at such scale (e.g. over a hundred people at one site) presents a relatively new phenomenon in Latvia and is associated mainly with economic burdens of transition. The scavengers represent a semi-formal group. The system of registration have been introduced for waste pickers along with organizing the sorting activities through work teams (or brigades), concentrated on a particular class of recyclable material.

- The SA established that the scavenger: Came from a wide range of socio-economic backgrounds and had diverse reasons for working on the disposal site
- Were previously in professional jobs, which they had lost during the transitional economic phase
- Worked mostly at the site all day and every day
- Had no other source of income, or other sources available to them were insufficient for their family needs
- Included pensioners supplementing their income
- Lived in Riga City and commuted to the site daily (by train)
- Claimed to be in good health
- Were mostly of Russian ethnic origin; and
- Were in the 40-60 years of age

Source: Latvia Municipal Solid Waste Management Project, 2001

Waste pickers suffer many more illnesses and injuries than the general population. Particularly prevalent are gastrointestinal, respiratory and skin diseases, lead poisoning, and cuts from needles and broken glass (Cointreau 2000). Child waste pickers are particularly at risk. Waste picking may permanently damage a child's intellectual, emotional, and physical development, condemning them permanently to poverty and shortening their lives. Studies of the health of children working at the now closed Smokey Mountain dumpsite in Manila, Philippines revealed that the child waste pickers were at extreme risk of long-term disease or

disability. Many children had elevated blood lead levels, tetanus, gunshot wounds, impaired pulmonary function from exposure to extreme carbon monoxide pollution (25 times the national limit), and debilitating conditions such as stunting and wasting due to low calorie intake. Moreover, children's intelligence declined gradually from ages 7 to 13 relative to the Filipino norm. The children were particularly disadvantaged in verbal ability, problem-solving, ability to absorb new material, and ability to plan ahead. Analyses suggested it was the work itself, which is dull and repetitive, and possibly physical factors such as malnutrition and lead poisoning that led to this outcome (Gunn and Ostos 1992).

Working in hazardous conditions has serious consequences for waste pickers. Life expectancy of Mexican waste pickers is 11 years lower than that of the overall Mexican population (53 versus 64) (World Bank 1994). Infant mortality among the *zabbelin* waste collectors in Cairo is much higher than that of other residents of the city with about one in four infants dying before reaching their first birthday (Medina 1997a). Waste pickers also are faced with the public's perception that they are social outcasts, part of the marginalized segment of the general population.

Organization of Waste Picking

Organization of waste picking varies greatly across cities. Waste picking may be an unorganized activity, with people moving freely in and out of the occupation as their individual circumstances change. For example, in Mexican cities many waste pickers are migrant farm workers working during the off-season and construction workers between jobs. The number of waste pickers in unorganized systems fluctuates depending on the season, changes in overall economic conditions, and changes in the prices of recyclables. For these casual workers, waste picking offers an essential safety net against absolute poverty.

Waste picking may also be a full-time, highly organized activity, with high barriers to entry. In Cairo rights to garbage historically belong to members of two communities, *wahis* and *zabbelin*, who established these rights through legal agreements forged more than a half century ago (Box 2). They vigilantly defend their rights to garbage and its valuables through their community organizations, which operate much like trade unions.

Box 2. Waste Pickers of Cairo Gain Rights to Garbage

Wahis migrated to Cairo about 100 years ago from the oases of the Egyptian southwest desert and progressively acquired the right to collect garbage in mostly wealthy buildings, by signing contracts with building owners. The rights to garbage established through these contracts are permanent, ending only when the building is torn down. *Wahis* charge fees to building residents for garbage collection services.

Zabbelin migrated to Cairo about 50 years ago from a few villages in the Assiut and Qena governorates. They were mostly Coptic Christians, and raised pigs (forbidden for Muslims), feeding them on garbage purchased from the *wahis*. Gradually, they entered into agreements with the *wahis* to collect and transport garbage in exchange for

ownership of it. The *zabbelin* bring the garbage to their houses where family members sort and process the garbage, selling metals, plastics, glass, and paper to dealers and feeding the edible portion to their pigs.

Source: Motaal (1997), Volpi (1997)

Waste picking may be controlled by organized groups of intermediaries who control access both to waste picking opportunities and to dealers of recyclables. In Beijing waste picking is under the control of a few men who migrated to the city a dozen years ago and established elaborate garbage networks based on personal connections to migrant waste pickers from the same province. Garbage picking is now the specialty of Bazhong county. One-third of its official residents pursue similar work in cities all over China (New York Times 2000).

Finally, waste picking may be carried out by cooperatives of waste pickers, formed to improve incomes and quality of life of workers by strengthening their bargaining position relative to purchasers and by providing social services. The oldest and most dynamic waste picker cooperatives in the world today are in Colombia (Medina 1998a). The cooperative movement is also strong and growing in Brazil, Mexico, India, Indonesia and the Philippines. In some countries, municipalities take actions to formalize waste collection and recycling activities by formalizing the work or enforcing registration requirements (Box 3).

Box 3: The Latvia Scavengers Are Organized in Groups to Improve Productivity

The Latvia Solid Waste Management Project dealt with the remediation and improved operation of an existing municipal (non-hazardous) solid waste disposal site at Getlini located in outskirts of Riga City. As a consequence of the closure of 19 dumps, a number of scavengers were to lose income. The municipality planned to fence the site and prohibit access to the dump site. This situation raised concerns about the future of the scavenging groups as waste picking played an important role in the income of many. The SA conducted for the Project focused on the importance of the scavenging in household income of scavengers and the availability of alternative sources of revenue and/or compensation for the scavengers once the disposal sites are closed. The SA assessed the attitudes of the Project's stakeholders, including environmental agencies, government bodies, media, as well as the scavengers themselves in order to formulate mitigation measures.

Source: Latvia Municipal Solid Waste Management Project, 2001

The form of organization that waste pickers belong to greatly affects their incomes and quality of life. Those in unorganized systems earn low and highly variable incomes depending on their individual effort, competition from others and luck. In Mexico City, waste pickers earn ¼ to ½ the minimum wage for a 40 hour week (the 10th decile of income distribution) (World Bank 1994a and 1994b). Waste pickers in more organized systems earn higher incomes. For example, *zabbelin* in Cairo earn 1 to 5 times civil servants' salaries (Medina 1997a). Members of cooperatives generally earn more than waste pickers that are not part of such an organization.

Members of a cooperative in Colombia (60 percent of them women) earn 1.5 times the minimum wage, members of a coop in Brazil earn twice the minimum wage, and members of a coop in Juárez, Mexico earn 2 ½ times the minimum wage (Medina 1998a). Waste pickers that belong to an organization also often benefit from services not available to independent workers. Members of the *Cooperativa Recuperer* in Medellín, Colombia have life and accident insurance, and are eligible for loans and scholarships from the coop (Medina 1998a). Members of the *Sociedad de Selecciones de Materiales* (Socosema) in Juárez, Mexico can participate in training and formal education programs sponsored by the coop, and have access to health care and legal protection (Medina 1998a).

What are the Issues?

Municipal authorities face two main issues in developing policies for waste picking. First, waste picking poses substantial health and safety risks to its practitioners. Governments and others share the aim of enhancing the quality of life for waste pickers, by helping them improve their working and living conditions, increase their incomes, expand their employment options, and improve access to social services.

Second, waste pickers can impede cities' collection and disposal operations in a number of ways. At landfills, they can interfere with the work of heavy equipment, delaying compaction and soil covering. Waste pickers can light fires, creating a danger to the environment, landfill employees and themselves. Waste pickers looking for valuables in rubbish bins sometimes empty and scatter their contents, contributing to urban litter and significantly increasing costs of collection by adding to the time it takes collectors to complete their rounds.

In the past, governments have often tried to solve the problems associated with waste picking by outlawing the activity. However, because waste picking provides an essential safety net for people with few alternative means of survival, this approach has largely failed. Attempts to control access by force have led waste pickers to light fires at dumps, storm city halls and knock over garbage containers. For example, in Matamoros, Mexico, waste pickers started fires at the dump and threatened to take over city hall when authorities tried to stop waste picking at the dump. In Bogotá, Colombia, waste pickers reacted to the introduction of a closed system by knocking over waste containers to collect materials at the source, seriously disrupting collection and greatly increasing its cost (World Bank 1994a). A more successful approach is to take measures that directly address the needs of the waste pickers.

What Can Be Done?

There are many ways for governments, planners, nongovernmental organizations, and others to address the needs of waste pickers, while also helping to meet the objective of operating the municipal waste management system efficiently and effectively. These may involve technical solutions to raise productivity of waste pickers and improve the health and safety conditions under which they work, measures to improve waste pickers' housing and living conditions, training to enhance their employment options outside of waste picking, assistance to help them start and operate small recycling enterprises and assistance with organizing cooperatives.

There are alternative paths that planners can consider. Many of these measures have been included as part of projects. Unfortunately, implementation experience is extremely limited. For example, the ambitious plans to assist waste pickers as part of the Mexico Northern Border Environment Project and the Second Solid Waste Management Project were never implemented because municipal governments did not want to borrow for these purposes. Measures should be selected with full participation of all stakeholder groups and with careful attention to implementation issues and sustainability.

Improve waste pickers' productivity and working conditions while ensuring the safe and efficient operation of landfills:

- Provide special areas and infrastructure at landfills where waste pickers can safely sift through the garbage before it is deposited and buried in the landfill. Designating a special site makes it easier to operate the landfill efficiently and safely, and helps in supervising the waste picking activities. In Rio de Janeiro, the landfill site includes a covered area with picking belts operated by a cooperative, which receives all the income from the operation (World Bank and SKAT 1998). The Bank-financed Mexico Northern Border Environment Project and Second Solid Waste Management Project both included covered sheds with slow-moving conveyor belts just outside the landfills for waste pickers to work. Providing this infrastructure, however, raises the costs of the landfill operation. According to some analysts, a minimum 10 -year life span for the landfill would be needed to justify the costs (Rushbrook and Pugh 1999).
- Provide clean water and sanitation facilities at dumpsites or transfer stations where waste pickers can wash. To ensure that these facilities continue to function after being built, program designers should establish rules of access and provide resources for their regular cleaning and maintenance. If a cooperative or a private recycling firm has been given exclusive access to the site for waste picking, planners should consider giving ownership of the facilities to the group.
- Promote waste picking at transfer stations, instead of at landfills. Transfer stations are located closer to cities than landfills and are therefore more accessible to pickers. Because they are easier to monitor, municipal authorities can more easily ensure the safety of pickers than at landfills.
- Consider involving pickers in collecting recyclables separated at their source. Many cities encourage households and enterprises to separate their recyclables before depositing them on the street for pickup. Planners can consider ways to involve pickers in collecting the materials.
- Consider integrating waste pickers or their organizations into the formal solid waste management system. Cooperatives or private firms can be given contracts to manage recycling operations. In Tashkent, for example, a private firm operating a recycling center at the landfill has registered waste pickers as employees, and provides them with some facilities to sort and store wastes. In Cairo, the government integrated the *wahis* and *zabbelin* into the

formal mechanized waste collection system by having them establish legal companies and comply with the municipality's requirements (Box 4). Many cooperatives have also obtained the exclusive rights to carry out recycling activities. In Pune, India rag pickers cooperatives, recycle 25 percent of waste generated by the city's one million residents (Medina 1997a).

It should be noted however that integrating informal recycling into the formal system may increase the vulnerability of waste pickers. For example, formal systems rarely employ as many people as work on a freelance basis. Women in particular are likely to drop out when informal activities become legitimized, formalized and the subject of employment or commercial contracts (Scheinberg, et. al. 1999).

Box 4. Wahis and Zabbelin Become Part of the
Formal Waste Collection System of Cairo

When converting Cairo's waste collection system from one based on donkey carts to one based on mechanized trucks, the municipal government encouraged *wahis* and *zabbelin* to establish legal waste collection companies and obtain a license for garbage collection. Informal collectors are now in charge of most of Cairo's municipal solid waste management collection. In cases when the municipality licensed companies not under the control of the informal collectors, the *wahis* and *zabbelin* have sometimes violently confronted such companies, forcing them to leave the area. This happened in Zamalek and on some routes in Nasser City. However, some private firms have made agreements to sell the household wastes they collect to the *zabbelin*. This has enabled them to operate in peaceful co-existence with the informal collectors.

Source: Volpi 1997

Improve waste pickers' housing and living conditions

- Provide assistance to formalize and upgrade squatter communities where feasible. This would involve providing formal title to land and basic community infrastructure, including water and sanitation facilities. The World Bank-financed Egypt Greater Cairo Urban Development Project provided resources to formalize *zabbelin* settlements and improve their housing and infrastructure (World Bank 1982).
- Where formalizing existing settlements is not feasible or desirable, help squatters resettle or find accommodations in the existing housing market. The Mexico Northern Border Environment Project and Second Solid Waste Management Projects contained provisions to help eligible waste pickers living at dumpsites enter into existing low-income housing programs, and to provide ineligible families with new sites and a package of housing materials. In the Philippines, about 3,500 squatter families who formerly lived in the Smokey Mountain dump site have been relocated to temporary warehouse-type housing, with permanent medium-rise residential units under construction nearby.

- Provide access to health care. Governments can set up health care facilities at dumpsites or places convenient to waste pickers. These need not be expensive, permanent operations. They can be mobile clinics, staffed by people with training in first aid and basic health care who can offer assistance with preventive medicine (including vaccinations for infectious diseases and tetanus) and the most urgent needs of waste pickers, and with referrals to better equipped facilities for longer-term more complex care. The International Labour Organization-supported child labor project at Smokey Mountain in the Philippines provided a first aid and tetanus vaccinations to child workers to address their most pressing health care needs (Gunn and Ostos 1992).

Enhance Employment Opportunities of Waste Pickers and their Families

- Provide opportunities for vocational training to waste pickers. Literacy training is a top priority in cities where many waste pickers do not know how to read and write. Training in health, hygiene, child care and family planning is also critical, particularly where women and children constitute a large proportion of the waste picker population. The curriculum and the schedule of classes should be developed with the waste pickers themselves. In many cases it will be possible to take advantage of ongoing government programs offering vocational training and basic education (including adult education) to low-income families. The ministry of health may offer health education courses. The Mexico Northern Border Environment Project and Second Solid Waste Management Project were planned to provide such training and educational opportunities for adult workers (World Bank 1994a and 1994b).
- Help waste pickers find jobs in the formal sector. Some programs have successfully placed waste pickers with industrial and commercial cleaners, with the city municipal solid waste services, and with enterprises recycling directly from the sources, such as restaurants and manufacturers.
- Provide assistance to waste pickers to help them start and operate small recycling enterprises. This may include training in specific skills, such as bookkeeping, and technical skills. It may also include providing credit to entrepreneurs interested in setting up small businesses (Haan, et. al. 1998). The Mexico Northern Border Environment Project and Second Solid Waste Management Project provided for financing of city-specific studies of the potential of the recyclable market in each city (World Bank 1994a and 1994b). On the basis of this information the project was to finance recycling plants, which still needed to meet standard economic criteria to be eligible for financing.
- Make basic education accessible to child waste pickers and ensure that they attend school. Perhaps the most important way of helping break the cycle of poverty in which waste picker families are often trapped is to make sure children acquire an education. Governments can establish schools near dumpsites or other places where waste pickers work and live. They can also offer direct cash assistance to families who send their children to school to substitute for income children would otherwise earn. However, the difficulties of retaining children in school should not be underestimated. Pilot programs

at Smokey Mountain showed that children's reasons for leaving school are complex and require comprehensive programs that address them comprehensively (Box 5).

**Box 5. Smokey Mountain Program Successfully Removes
Child Waste Pickers from Hazardous Work**

Until it was closed recently, the Smokey Mountain dump in Manila Philippines was home and source of livelihood to 13,000 people. Over 1,500 waste pickers were children. Children as young as 4 or 5 years accompanied their parents or older siblings to the dump. By the time they were 10 they worked 5 to 8 hours a day waste picking. By age 12 most had dropped out of school to collect and sort waste full time. Lacking essential academic and work skills, most ended up working as waste pickers their entire lives, as had many of their parents and grandparents.

To assist these children in developing the skills they needed to permanently leave this occupation, the International Labour Organization, with the assistance of the governments of the Philippines and the Netherlands, developed a program involving both short-term actions to address the children's most immediate needs for medical care and protection, and long-term measures to address their educational and social deficiencies. During the first year, program managers experimented with measures to address the *causes* of child waste picking, implementing programs to help mothers and fathers of child workers raise their incomes by providing them with job training and job placement services and loans to start small businesses. These approaches largely failed. None of the men and women who completed the training and job placement programs was able to find permanent jobs. Nor did the families that received loans invest successfully in profit-making enterprises. Indeed, studies showed that families that received the loans were actually more likely to send their children out to collect garbage in order to raise the money they needed to pay off the loans.

Several lessons emerged from the failures. The first was a need to focus on the children rather than adults. To reach children directly, the program created a center where children could go to resume their education and learn new skills, called the sheltered learning place for children. The second was to develop capacity within the community itself to implement and manage the work on a long-term basis. Residents of the community knew the situation well and were not averse to working there, which was not true of the government workers assigned to the project. The third was to understand the needs and situation of the children better. Program managers initiated intensive studies to learn about the children's physical and mental health and the social and family situations in which they lived. These studies led to the development of a program that provided substitutes for payoffs that the children received from waste picking and addressed their special learning needs. The program offered non-hazardous work (arts and crafts) in exchange for hazardous work (waste picking). It provided training, food, medical care, and wages of 10 pesos per day in exchange for the 30 pesos the children could typically earn from waste picking. It developed an innovative curriculum that involved multiple learning modes, and used concepts and

language of the dump to help children master the academic skills that had eluded them before.

The program was not intended as a long-term program for the children, but rather as a transitional facility, providing them with sufficient skills to enter the established government institutions. This way, with limited resources, the program could reach nearly all the children in the crucial age group (9–12) working at the dumpsite and provide them with the intensive assistance they needed to avoid entering into waste picking permanently.

The program had several significant impacts. It provided medical and other services to 1,200 children, protecting them from further harm. And it helped 160 children withdraw from waste picking and return to school.

Source: Gunn and Ostos (1992)

Improve Waste Pickers Bargaining Position

- Provide assistance to help waste pickers form cooperatives or associations.¹⁸ In many countries NGOs, governments, and waste pickers themselves have successfully created cooperatives. This has helped them strengthen their bargaining position with purchasers of recyclables and often given them a measure of legitimacy not otherwise available to waste pickers. These coops or associations employ workers (who might otherwise be waste picking without equipment or recognition) to separate wastes at sources, collect recyclable materials, and transport them to the collection centers for processing and sale (box 3). Typically the cooperative distributes its profits among its members at the end of a defined period.

Often cooperatives gain property rights to discarded materials by signing contracts with enterprises, residential neighborhoods, or municipalities for the right to collect their recyclable waste. This assures them a large and stable supply of quality materials that they can then sell directly to end-users, bypassing the middleman. For example the Socosema coop in Juarez, Mexico, received a concession from the municipality giving it the exclusive right to recover materials at the local dump. Socosema allows nonmember waste pickers to work at the dump, but only on the condition that they sell their pickings to the coop. When there is high demand for a particular product, Socosema even purchases materials from independent waste pickers at dumps in nearby towns. A coop in Nuevo Laredo, Mexico has agreements with grocery store chains and factories giving them the right to collect their recyclables. This coop also purchases materials from independent waste pickers, paying them 10 percent more for the products than what middlemen offer (Medina, personal communication) as illustrated in Box 6 and 7.

¹⁸ Martin Medina provided many valuable insights and recommendations for this section.

Box 6. Successful Women's Cooperative in India

The Self Employed Women's Association (SEWA), an NGO in Ahmedabad, India, has helped in organizing women engaged in paper and rag picking and safeguarding their interests from the clutches of the paper contractors and middlemen. SEWA has helped these women in setting up their own *godown* from where they sell collected waste paper directly to the mills. SEWA's efforts have not only safeguarded these women from the drudgery and dangers of work but also have increased their income by eliminating the middleman. This has also improved the status of women by making them organized workers who sell paper/rag directly to the mills through its own cooperative.”

Source: Scheinberg, et. al. 1999

Forming cooperatives is a long-term and complex activity, however. Many Cooperatives have failed because decision-makers have not fully understood the existing waste picking organization and its links to dealers, industries using recycled materials, city officials, and others. Others have failed because of waste pickers low levels of education and knowledge of how to operate businesses. In some cases, individual waste pickers have taken control of coops, benefiting themselves at the expense of its members (Medina, 1997). Some coops have failed because of their failure to secure the commitment and support of city officials.¹⁹ Policy-makers can assist the process by providing incentives to municipalities to award contracts to coops for street sweeping, collecting wastes in underserved areas, recycling programs and the like. They can also enact laws supporting the formation of cooperatives by guaranteeing them legal status and the rights enjoyed by any corporation, and even provide them loans. One model is that provided by the highly successful nongovernmental organization in Colombia called the *Fundación Social*, which has supported the formation of coops throughout the country, providing them with loans, grants, and assistance on legal technical and business matters (Medina 1997a). Governments and development partners can also work directly with nongovernmental organizations, which often have significant experience organizing informal workers. Finally, information is available from groups that have prepared toolkits to help practitioners organize waste pickers. A nonprofit industry association in Brazil, Cooperar Reciclando, Reciclar Cooperando (CEMPRE), has prepared a toolkit for practitioners who provides a step-by-step guide on how to form cooperatives (Cooperar Reciclando, Reciclar Cooperando 2000).

Box 7. Riches in Rags: Informal Recycling in Belo Horizonte, Brazil

Professional scavengers have never been popular among local authorities in Belo Horizonte, a city located in southeastern Brazil. But for many, recycling materials from waste heaps near homes, offices and shops is a livelihood. Now, an annual parade is held to help change people's perceptions of street scavengers and waste.

¹⁹ For more on the issue of cooperatives see Martin Medina, 1997a, 1997b, 1998, 2000 and forthcoming.

Maria das Graças Marçal spent her childhood as a waste picker in Belo Horizonte. She recalls the hostility of police and pedestrians. Since then, things have changed. In 1990 she helped form the Street Scavengers' Association (ASMARE) that oversaw the construction of a large warehouse where waste pickers could sort through their materials and keep them for market. In December 1992, the government and the association signed an agreement to guarantee funds for its maintenance. Storage space was later expanded, and ASMARE equipped workers with carts to facilitate waste collection and developed training workshops.

The waste pickers are now earning a more regular income. Revenue is distributed proportionately according to how much each waste picker collects and sells. Each “associate” receives a 20 percent productivity incentive at the end of every month based on his or her monthly production, and surplus revenues are distributed annually.

The occupation still carries a huge health risk; disease is common. A recent international workshop on waste disposal sponsored by multilateral and bilateral organizations held in Belo Horizonte determined that much more research is needed on waste picking activities. There is a serious lack of information about health conditions, income levels, involvement of children, and the actual number of waste pickers.

Since 1994, the association has held the annual street scavengers carnival parade where scavengers and street sweepers dress in colorful, recyclable materials. Its purpose is to change people's traditional perception of waste- from something that is useless to something that is valuable. “It also gives these people an opportunity to socialize amongst themselves and with the partners involved in the program” says Sonia Maria Dias, a parade organizer.

The program has given a sense of hope to the local people who now take pride in what was once deemed a dirty and useless occupation. They feel empowered and recognize the importance of their work, both as a means to make a living and an opportunity to draw people's attention to their environment.

Source: Urban Age Magazine, Spring 1999

Carry out sensitization and public awareness campaign

Because the public often perceives waste pickers as social outcasts and thus a marginalized and stigmatized segment of the general population, policy makers at the municipal level should organize sensitization and awareness raising campaigns aimed at making the city's population aware of the useful tasks the waste pickers perform in the waste cycle. The public should be made aware that the waste pickers saves the city money, lowers the people's taxes, and there is an integral part of society carrying out a useful function. This can contribute to changing the population's perception of scavengers and help with their social acceptance. In Belo Horizonte, for example, the municipality carried out measures to “de-marginalize” the pickers by giving them an important task in the waste collection system and implementing an awareness raising campaign directed at people in all segments of society (for example, factories, churches)

by taking school children and other to see their waste sorting activities, organizing a choir, and having them participate in the Carnival. Waste pickers even made costumes out of recycled waste materials. These activities helped to raise the status of the waste pickers and integrate them into society and later organize them into cooperatives.

Developing a Social Action Plan for Waste Pickers

Devising the most appropriate approach for dealing with waste picking requires first a full understanding of who is involved in waste picking, the organizational structure in which they work and the key actors involved their occupational and living conditions, and their perceptions of the situation and their main concerns. Second, it requires full participation of waste pickers, their organizations, municipal authorities, solid waste services managers, and other key stakeholders in the waste management system (recyclable dealers and enterprises that use recovered materials) in formulating a strategy.

Step 1: Gather information on the Current Situation

Generally, little information exists in the public domain on waste picker numbers, characteristics and activities, as is true of other informal sector activities. Researchers must therefore gather most of their information directly from target groups, using tools such as household surveys, semi structured interviews with individuals and households, focus group interviews, and participant observation. Researchers should supplement the information from these sources with discussions with policy-makers, municipal authorities, service providers, solid waste system managers, nongovernmental organizations and social scientists knowledgeable of the situation. The quality of the data is critically important. The situation of waste pickers varies greatly across cities, and programs must be tailored to address the specific circumstances of the target group. What works in one place is not likely to work in another. Good quality data will also provide a baseline for future monitoring and evaluation. Key information includes:

Demographic and Socio-cultural Information

- How many people are involved at any one time (at the dumpsite, transfer stations, streets and other locations)?
- Do the numbers fluctuate seasonally? Why?
- What is the demographic and social profile of the waste pickers (gender, age, ethnicity, religious affiliation, caste)?
- Do men and women play different roles in the system (for example do men collect garbage while women sort it)? Do men and women specialize in different materials?
- What are waste pickers' places of origin? Are they migrants or are they from the city where they work?
- Are families involved? What are their compositions and sizes? What roles do different family members play in waste picking and in the overall household economy?

Organizational Structure and Key Actors

- Is the system an open or closed system? Can anyone enter or are there barriers to entry?
- Is access to the dumpsite free or controlled? If it is controlled, who controls it?
- Are waste pickers long-term or temporary workers?
- Are there organizations involved? How do they operate?
- To whom do waste pickers sell the recovered materials? What is their relationship to the purchasers of materials?
- What is the relationship of the solid waste system managers to the waste pickers and their organizations?
- Are outside organizations, such as government agencies, nongovernmental organizations, or donor groups actively working with the community to help them organize?

Occupational Characteristics, Income, and Job Satisfaction

- What proportion of waste pickers do this work full-time or part-time? What other jobs do part-time waste pickers do?
- How many hours per week on average do they work at waste picking? How does this vary by season?
- What are their average hourly earnings from waste picking? From their other jobs? What proportion of the income of different demographic and social groups comes from waste picking?
- What are the prices of recyclables on the open market? What price do waste pickers receive for their products?
- What are their reasons for doing this work? What is their opinion of the work? Would they like to work at something else? If yes, what would they like to do instead?
- What hazards do they face on the job? What are the main illnesses and injuries of waste pickers?

Education, Health and Living Conditions

- What is the average level of education of adult waste pickers?
- Do children of waste picker families attend school? Until what age and grade level?
- What is the overall health status of waste pickers? What are the most prevalent diseases? What are the main sources of exposure?
- Where do waste pickers live? Do they live near the site where they work or do they commute from other neighborhoods?
- What is the state of their housing?
- What is the state of their neighborhood? Do they have access to infrastructure, water and sanitation, health clinics, roads and other infrastructure?
- Are outside organizations, such as government agencies, nongovernmental organizations, or donor groups actively working with the community or providing them services?

Step 2: Formulate a Participation Strategy

Participation of key stakeholders is critical in devising a program that will be both effective and sustainable. Participation of two broad groups is required. The first comprises primary stakeholders: the waste pickers and their organizations. Waste pickers know better than anyone else what the real problems and priorities are, and what actions might effectively address them. Outside facilitators can assist by offering expertise on alternative actions they know have worked elsewhere, helping waste pickers identify solutions that are actually feasible, and identifying service or development agencies or that can provide assistance. The second group comprises secondary stakeholders: municipal officials, solid waste system managers, service providers, nongovernmental organizations, dealers of recyclables, and the firms that use recovered materials as feedstock.

Devising a plan of action can take time. After basic information is obtained and initial contact with community members and leaders has been made, a week or so of intensive work may be needed to go through the process of identifying problems and ranking problems, devising solutions, and planning actions. More time will be needed if no distinct community exists and groups have to be organized. The use of participation tools, such as mapping, seasonal calendars, and problem and solution analysis can greatly facilitate the process of formulating an action plan. The final social action plan, which must be agreed with all the key stakeholders, should specify actions to be taken and a timetable for implementing them. Appendix 1 contains an example of elements that may be included in a social action program for waste pickers.

Step 3: Define Implementation Arrangements

The participatory social action plan defines the specific responsibilities of each stakeholder group, such as waste pickers, municipal government, nongovernmental organizations, service providers, private firms and donors. The dialogue will also identify needs for capacity building, institutional changes, and targeting. The plan should include an assessment of the social benefits and risks. Special attention should be paid to the potential for conflicts between winners and losers from changes in existing ways of doing business. Middlemen, who are likely to be losers if waste pickers organize into coops for example, may strongly resist the changes. They have successfully blocked attempts to organize in the Philippines and other places (Medina 1993). Some changes designed to raise pickers' incomes, may also lead to reduced opportunities for others. For example giving private firms or cooperatives exclusive rights to waste excludes those who are not members of the firm or coop from access to its valuable materials. Conflict may occur between these two groups. Finally, the plan should clearly specify resource needs and sources of funds, and procurement, financial management and accounting arrangements.

Step 4: Establish mechanisms for monitoring and evaluation

The social action plan must specify arrangements for monitoring and evaluation. The waste pickers themselves should play a major role in selecting the indicators and in assessing progress, with guidance from the other stakeholder groups. Indicators should be

relatively simple to monitor, using data or data sources that are readily accessible. Possible indicators to measure progress of social programs are:

- *Input and process indicators:* number of workshops held, number of people reached through training courses, medicines delivered, or housing materials delivered.
- *Output indicators:* Number of new schools and health clinics built, number of new cooperatives formed under the program, number of new housing units built, number of water and sanitation facilities built, number of new sorting facilities constructed, number of children vaccinated against tetanus, number of micro loans made, and the like.
- *Outcome indicators:* Changes in household income, health status, life expectancy academic performance, job and life satisfaction, degree of inclusion in the wider community, and the like.

Of course the ultimate focus of the program is to improve outcomes, but program impacts on outcomes are often long-term and hard to measure. Therefore, it is often necessary to rely on output indicators.

The social action plan must specify monitoring and evaluation procedures. How will the data be collected? Who will be responsible for doing what? How often will indicators be measured? How often will results be reported back to the stakeholders? What will the reporting arrangements be?

Lessons and Recommendations

As mentioned earlier, actual implementation experience with social programs for waste pickers is extremely limited. The experience that does exist shows strongly that success is more likely if program designers and managers do the following.

Carry out careful studies to fully understand the real problems. Providing programs that truly help waste pickers is highly complex, requiring a good understanding of workers' situations, the organizational frameworks within which they operate, and the motivations of individual workers. The Smokey Mountain program showed that pilot projects and intensive studies can save both time and money by demonstrating what is likely to work and what is not.

Devise strategies and programs jointly with waste pickers. People from outside the community rarely know what the real problems and priorities of waste pickers are and what the solution are likely to be. Waste pickers themselves should be involved in identifying priorities, suggesting solutions, and monitoring and evaluating programs.

Develop community based institutions to manage the daily activities. Community members are often much more willing than outsiders to work directly with poor and vulnerable people on a daily basis. Outsiders can help them organize and assist them with training in financial management, accounting, monitoring and evaluation and other program management skills.

Take a comprehensive approach. Programs that address multiple needs are more effective than those addressing a single problem. For example providing child waste pickers at Smokey Mountain with educational opportunities without providing an income substitute would have made it impossible to reach the poorest and most vulnerable children.

Experiment with different approaches. We still know very little about what kinds of programs are most likely to reach waste pickers and achieve their stated objectives. Program designers need to be imaginative with developing strategies and free to experiment with different approaches. The experience of the Smokey Mountain program shows the value of freely piloting different approaches to gain a better understanding of what is likely to be effective.

Involve municipal governments and agencies that are intended to finance social programs in designing and planning them to ensure their commitment. It is by now a cliché, but unless municipal authorities truly desire programs they will not finance and implement them. Two Bank-financed solid waste projects in Mexico with extensive social programs for waste pickers (investment in recycling facilities, and provision of housing, health, and education services for waste pickers) were never implemented because municipal governments did not want to borrow for them.

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APPENDIX 1

ELEMENTS OF AN ACTION PLAN

Depending on the program agreed among the stakeholders, elements of an action plan to improve the lives of waste pickers may include:

Education and Training

- Types of education and training programs desired
- Schedules and logistics of programs
- Organizations responsible for designing the programs and providing the training
- Measures to be taken to publicize the programs

Assistance Forming Cooperatives

- Identification of legal frameworks pertaining to coops
- Schedules of meetings
- Schedules for contacting generators of recyclables and trying to secure contracts guaranteeing rights to the material
- Schedules for contacting final-users of materials and forging contracts with them guaranteeing a market for the coop's recovered materials
- Measures to be taken to encourage waste pickers to join the coop

Housing Assistance

- Specification of resettlement plans and housing programs
- Specification of sites and provision of housing materials
- Measures to be taken to obtain consent of people to be resettled and establishing a timetable for doing so

Creation of Recycling Centers

- Engineering specifications of sorting and recycling centers
- Budget and timetable for construction.

ANNEXES

ANNEX 1

**SAMPLE TERMS OF REFERENCE FOR SOCIAL
AND BENEFICIARY ASSESSMENTS**

Improvement of Municipal Solid Waste Management

Sample Terms of Reference

Social Assessment

1. CONTEXT FOR SOCIAL ASSESSMENT

Development projects intend to design improvements or changes that affect social groups or require their participation. To manage social changes, to involve all social groups affected by changes, and to ensure the sustainability of the projects' improvement, it is advisable to apply social assessment (SA) procedures as early as possible in the design of any development project.

According to the World Bank, SA is the instrument the Borrower uses to analyze social issues and solicit stakeholder views for the design of Bank-supporting project. SA is a type of social analysis that is undertaken as a part of the project design and is often continued during the implementation. SA helps to make the project responsive to social development concerns and assists the Borrower in reaching the vulnerable and the poor, as well as to ensure that the project objectives are acceptable to the intended beneficiaries. SA helps make the project responsive to social development concerns by seeking to enhance benefits for the poor and vulnerable groups while minimizing or mitigating risk and adverse impacts. SA "is made up of analytical, process, and operational elements, combining (a) the analysis of context and social issues with (b) a participatory process of stakeholder consultations and involvement, to provide (c) operational guidance on developing a project design, implementation, and monitoring and evaluation (M&E) framework" (Social Analysis Sourcebook, World Bank, 2003). According to the World Bank (2003), the SA:

- Facilitates the process through which the Borrower better understands social organization and cultural systems, institutional, historical and political contexts in order to ensure the quality of investment design and success during implementation;
- Provides means to enhance equality, strengthen social inclusion and cohesion, promote transparent governance and empower the poor and the vulnerable in the design and/or implementation of the project;
- Provides a mechanism to identify the opportunities, constraints, impacts and social risks associated with policy and project design;
- Provides a framework for dialogue on development priorities among social groups, civil society, different levels of government and other stakeholders; and
- Uses an approach to identify and mitigate the potential social risks, including adverse social impacts.

Social Assessment Objectives for Municipal Solid Waste Management (MSWM) Improvement Projects

Generally the goals of solid waste projects are to improve many elements in overall system of MSWM. The main objectives of the SA for MSWM are to promote and maximize cooperation, coordination, and communication between participants who represent all levels of the affected community by MSWM project to make the project socially sustainable. The SA should develop and apply methodologies based on applied research and planning principles to:

- anticipate any social effects of changes by MSWM project,
- involve all social groups and stakeholders affected by changes in the planning of MSWM system improvements, and
- manage the changes in a positive process of social development

The specific objectives of the SA are to:

- (a) collect and assess baseline data from social, economic, and household perspectives
- (b) identify essential stakeholders, vulnerable groups, and specific solid waste issues, including a special focus on the social groups involved in informal recycling
- (c) identify triggering of relevant social laws and regulations

II. SCOPE OF WORK

The SA will need to incorporate both quantitative and qualitative methodologies, including a background socio-economic study, in-depth interviews with key stakeholders, household surveys, focus group discussions, and a stakeholder workshop. The findings of the SA will be used to provide information on socio-economic conditions, the solid waste service needs of the population and other stakeholders, likely willingness to pay in cash or in-kind for improved solid waste services, and recommendations for involving stakeholders in project preparation and implementation. The Borrower will hire and work with a team of local social scientists (hereafter referred to as the Consultant), and ensure that the results of each activity will inform and refine subsequent activities and contribute to an overall understanding of the roles and priorities of different stakeholders. The following describes the SA activities that will be carried out under this assignment.

Task One: Review of Relevant Background Information

The Consultant will collect and review available data relevant to the project's objectives in the following areas: (a) country background; (b) sector background; and (c) project background. In particular, the Consultant will review and summarize the findings of the existing country and sector relevant studies concerning MSWM. Other types of documents will include reports on the completed, on-going, and planned assessments such as project feasibility studies and environmental assessments. The Borrower will provide assistance to the Consultant in obtaining such information and will work with the Consultant team to assess the local conditions,

discuss any recent developments in the solid waste sector, and visit all of the proposed solid waste facility sites described under the proposed project.

Task Two: Five Points of Inquiry Applied in Social Assessment

The Consultant will apply five points of inquiry recommended for an SA. This task will include both qualitative descriptions and analyses, and quantitative indicators of change (positive and negative) such as: population, economic activity, and standard of living. The purpose of this exercise is to: (a) articulate the historical context for the current project, focusing on physical, demographic, and social changes; (b) identify groups and agencies that are most directly concerned by a proposed investment, the various roles played by different stakeholders over time, their inter-relationships, and any conflicts among stakeholder groups that may undermine the implementation of the proposed investment; (c) establish how existing institutions as well as legislative and regulatory frameworks relate to MSWM; and (d) determine the important social development issues that pertain to the project, and how specific stakeholder groups may facilitate or impede the participation of the poor and other vulnerable groups, how these groups may be affected, and how the participation of the poor and vulnerable groups may affect project ownership and sustainability.

The SA's five "entry points" of inquiry include the following:

1. Social Diversity and Gender

The Consultant will examine the social organization of the population, based on the statutes ascribed to them at birth (ethnicity, clan, gender, locality, class, language) as well as other identities chosen or achieved. The Consultant will then identify the factors that should be taken into account in project design and implementation.

The Consultant will carry out a preliminary identification of important social diversity issues based on available secondary information including: social development literature/studies; social impact monitoring studies for similar projects in the same or other countries (if available); existing social development profiles or other background information; country social science studies and area studies; poverty assessment; demographic data; relevant social surveys; political and institutional information, and consultations with knowledgeable local and international experts. The types of information include population and other relevant socio-economic statistics for the project area (for example, population trends over the past five years, demographic structure, average income, unemployment, urban growth and migration rates, economic base, number and types of economic enterprises, numbers and types of social services, patterns of settlement as a function of migration from other cities), and information on solid waste conditions and institutions.

Gender analysis focuses on understanding and documenting the differences in roles, activities, needs, and opportunities available to people according to their gender. In MSWM, this analysis examines the roles of women and men in both production and management of municipal solid waste and attempts to understand how changes in these roles may produce beneficial or detrimental effects. The issues addressed include practical gender needs such as clean water;

strategic gender needs such as laws to facilitate property ownership; intra-household dynamics or the likely effects of development changes on the interdependent relationships of family members; and inter-household relationships or the affects of development on community labor exchanges, the flow of goods, and other survival coping mechanisms.

2. Institutions, Rules, and Behavior

The Consultant will examines the groups' characteristics, intra-group and inter-group relationships, and the relationships of those groups with private and public institutions. It also assesses the norms, values, and behavior that have been institutionalized through those relationships, both formally and informally. Understanding the relationship between organizations and institutions is critical because often development interventions depend for their implementation on institutional change. Institutions are commonly accepted code or rules that govern or influence behavior and that allow organizations to interact. Institutions are also thought as a form of social capital that reflects how relationships between people enhance those people's ability to get things done.

The goal of this task is to also describe the applicability of laws and regulations (including municipal administrative practices) relevant to the social impacts of the project.

3. Stakeholders

The Consultant will identify key stakeholders of the project. Stakeholders may include various organizations, groups, and individuals who have an interest or a stake in the project. Stakeholder analysis is closely linked to the identification of social development issues and constitutes an important starting point for other participatory work. It is used to acquire an understanding of the power relationships as well as the influence and interests of stakeholders involved in the development of a project or policy. Its findings can provide early and essential information about: who will be affected by the project (positively or negatively); who could influence the project (again, positively or negatively); which individuals, groups, or agencies need to be involved in the project and how; and whose capacity needs to be built to enable them to participate. It is suggested that based on this analysis, a plan for involving each stakeholder group in subsequent stages of the project or policy work is developed.

The Consultant will carry out a stakeholder analysis to identify the most important actors that should be involved in preparing and implementing each component of the project and their individual interests. Each significant stakeholder should be described in terms of such factors as size (number of units, size of unit), location (for example, residents of detached private homes, residents of apartment buildings, residents of particular parts of the city), and role in the sector (for example, consumer of solid waste service, waste worker, waste picker). The analysis should address: (a) who are the stakeholders and what are their interests in MSWM system; (b) factors that may prevent any group of stakeholders from acting in terms of their interests; (c) possible sources of conflict between stakeholders, (c) what are the relationships between stakeholders (that is, which stakeholders are dominant and which ones are subordinate, which stakeholders are powerful economically, politically, and socially, and which ones are weak?); possible consequences of conflicting interests among different stakeholders and alliances or

conflicts (do any alliances prevent stakeholders from fulfilling their responsibilities in managing waste responsibly?) and (e) what should be changed so as to promote sustainability of MSWM system (that is, what incentives should be changed, and what sort of regulation(s) should be enacted or enforced?) The following groups of stakeholders are likely to be affected by the project, not all of which will be equally significant:

- **National Level.** Stakeholders include relevant line ministries of Economics, Finance, Environment, Social Affairs, and National Statistics Office
- **Local Level.** Stakeholders include municipal organizations responsible for waste management
- **User Groups.** Stakeholders include residents (apartment buildings, private houses, communal living arrangements); as well as commercial, institutional, industrial, and medical facilities.
- **Waste Workers.** Stakeholders include formal employees of the municipal solid waste service, waste pickers (informal workers), municipal sweepers, private sweepers, domestic workers, and janitors.
- **Vulnerable Groups.** Stakeholders include residents living near transfer stations or final disposal sites, women or children who are responsible for disposing of household waste, and waste pickers.
- **Private Sector.** Stakeholders include regional industries, local and national level main dealers, neighborhood dealers, district waste sellers, private waste recycling companies (for example, plastics processing and recycling plants), private collectors of recyclable materials, and private waste collection firms.
- **Non-Governmental Organizations.** Stakeholders include local environmental organizations, women NGO, youth groups, etc.
- **Community-Based Organizations.** Stakeholders include local groups that may be responsible for management of neighborhood services.
- **Trade Associations.** Stakeholders include associations having an interest in any aspect of solid waste.

Examples of Stakeholder Issues to be Identified

- The Consultant will characterize stakeholder views on how they perceive the institutions responsible for providing waste collection service (for example, are they aware of who is responsible for providing solid waste collection and disposal services, are they satisfied with the way they carry out their function, respond to service problems, requests for information, do they trust local institutions responsible for MSWM?).
- The Consultants will identify stakeholders that will benefit or are likely to be affected by investments in the MSWM sector (it should be described in terms of such factors as size, location, and role in the sector) and their particular interests (who are and what are their interest in MSWM and what factors would prevent any stakeholder groups to act in terms of their interests), clarify relationships between different stake holders (which stakeholders are dominant, which ones are subordinate and which ones are weak, what are possible sources of conflict between stakeholders), and assess the consequences of stake holder interests and relationships on solid waste management and the successful

implementation of the project, and what should be changed so as to promote sustainability of MSWM system (what incentives should be changed, and what sort of regulation(s) should be enacted or enforced).

- The Consultant will identify the most vulnerable groups (e.g. waste pickers, solid waste workers hired by small private solid waste collection firms, households in close proximity to existing or planned waste transfer facility sites), with a focus on how they may be affected and how their participation may affect project ownership and sustainability by analyzing potential gains and adverse impacts, with a view toward identifying how specific stakeholder groups may facilitate or hinder the participation of these groups in the development initiative.
- The Consultant will characterize stakeholders' perceptions on the city's solid waste conditions, adequacy of existing solid waste services and the most important problems with the city's MSWM system, (for example, do residents feel they are receiving adequate waste collection service; what do they think is the priority for improving the system, how do they respond to informal waste pickers in their neighborhoods, what are the problems resulting from close proximity to transfer station?).

4. Participation

The Consultant will examine opportunities and conditions for the participation of stakeholders in the development process. Participation refers the extent to which stakeholders can influence development by contributing to the project design, influencing public choices, and holding public institutions accountable for the goods and services they are bound to provide. It involves participation of beneficiaries in project design and implementation. Participation also includes analysis of strategies for involving stakeholders, designing a plan to meet the costs of stakeholder participation, as well as managing the expectations and providing timely feedback and follow-up of participants.

In planning and implementing new or improved solid waste management systems, the degree to which the public is involved in strategic decision making is a critical determinant of the proper functioning of the system as well as its sustainability. Participation strategies targeting various stakeholder groups substantially differ from one another; those that aim at the support of the key ministries or industry groups require information/communication (I/C) methods sharply different from those that aim at changing the behavior of, let us say, garbage workers. Public participation also can be defined as I/C for the public at large, consisting primarily of the MSWM agency's outreach to the city populations, informing them of the proposed MSWM activities and expected support from the user of these services.

The Consultant will focus on how the participation of the poor and vulnerable groups may be affected, and how their participation may affect project ownership and sustainability. The SA should also focus on the desired household level of participation in the project activities and other changes associated with the implementation of project activities. The SA should identify in this task the specific potential gains and adverse impacts, with a view toward identifying how the participation of specific stakeholder groups can be facilitated or hindered. In

addition, the key issues for the relatively vulnerable and poor stakeholders should be highlighted, with appropriate discussion of the rationale and context of their vulnerable status. More general issues such as social cohesion, social capital, social diversity, social organization, and social exclusion also may be identified if they pertain to the project.

Examples of Identifying Participation Issues in a MSWM Project:

- Identify any vulnerable groups, the risks involved and where necessary, measures for mitigating any potential negative social impacts of the project. The Consultant team will pay particular attention to solid waste workers formally or informally employed by small private waste collection companies and waste pickers.
- Determine whether the project will trigger any of the World Bank's social safeguard policies (Involuntary Resettlement OP4.12, Indigenous Peoples OD4.20).
- Assess user preferences and willingness and ability of population to contribute, either in cash or in-kind, to various types of improvements to their solid waste services (for example, collection every second or third day, use of household vs. community containers, use of separate containers for organic wastes and recyclables). At this stage, general social attitudes for a fee-for-service principle could be established. The detailed assessment of payment for a particular service level should be quantified through the questionnaire approach.
- Identify populations' preferences regarding alternative payment arrangements (that is, who do they trust to collect solid waste tariff, how often do they prefer to pay monthly, every six months, yearly, etc.).

5. Social Risk

The Consultant will look at potential social risks from the project and explores how to address them as to achieve its development objectives. Social risks may range from the obvious, such as involuntary resettlement, social and political tensions, to more subtle impacts, such as institutional reforms that affect access to goods and services. Social risks can be broken into five categories: vulnerability; country risks; political economy risks, institutional risks; and exogenous risks. *Vulnerability* risk includes increased exposure to endemic risks or external shocks. *Country* risks include political instability, ethnic or religious tensions, and military conflicts. *Political economy* risks are those that include distortion of distribution of benefits or opposition of the project by influential stakeholders (e.g. elites). *Institutional risks* include inappropriate institutional arrangements, weak governance, complexity and low capacity. Finally, the *exogenous risks* include regional conflicts or macroeconomic changes.

III. TOOLS AND METHODS OF SOCIAL ASSESSMENT

3.1 Socioeconomic Household Survey

The Consultant will carry out a household survey that will help to identify key issues and to establish a baseline for measuring the impacts of the project over time. The survey will:

- Identify the general socioeconomic situation in the project area (such as population growth during the past five years; demographic structure; average income; unemployment; urban growth and migration rates; economic base; number and types of economic enterprises; numbers and types of social services; migration from other cities and patterns of settlement; existing political, legislative, regulative and institutional structure related to the project, different settlements' role in garbage production and management of disposal and their cultural and behavioral habituate related to that) as a base line to predict social effects of project.
- Characterize existing solid waste practices, service levels, current payments in cash or in-kind for solid waste collection services' and mechanisms for coping with the lack of adequate solid waste collection services, and user preferences (for example, placement of collection point, type and size of waste collection bin, number of waste collection pickups per week).
- Establish baseline socioeconomic conditions for the population that will receive the improved solid waste collection services. The data should include household size and structure, main sources of income, consumption levels (proxy for income), and decision making responsibility at the household level (for example, population divided by residential user of different types of housing, commercial user, institutional user, industrial and hospital users in different parts of the city, number of units and their size, their economic activities, standard of living, average income). If existing data are not sufficiently detailed, then a representative sample area could be chosen for more detailed analysis or field survey.
- Establish a representative group of households in the project area, with a succinct set of baseline socio-economic indicators that can be used for monitoring purposes during project implementation.

3.2 Analyze Waste Management Issues through Semi-Structured In-Depth Interviews

The Consultant will conduct a number of semi-structured in-depth interviews with important stakeholder groups primarily to explore the range of management issues and options for resolving them as well as to examine the feasibility of introducing the various resource management approaches in project areas. It is anticipated that the stakeholders to be interviewed include: residents of different types of housing in different parts of the city/town, waste pickers, municipal waste workers employed by private firms, owners of solid waste collection enterprises, and residents living near solid waste facilities. The team will prepare an analytical report summarizing the findings of the semi-structured interviews and attach the most important interview reports.

3.3 Analyze Waste Management Issues through Focus Group Discussions

The Consultant team will conduct a number of focus group discussions with representatives of key stakeholder groups to help define three types of issues and problems that are typically addressed in a MSWM project: collection, recycling and disposal services.

The Team will identify participants for and conduct the focus group discussions and community consultations. The selection of participants for each group should be based on such factors as location and housing type, gender, occupation, role in solid waste management system (for example: residential user, commercial user, institutional user, industrial user).

Focus group discussions and semi-structured interviews should include separate discussions with:

- representatives of the communities in close proximity to selected waste facilities (for example, transfer stations, landfills)
- representatives of potential vulnerable groups as for example especially poor individuals, ethnic groups and women
- solid waste employees and managers from the public, private, and informal sectors

The Consultant will prepare a focus group discussion and semi-structured interview guide that reflects the relevant issues associated with each group, arrange for all logistics, record the discussion, and prepare a focus group discussion report highlighting the key points, including actual quotes. At least one focus group discussion in each area will include only women. In addition, at least one focus group discussion will be held prior to the household survey to identify project issues that may not have been previously identified but may require investigation. The areas of investigations will include but not be limited to: (a) problems with existing solid waste services for collection and operations at transfer stations; (b) alternate locations or designs for transfer stations (or other solid waste facilities) (c) institutional arrangements at the Sub-District, District and Municipal levels for delivering improved solid waste services, where appropriate; (d) willingness to contribute to improving the MSWM system through in-kind and in cash (i.e. introduction of new tariff proposal); and (e) the role of informal and formal waste pickers in the MSWM system.

IV. EXPECTED OUTPUTS

The Consultant team will prepare the following outputs that are outlined below. It is anticipated that detailed annexes will be prepared to describe full the results of each of the above tasks, and that a short concise final report text will highlight the main results of the SA process. The main SA report will have at least four main sections: (a) introduction and background, (b) SA objectives and methodology, (c) main findings of the SA which incorporate the qualitative and quantitative aspects of the assessment, and (d) implications (conclusions and recommendations) of the assessment. The report will also should include detailed annexes on all the work carried out within the above scope of work.

Deliverable 1 - Preparatory Report (5 copies): The Preparatory Report shall be prepared in the local language and English and submitted to the Borrower according to the time schedule set out below. This Report shall provide complete additional details of all surveys, interviews, consultations, sampling, analyses and other data collected. The information should be compiled in a main text and technical annexes. The annexes may be prepared in a local language only (with summary sheets in English). The following annexes should be provided in the Preparatory Report:

- Background literature review
- Summary of available socio-economic data
- Social diversity and gender issues
- List of main stakeholders
- Participation issues within project context
- List of institutional issues within project context
- List of issues regarding social risks within project context
- Analytical report for semi-structured interviews and focus group interviews

Deliverable 2 - Final SA Report (15 copies): The Final SA Report shall be submitted to the Borrower within the time schedule set out below. This report will build upon the Preparatory Report. The Final Report should have an Executive Summary prepared in English and the local language, and a Main Report prepared in English in 15 copies. The working papers and annexes may be prepared in the local language (with summary sheets in English). The Borrower will have a 4 week period to review and comment on the Report, at both review meetings and with written comments. The following should be provided:

- Executive Summary
- Main Social Assessment Report (concisely written in 10-20 pages) with four main sections:
 1. Introduction and Background
 2. Objectives and Methodology
 3. Main Findings (qualitative and quantitative)
 4. Conclusions and Recommendations
- Annex on background literature review
- Annex on summary of available socio-economic data

- Annex on broad social diversity and gender issues
- Annex on issues for main stakeholders
- Annex on participation issues within project context
- Annex on institutional issues within project context
- Annex on issues related to social risk within project context
- Annex on participation issues within project context
- Annex on analytical report for semi-structured interviews
- Annex on analytical report for focus group discussions,

V. ASSIGNMENT SUPERVISION AND TIME SCHEDULE

The SA work would be supervised by Borrower. The Borrower will be the focal point for coordination with all other consultants, ministries, agencies and any other international institutions. The Borrower will assure free access to all existing data and to all relevant operations and facilities. The Borrower will also provide liaison and contacts with the local authorities, NGOs, academic institutions, and will work cooperatively with the Consultant team for all public participation and public consultation activities.

The following is a recommended time schedule for the production of the reports described above. The Consultant team shall begin work upon contract signature. The team should propose a clear schedule with critical milestones, and make all possible efforts or complete the work in a shorter duration than the proposed time schedule.

MILESTONE	WEEKS TO COMPLETION
1. Contract signature	0
2. Submit Preparatory Report	8
3. Comments issued by Borrower	10
4. Submit Draft Final Phase SA Report	14

VI. QUALIFICATIONS OF CONSULTANT TEAM

It is anticipated that the Consultant would establish a strong core team of 3-5 specialists. It is envisaged that an international expert would serve as project team leader with a resident regional/national expert as deputy team leader. The team should complement the skills of the core team with other short-term social, environmental, technical, and institutional specialists. The team is expected to provide pragmatic and insightful planning to complete the assignment to the above scope of work.

The Team shall propose and justify the range of disciplines to be included in the core project team and the complementary skills of the short-term specialists. It is expected that the core project team will include 3-5 key staff, and the key staff would have a minimum of 10-15 years relevant experience. The team should include specialists who are highly familiar with social development issues appropriate for middle income countries who wish to maintain affordable public services. The Team should have an experience in urban environmental

management projects, institutional development, social and environmental studies. The entire proposed project team may include several of the specialists listed below, but should not be necessarily confined to the listed specialists:

- Specialist in social assessment and community development
- Specialist in institutional analysis
- Specialist in outreach and facilitation (group dynamics, negotiations, conflict resolution)
- Social scientist experienced with cost recovery, user charges and willingness to pay
- Social scientist experienced in working with the NGO community
- Social scientist experienced with working on solid waste issues (or wastewater issues)

Note: team members should have a proven track record of experience in sociological research

The Consultant Team shall name individuals to participate in specified roles within the project team and provide full curricula vitae and any other information considered relevant by the team. The Consultant team may name the project leader, the deputy team leader, the other core team members and key short-term specialists, and provide assurance that all members of the proposed team will be made available as specified in the proposal, if the team is named.

ANNEX 2

SAMPLE HOUSEHOLD QUESTIONNAIRES

TURKEY
SOUTHEASTERN ANATOLIAN URBAN SANITATION PROJECT
HOUSEHOLD QUESTIONNAIRE

August 1998

Household number: _____

Name of Interviewer:

Interviewer ID number:

Time of Interview:

Name of Supervisor:

Supervisor ID number:

HOUSEHOLD QUESTIONNAIRE

The purpose of this household survey is to collection information on: household solid waste-related practices and attitudes toward their solid waste service and institutions, the extent to which households are paying the cleansing tax, reasons why they may not be paying this charge on a regular basis and factors that may encourage more regular payments, and experiences associated with household's proximity to a solid waste facility. This information will be used to help design an investment directed at improving citywide solid waste management. The survey is being conducted throughout the city. All respondents will be anonymous. Survey results will be analyzed and used in a processed form only. The full confidentiality of this discussion is guaranteed.

HOUSEHOLD IDENTIFICATION (to be filled out by interviewer prior to interview)
--

City name: _____

District name: _____

Address of respondent: _____

Type of housing: _____

1=Apartment in multi story apartment building (5 or more floors)

2=Apartment in low-rise apartment building (1 to 4 floors)

3=Private single family house

4=Other (specify) _____

Floor Level of household _____

1=1 5=5

2=2 6=6

3=3 7=7

4=4

Respondent Code: _____

1=Head

2=Spouse

3=Other (specify) _____

Gender of Respondent: _____ 1=male 2=female

(Household is defined as all individuals living in this dwelling and are part of the same economic unit.)

INTERVIEWER:

If respondent's answer is 'I don't know', write **DK**.

If the respondent **refuses to answer** question, write **NR**.

GENERAL HOUSEHOLD INFORMATION

1. Who owns this house/apartment? ____
1= household member(s)
2 = state
3 = private owner

2. How many people live in your household?
1=1
2=2
3=3
4=4
5=5
6=6
7=other _____

3. How many adults (above ____ years)?
1=1
2=2
3=3
4=4

4. How many of these adults are employed (employed with regular income and seasonal workers)?
1=1
2=2
3=3
4=4

5. How many children live in your household (including those away at school)?
0=0
1=1
2=2
3=3
4=4

6. How many adults are unemployed (not including retirees or handicapped)? ____
0=0 2=2
1=1
2=2
3=3

7. Among the adults in your household, how many are retired? _____
8. Among the retired adults in your household, how many receive a pension? _____
9. How much does your household spend per month on: _____ lira/month
[this list may need to be revised to reflect appropriate expenditure categories]

- | | |
|--|----------|
| A. food | A. _____ |
| B. transport | B. _____ |
| C. rent | C. _____ |
| D. utilities (e.g., heating, electricity, water, solid waste, telephone) | D. _____ |
| E. education | E. _____ |
| F. health and medical services | F. _____ |
| G. clothing and shoes | G. _____ |
| H. other expenses | H. _____ |

10. What is your education level ? _____
 1=primary school
 2=incomplete secondary education
 3=complete secondary education
 4=professional technical education
 5=technical education
 6=incomplete higher
 7=higher education

MAJOR CONCERNS

11. What would you say is the most important environmental problem in your city?
 1=air pollution
 2=unsafe drinking water
 3=insufficient water supply
 4=inadequate sanitation (sewerage)
 5=inadequate solid waste collection
 6=unsafe solid waste disposal
 7=traffic and congestion
 8=unsafe disposal of hazardous waste
 9=other

12. What would you say is the second most important environmental problem?
 1=air pollution
 2=unsafe drinking water
 3=insufficient water supply
 4=inadequate sanitation (sewerage)
 5=inadequate solid waste collection
 6=unsafe solid waste disposal
 7=traffic and congestion
 8=unsafe disposal of hazardous waste
 9=other

13. If you did not list inadequate solid waste collection or unsafe solid waste disposal as number 1 or number 2 priority problem, how serious do you consider these problems?

a. inadequate solid waste collection _____

1=very serious

2=somewhat serious

3=not serious

4=not a problem

b. unsafe solid waste disposal _____

1=very serious

2=somewhat serious

3=not serious

4=not a problem

14. Were any members of your family ill in the past 6 months? _____ 1=yes 2=no

a. adults _____

b. children _____

15. If yes, what type of illness(es) ? _____

a. adult _____

b. children _____

1=respiratory

2=stomach

3=cardiovascular

4=injury-related

5=tuberculosis

6=skin problems

7=kidney problems

8=cancer

9=other _____

16. Do you associate any of these illnesses with poorly managed solid waste? _____

1=yes 2=no

HOUSEHOLD SOLID WASTE SERVICE

17. Does your household have a metal or plastic container for storing household solid waste?

1=yes, have metal or plastic container inside house or apartment

2=yes, have metal or plastic container in hallway

3=yes, metal or plastic container outside

4=no container

5=other

18. How often is your solid waste or solid waste container taken outside to be emptied?
- 1=once a day
 - 2=twice a day
 - 3=three times a week
 - 4=twice a week
 - 5=once a week
 - 6=less frequently
 - 7=other _____
19. Where is your solid waste container taken to be emptied?
- 1=placed curbside for collection
 - 2=emptied into larger container at same building
 - 3=emptied into communal container in the neighborhood
 - 4=emptied onto an open pile of waste in the yard
 - 5=taken to final disposal site directly
 - 6=taken to transfer station
 - 7=other
20. If your solid waste container is placed outside your home, taken to a larger container at the same building, or taken to a communal container, how often is the container emptied by the municipal solid waste service?
- 1=daily
 - 2=two times a day
 - 3=three times a week
 - 4=twice a week
 - 5=once a week
 - 6=less than once a week
 - 7=less than once a month
 - 8=don't know
 - 9=other _____
21. If your container is taken to an open pile of waste in your neighborhood, how often is that pile removed? _____
- 1=daily
 - 2=three times a week
 - 3=two times a week
 - 4=once a week
 - 5=less than once a week
 - 6=less than once in 2 weeks
 - 7=never
 - 8=other _____

22. Who has primary responsibility for collecting your household's solid waste once it is brought outside ? _____
 1=local government/municipality
 2=private company
 3=neighborhood group
 4=other _____
 5=don't know
23. Do you pay a janitor to collect solid waste from your apartment and take it outside?
 1=yes
 2=no
24. How much do you pay the janitor? _____ per _____
25. Does your household separate recyclable waste? _____ 1=yes 2=no
26. What type of waste does your household reuse (can indicate more than one) ? yes=1 no=2
- a. glass _____
 - b. plastic _____
 - c. paper _____
 - d. cardboard _____
 - e. compostables _____
 - f. metal cans _____
 - g. other _____
27. What type of waste does someone else pick up for recycling? yes=1 no=2
- a. glass _____
 - b. plastic _____
 - c. paper _____
 - d. cardboard _____
 - e. compostables _____
 - f. clothing _____
 - g. metal cans _____
 - h. other _____
28. Which of the following types of solid waste does your household sell ?
 yes=1 no=2
- a. glass _____
 - b. plastic _____
 - c. paper _____
 - d. cardboard _____
 - e. compostables _____
 - f. clothing _____
 - g. other _____

29. How much income per month on average do you get from selling these wastes? ____
30. Does anyone in your household recycle manure? ____
 1=yes, the manure comes from my household's own animals
 2=yes, the manure comes from the animals of friends
 3=yes, the manure comes from a waste facility or from the street
 4=other _____
31. Do you sell tezek to other people? ____ 1=yes 2=no
32. If yes, how much money do you make per month from selling tezek? _____ lira
33. Do you or anyone else in your household buy tezek from neighbors or friends? ____
 1=yes 2=no
34. How does your household use the tezek? ____ 1=heating 2=fertilizer
35. How would you characterize your satisfaction with your primary solid waste collection service? ____
 1=very satisfied
 2=satisfied
 3=not satisfied
36. If you are not satisfied, what bothers you most about your primary solid waste collection service?
 1=infrequent collection
 2=unreliable collection
 3=location of container
 4=number of garbage bins provided
 3=unsanitary conditions at container
 5=other (specify) _____
37. Do you know where the collected waste is taken for final disposal? ____
 1=yes 2=no
38. Are you concerned about whether ultimate disposal is environmentally safe?
 1=yes 2=no
39. Do you know what a solid waste transfer station is? 1=yes 2=no
40. Do you live near a solid waste transfer station? 1=yes 2=no
41. Have you experienced any problems with that transfer station? ____ 1=yes 2=no

42. If yes, what problems have you experienced? (you may list more than one) _____
 1=noise
 2=odors
 3=unsanitary conditions
 4=aesthetic problems
 5=flies
 6=other _____
43. Do you know anyone who lives near a solid waste transfer station? ___ 1=yes 2=no
44. What kind of problems have they experienced? _____
 1=noise
 2=odors
 3=unsanitary conditions
 4=aesthetic problems
 5=flies
 6=other _____
45. Do you know who to contact if you have any problems with your solid waste service?___ 1=yes 2=no
46. If yes, who would you call? _____
47. If you ever called this office, were you satisfied with their response? ___
 1=yes 2=no
48. If no, what problems did you experience?

49. Is sufficient information made available to you about your solid waste management system (for example, information about collection times, payment of cleansing tax, risks associated with improper waste handling)? _____ 1=yes 2=no
50. If no, what type of information do you want to have? _____
 1=solid waste collection schedule
 2=where to complain if there are problems
 3=proper handling of different kinds of waste
 4= other _____

WILLINGNESS TO PAY

51. Do you know that you are supposed to pay for your solid waste service?
 1=yes
 2=no

52. How much money are you supposed to pay for solid waste service?
 1= _____ lira/year
 2= _____ lira/every 6 months
 3=don't know
53. Do you regularly pay your solid waste charge? _____ 1=yes 2=no
54. If no, what are the reasons why you are not paying your solid waste charge regularly? _____
 1=dissatisfied with the service
 2=there is no enforcement for non-payment
 3=can't afford to pay
 4=other
55. If payments for solid waste service in your city is not increased, the municipality will not be able to continue to provide an adequate solid waste collection service. Would you be willing to pay (**ask municipality or engineering contractor for cost figure**) to maintain your solid waste collection service (or the service will get worse) ? _____ 1=yes (go to 56)
 2=no (go to 57)
56. If yes, would you be willing to pay double this amount to main your solid waste service? _____ 1=yes 2=no
57. If you are not willing to pay this amount, what are your reasons?
 1=can't afford to pay more
 2=I want to see improvements first
 3=other _____
58. If you are not satisfied with your solid waste service, would you be willing to pay (**ask municipality or Posch for cost figure**) to get an improved solid waste service? _____
 1=yes 2=no
59. If yes, what type of improvement would you be willing to pay this amount for?
 1=more frequent collection
 2=safer disposal
 3=other (specify) _____
60. If no, why not? _____
 1=can't afford
 2=want to see improvements first
 3=other
61. If you are not willing to pay this amount to maintain or to get an improved service, what is the most amount of money you would pay each month either to maintain or get an improved service? _____

INFORMATION ABOUT RESPONDENT

62. How long are you living in this city? ____ years
63. If you are not living here since birth, why did you come here? ____
1=government appointment
2=to find better opportunities for myself
3=to find better opportunities for my children
4=political reasons
5=other (specify) _____
64. What is your household's total average monthly household income? _____ lira
65. Out of your total household income, how much pension income does your household receive every month? _____ lira
66. What is your age? ____ years

UZBEKISTAN-TASHKENT SOLID WASTE MANAGEMENT PROJECT

Satisfaction with Existing Municipal Solid Waste Management System

Household Questionnaire

June 2004

Date of interview: _____

Name of interviewer: _____

District: _____

Introduction:

During the past five years, the Hokimiyat of Tashkent has been implementing a project to improve citywide solid waste collection and disposal. The purpose of this survey is to determine whether the residents of Tashkent are currently satisfied with the services provided, what specific problems they may be experiencing with the solid waste collection service, whether they are willing and able to pay an increased tariff to ensure that the current level of service is either maintained or improved. To help determine current needs for waste collection services and set reasonable prices for collection and removal of waste from your houses or establishments, we need to know your opinion. I would like to ask you some questions that would assist the local government in improving the existing situation. These questions will take no more than 20 minutes of your time. We are interviewing a sample of% of the households of your neighborhood, so your opinion is very valuable to us and to this study. All information to be received from you will be kept absolutely confidential and will not be disclosed to public. Only statistical data and general information will be used to determine the general picture. Let me first ask you to identify your position within a household.”

1. Name of the respondent (upon discretion) _____
2. Position of the respondent (mark one):
 - Male head of the household
 - Female head of household
 - Spouse of head of the household
 - Household member 16? years or older
 - Representative of Housing Cooperative
 - Representative of Mahallah Committee
 - Other, please describe _____

3. Type of the household (mark one):
- Flat (how many stories) _____
 - Private house

A. Existing Situation Concerning Solid Waste

4. What type of receptacle does your household (or establishment) have for waste storage on your premises?
- Metal or plastic container (give approx. size or volume) _____
 - Concrete (immovable) container
 - Basket or carton container
 - Bag
 - Other type of container
 - No container
 - Don't know
5. Who provided the receptacle that is used on your premise?
- Provided by local authority
 - Purchased by own means
 - Other source
6. Would you prefer to use a different type of receptacle?
- No
 - Yes (describe preferred type) _____
7. Is your waste receptacle emptied by waste collectors?
- Yes, by waste collectors from the local authority
 - Yes, by private waste collectors
 - No, we empty container into a larger container in the neighbourhood
 - No, we empty the container at the secure collection point
 - No, we empty the container on the street in some unauthorized waste pile
 - Other (describe) _____
 - Don't know
8. If your receptacle is emptied by waste collectors, how many times is your waste receptacle usually emptied?
- Daily
 - Twice a week
 - Three times a week
 - Once a week
 - Less than once a week
 - Don't know

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

- Male head of household
- Female head of household
- Any male adult
- Any female adult
- Any child between the age of 12 and 18
- Any child between the age of 6 and 12
- Don't know

B. Quality of waste collection services

10. How do you rate the service that you receive for collection of solid waste from your household /establishment

- Very satisfactory
- Satisfactory
- Unsatisfactory
- Don't know

11. If you are not satisfied with waste collection service, please state your primary reason for your dissatisfaction:

- Reliability of service
- Frequency of service
- Lack of clean appearance around the bin after collection
- Waste collection bin located too far from my home
- Waste not directly collected from the premise
- Lack of recycling
- Environmental concerns not taken into account
- Other (explain) _____

C. Ability and willingness to pay for waste collection services

The present project for improving solid waste management in Tashkent City has included many improvements such as: purchase and installation of new containers, purchase and use of new waste trucks, construction of three waste transfer stations for faster waste disposal, and upgrading the landfill and its equipment. There will also be changes made in the present waste management system to improve the quality of collection and disposal services and to increase the effectiveness of the work of present tariff mechanism. All these changes are intended for improving the quality of the city's solid waste service and shall have a positive effect for you and your family as well as for the whole sanitary condition of your city. Therefore the following questions deal with possible increase in tariffs due to these costs.

12. Do you pay regularly for waste collection services?

- Yes, _____ soums per person per month

13. How do you pay for waste collection services?
- Make a direct payment to Spetstrans
 - Payment included in my bill for housing service paid to housing partnership
 - Other _____
14. Would you pay more if the price of the service will rise?
- Yes (answer 16 question)
 - No
 - Do not know
15. If no, what the reason?
- Small family budget resources
 - Service is not satisfactory
 - Service is unnessesary for the additional payment
 - Payment should be included in the tax
 - Do not know
16. Which improvements do you consider most important in your waste collection service (please state in order of importance)
- _____
- _____
- _____
- _____
- no need for improvement (go to question 19)
17. Will you be prepared to pay a higher tariff for your household if the improvements proposed above for waste collection is actually implemented?
- No, I am not prepared at all to pay a higher fee
 - Yes I am prepared to pay an additional 50 soums/person/month
 - Yes, I am prepared to pay an additional 51-100 soums/person/month
 - Yes, I am prepared to pay an additional 101-150 soums/person/month
 - Yes, I am prepared to pay an additional 151-200 soums/person/month
 - Yes, I am prepared to pay more than 200 soums/person/month
18. Let's assume that the local authority that presently provides your solid waste collection service runs into financial difficulties due to the costs of the waste collection service and would therefore need to reduce service level unless the residents of Tashkent pay a higher price for the service. What will you be prepared to pay to ensure that the present level of waste collection service is maintained (Soums per person per month for your household)?
- I am not prepared to pay a higher fee for maintaining the present service
 - Up to 50 soums/ person/ month (answer 21 question)
 - 51 to 100 soums/person/ month (answer 21 question)
 - 101 to 150 soums/person/month (answer 21 question)
 - 151 to 200 soums/person/month (answer 21 question)
 - more than 200 soums/ person/ month (answer 21 question)

19. If you are not prepared to pay for maintaining the present level of service, state your reasons: _____

- Insufficient family budget resources
- Service is unnecessary for the additional payment
- Payment should be included in the tax
- Do not know

D. Treatment and final disposal of solid waste

20. Do you know where the collected waste is taken for ultimate treatment and disposal when it leaves your premise / neighborhood?

- Yes
- Don't know (answer question 23)

21. If you know about the ultimate treatment / disposal of your waste, are you concerned whether this is done in an environmentally safe and acceptable manner?

- Yes
- No
- Don't know

22. How much (in %) of your solid waste tariff should be reduced for your agreement to participate in keeping collection points clean?

- 10%
- 15%
- 25%
- 50%

23. If you are willing to pay for the solid waste service, to whom would you prefer to pay the fee?

- Housing Cooperative
- Mahallah Committee
- Transfer money through the bank
- One tax
- Don't care
- Other _____
- Don't know

E. General and Income and Expenditure Information

24. What is your age? _____

25. What is your level of education (number of years of school)? _____

26. What is the level of education of the most educated member of your household (or establishment)? _____
27. How many people live in your household (work in your establishment) on a regular basis? _____
28. If a household, how many of these are children under 15 years of age? _____
29. If a household, what does the principle income earner do?
- Don't Employee of private company
 - Employee of joint-stock company
 - Government employee
 - Self-employed as trader
 - Self-employed as laborer
 - Retired
 - Other
 - know
30. How much does your household spend on average on the following items per month?
- Food _____
 - Clothing _____
 - Electricity _____
 - Cold Water _____
 - Hot water _____
 - Solid Waste Collection _____
 - Central Heating _____
 - Fuel for cooking and heating (natural gas) _____
 - Television (cable) _____
 - Telephone services _____
 - Housing maintenance rate _____
 - Medical Services _____
 - Transportation _____
 - Education _____
 - Other (celebrations, recreation, entertainment, etc)
 - Don't know _____

F. Questions concerning the collection points

Presently there are three different types of collection points for waste (pictures provided):
For Tashkent

1. Non-secured non-engineered collection points, where usually 2 to 4 blue or rusty brown colored open 750 liter containers are placed, and where the population of the neighborhood shall dispose of their waste.

2. Non-secured engineered collection points, where up to 5 blue colored open 750 liter containers are placed, and where the population of the neighborhood shall dispose of their waste. In case of this type of collection point the containers are placed in a row in a concrete structure.
3. Secured collection points, where up to 6 galvanized 1,100 liter metal containers (which have 4 wheels and a lid) are placed in a walled lot, and which also includes a small building for the staff. The secured collection point is manned all day and night by staff, who are responsible for keeping the area clean.

We would like to ask you the following questions:

31. Which type of collection point do you know (pictures to be shown)?
 - Non-secured-non-engineered collection point (type 1))
 - Non-secured-engineered collection point (type 2))
 - Secured collection point (type 3))
 - Other: _____(please specify)
 - None of them
32. To which type of collection point do you presently carry your waste?
 - Non-secured-non-engineered collection point (type 1))
 - Non-secured-engineered collection point (type 2))
 - Secured collection point (type 3))
 - Other: _____(please specify)
33. What is the distance to your collection point?
 - Close
 - Acceptable
 - Far away -- unacceptable
33. Could you define in more detail the distance from your home to your collection point?
 - Less than 100 meters
 - 100 to 300 meters
 - 300 to 500 meters
 - more than 500 meters
 - do not know
34. If you use a secured collection point, what, if any, problems have you encountered using the facility?
 - The collection point and its equipment are not being properly maintained
 - The staff assigned to the collection is not always present
 - Other (please specify) _____
 - There are no problems
 - Don't know

35. If you use a non-secured collection point, what, if any, problems have you encountered?
- There is waste left around the bin after the collection truck picks up the waste
 - The bin is too high for child to properly dispose of solid waste
 - Other _____
36. Which collection point would you prefer to have in your neighborhood?
- Non-secured-non-engineered collection point (type 1)
 - Non-secured-engineered collection point (type 2)
 - Secured collection point (type 3)
37. Up to what distance would you be prepared to carry your waste to the next secured collection point?
- Up to 100 meters
 - Up to 300 meters
 - Up to 500 meters
 - More than 500 meters
38. What would you do, if no collection point at all would be in an acceptable range of your flat?
- Carry the waste farther until the next collection point
 - Search for a place in my neighborhood where others also dispose of their waste
 - Throw the waste wherever I please
39. In order to reduce the costs of a secured collection point, the number of hours that a collection point would be open could be reduced. What hours of operation would be most suitable for your household?
- All day and night
 - Between 6:00 a.m. and 10:00 p.m.
 - Between 8:00 a.m. and 8:00 p.m.
 - Between 10:00 a.m. and 6:00 p.m.
 - Other (please specify) _____
40. To whom would you complain about the waste collection services?
- Complain at the District Hokimiyat
 - Complain to Housing Cooperative
 - Mahallah Committee
 - Other _____
 - I would not complain
 - I don't know where to lodge complaints
41. What is the monthly average income of your entire household (all sources of income and from all income earners)?
- 15,000 soum or below
 - 15,000-30,000 soum
 - 30,000-50,000 soum
 - 50,000 – 80,000 soum

- 80,000 – 110,000 soum
- Over 110,000 soum
- Don't know

Thank you very much for your time and effort put in this work. This means a lot to our project and to the future sanitary condition of the city.

Tashkent Solid Waste Management Project

Beneficiary Assessment

Secured Collection Points (SCPs)

QUESTIONNAIRE

QUESTIONNAIRE PASSPORT
(TO FILL OUT AFTER INTERVIEW)

a. No. of questionnaire |_|_|_|_|

b. No. of SCP |_|_|_|

c. City district (WRITE LEGIBLE)

--

d. Correct address (street, block, house number) (WRITE LEGIBLE)

e. Sex of the respondent

Male	1
Female	2

f. Type of household

Apartment in multistoried building	1
1-storied private house	2
2-storied private house	3
3-storied private house	4

g. Language of the questionnaire

Uzbek	1
Russian	2

h. Distance from the house toward SCP: |_|_|_|_| meters

INTRODUCTION! Hello! My name is I work for the center of social research. Now we undertake survey in Tashkent city about problems of recently built SCPs. Would you agree to talk to me for a while? We guarantee that your answers would not be disclosed to anyone, and results will be processed only in general way, i.e. without specification of addresses , manes and family names.

Your household was selected by us by random choice out of many other households which are located close to SCPs. Our interview will last about 25-30 minutes. We hope that your answers would help to improve operation of these SCPs.

No	2
Hard to say/No answer	9

➔ TO QUESTION 6

5. What in particular did not satisfy you?

SEVERAL ANSWERS COULD BE MARKED

Nothing was said about working hours of new SCP	1
Nothing was said about what types of garbage they accept	2
Information from official sources was not available	3
Nothing was said how far is this new SCP located	4
Other (SPECIFY):	

6. Who from the members of your household usually discharge garbage at this SCP?

ONLY ONE ANSWER.

I myself	1
My spouse	2
My daughter	3
My son	4
Other (SPECIFY):	

7. **How often you or other member of your household discharge garbage at this SCP?**
ONLY ONE ANSWER.

Twice per day	1
Once per day	2
5-6 times per week	3
3-4 times per week	4
1-2 times per week	5
Other (SPECIFY):	

8. **Do you discharge garbage at some particular time of the day?**

Yes	1	➔ SPECIFY : at __ __ o'clock
No	2	

9. **How do you pay for the use of new SCP?**
ONLY ONE ANSWER.

There is no separate payment, we pay usual tariff to ZhEK or bank	1	➔ SPECIFY HOW MUCH : _ _ _ _ _ soum/month
We pay special fare for the use of new SCP	2	
Other (SPECIFY):		

10. **Do you or anyone from your household discharge garbage at any other place?**

Yes	1	➔ SPECIFY WHERE: _____
No	2	➔ TO QUESTION 12

11. Why do you or someone from your household discharge garbage at some other place?

SEVERAL ANSWERS COULD BE MARKED

We have a habit to discharge it at the old place	1
New SCP is located far from us	2
Do not want to walk to that SCP when it is too cold and raining	3
Do not want to walk to that SCP when it is too hot	4
If we see pile of the garbage on the ground we just discharge our garbage there	5
Other (SPECIFY):	

12. Do you sort your garbage before you take it to the SCP?

Yes	1
No	2

13. To what extent, in general, are you satisfied with operation of new SCP? You are very satisfied, rather satisfied, rather unsatisfied, and totally unsatisfied?

Very satisfied	1
Rather satisfied	2
Rather unsatisfied	3
Totally unsatisfied	4
HS/NA	9

14. Do you prefer to discharge garbage at new SCP or at old non-secured point?

Yes	1
No	2
HS/NA	9

➔ TO QUESTION 16

➔ TO QUESTION 16

15. Why do you prefer to discharge garbage at new SCP?

SEVERAL ANSWERS COULD BE MARKED

New SCP has less smell	1
New SCP is more clean	2
Someone is available over there to help to empty refuse bucket	3
Garbage is collected more regularly from new SCP	4
Other (SPECIFY):	

16. Have you or someone from your household face any problems connected with the use of new SCP because of living close to it or by interconnection with workers of SCP?

Yes	1
No	2
HS/NA	9

➔ TO QUESTION 18

➔ TO QUESTION 18

17. What problems did you or members of your household face?

WRITE DOWN ANSWER OF THE RESPONDENT IN DETAILS:

18. Do you know any one living close to you who faced any problems connected with new SCPs?

Yes	1
No	2

➔ TO QUESTION 20

19. Which problems did he face?

WRITE DOWN ANSWER OF THE RESPONDENT IN DETAILS:

20. In your opinion, is SCP and its equipment kept properly?

Yes	1
No	2
HS/NA	9

21. Do you think that majority of your neighbors discharge the ir garbage at SCP?

Yes	1
No	2
HS/NA	9

22. Do you think that majority of people currently use SCP more seldom then before, when it was just built?

Yes	1
No	2
HS/NA	9

➔ TO QUESTION 24

➔ TO QUESTION 24

23. Why do you think so?

SEVERAL ANSWERS CULD BE MARKED.

This SCP is not something new or unusual anymore	1
People do not want to walk distance towards new SCP	2
People do not want to pay for it at all	3
Payment for use of this SCP is too high	4
This SCP is not kept properly, became dirty and etc.	5
Other (SPECIFY):	

24. How often do you meet piles of garbage placed directly on the ground close to your house or adjacent houses ? You meet it very often, rather often, rather seldom, very seldom or never?

Very often	1
Rather often	2
Rather seldom	3
Very seldom	4

Never	5
HS/NA	9

25. **Have sanitary conditions improved in your house and around it for the period of SCP operation?**

Yes	1
No	2
HS/NA	9

26. **Would you prefer some other place to discharge your garbage?**

Yes	1
No	2
HS/NA	9

➔ TO QUESTION 28

➔ TO QUESTION 28

27. **What place, in particular, would you prefer?**

PLEASE WRITE DOWN RESPONDENT'S ANSWER IN DETAIL:
--

28. **Do you have any proposals to improve operation of SCP?**

Yes	1
No	2

➔ TO QUESTION 30

29. **What proposals do you have?**

PLEASE WRITE DOWN RESPONDENT'S ANSWER IN DETAIL:
--

30. **What amount in soum does you household pay in total for discharge and collection of garbage?**

WRITE DOWN:	Soum
DO NOT PAY AT ALL	8
HS/NA	9

➔ TO QUESTION 32

➔ TO QUESTION 32

31. How many months or years does your household pay such fare for garbage collection?

WRITE DOWN:	months	or	years
HS/NA	99		

32. What do you think, has organization of garbage collection in the city been improved, remained the same or worsened during last two years?

Improved	1
Remained the same	2
Worsened	3
HS/NA	9

34. Could you tell what is total amount of income of your household per month? Please, add money which all members of your household receive “at hands” for one months from all possible sources of income - salaries, pensions, stipend, welfare and etc. Please, name all amounts that should be received by members of your household, even if payment might be delayed.

FILL OUT BELOW TABLE WITH ALL POSSIBLE SOURCES OF INCOME.

	Source of income	Currency 1 – soum 2 – dollar	Total amount
(1)	Salary		
(2)	Pension		
(3)	Stipend		
(4)	Income from private business, individual business, sell of food stuff grown at own piece of land or garden		
(5)	All types of welfare		
(6)	Percentage of bank savings		
(7)	Any other types of income		

34. How old are you?

WRITE DOWN:	____ years
-------------	------------

35. How many people, including yourself, live in your household?

WRITE DOWN:	____ people

Thank you very much for participation in this interview!

i. Date of interview and time of its conclusion (WRITE DOWN)

	<i>Date</i>	2 .
Date of interview :		

	<i>Hours</i>	<i>Minutes</i>
Time of interview conclusion :		

k. INTERVIEWER		
<i>Name</i>	<i>Signature</i>	<i>Number</i>
l. SUPERVISOR		
<i>Name</i>	<i>Signature</i>	<i>Number</i>
m. CHECKING		
<i>Name</i>	<i>Signature</i>	<i>Number</i>
n. CODING		
<i>Name</i>	<i>Signature</i>	<i>Number</i>

QUESTIONNAIRE

FOR PERSONNEL OF SECURED COLLECTION POINT

INTRODUCTION! Hello! My name is I work for the center of social research. Now we undertake survey in Tashkent city about problems of recently built SCPs. Would you agree to talk to me for a while? We guarantee that your answers would not be disclosed to anyone, and results will be processed only in general way, i.e. without specification of addresses, names and family names.

Your SCP was selected because it operates for rather long time and is fully equipped . Our interview will last about 25-30 minutes. We hope, that your answers would help to improve operation of these SCPs.

1. Please, tell me how long you have worked at this SCP?

WRITE DOWN:	_ _ _ months
-------------	---------------

a.	Number of SCP _ _ _
b.	City district (WRTE DOWN LEGIBLE) _____

2. Where did you work before?

WRITE DOWN:

3. Were you specially trained to work at this SCP?

Yes	1
No	2

4. What is your mode of work? How many hours should you be at this SCP and how many days per week?

WRITE DOWN:

5. What are your duties here?

WRITE DOWN:

6. Who usually bring garbage here? SEVERAL ANSWERS COULD BE MARKED.

Children	1
Woman	2
Men	3
Other (SPECIFY):	

7. How far from this SCP do you live? How much time do you need to commute there? ONLY ONE ANSWER.

Very close, no need to commute	1
Need to drive for 10-15 minutes	2
Need to drive for 30-40 minutes	3
I commute for one hour or more	4
Other (WRITE DOWN):	

8. Do you sell any recycled materials? If yes, what do you sell more often?

WRITE DOWN:

9. Who is your main buyer – people, some small businesses or anyone else?

WRITE DOWN:

10. How much money approximately do you make per month from the sell of recycled materials?

WRITE DOWN:

11. Did you face any problems connected with use of this SCP by population? What problems did you face?

WRITE DOWN:

- 12. Did you hear that people living in the neighborhood sound any claims regarding this SCP? If yes, what in particular was unsatisfactory for people?**

WRITE DOWN:

- 13. Are you satisfied with working conditions? If not, please tell about problems and reasons of your dissatisfaction. Please describe how, in your opinion, could conditions of your work be improved and problems settled.**

WRITE DOWN:

- 14. Are there any problems with trucks that collect garbage here? If yes, what are these problems?**

WRITE DOWN:

ANNEX 3

**SAMPLE MODERATOR'S GUIDES FOR FOCUS GROUP DISCUSSIONS
AND IN-DEPTH INTERVIEWS**

TASHKENT SOLID WASTE MANAGEMENT PROJECT
MODERATOR'S GUIDE FOR FOCUS GROUP DISCUSSION

I. Introduction (5 minutes)

Introduction of Moderator

Hello. My name is _____. I am working in the Center for Social and Marketing Research of the city of Tashkent. I think no one of you have participated before in such a group discussion like this which we are going to initiate just now. First of all let me thank you for the time you find to come here today. Our job is to get the groups similar to yours involved in discussions so as to learn what do people think about these or those matters. Today the subject matter of our meeting is to discuss the situation with garbage and waste removal in the city of Tashkent.

Purpose of Discussion

The purpose of our discussion is to find out what do you personally think about the matters we are going to discuss. I am acting here not as an expert or specialist for the matters in question intending to teach you something or answer your questions. On the contrary, you yourselves will be the experts today, and, therefore, I would like to hear what are your personal ideas. In addition to our group, we will initiate and go into discussions devoted to similar subject matter in other groups as well. The results of study will be further used to change radically the situation with garbage removal in Tashkent.

Discussion Procedure

Let me explain some of the basic rules for the conduct of our discussion.

- First, our discussion will take approximately two hours and will be tape recorded. To avoid any failures (like, any break in recording), my assistant is present here to make her notes as well. I want to assure you that no one, excepting the investigation group, would ever hear anything you could say here. Prior to preparation of a report, your opinions will be summarized, and your names will be never mentioned anywhere.
- Further, we would like to hear your opinions regarding every issue which will discussed from the viewpoint of your own experience. During discussions no answers would not be treated as to be correct either incorrect, therefore, please, feel absolutely free to say everything you think. It will be quite normal of you to express both positive and negative opinions, to disagree with other participants or change your opinion. Shortly speaking, please, be absolutely relaxed.
- Third rule. It is very important for us to hear each of you. You are absolutely not required to answer each question, but, please, try to express your thoughts any time

you have something to say. Besides, let other participants speak out as well. Also, you are kindly requested to avoid discussing any other matters unrelated thereto so that all of you could hear well enough of what we are talking about.

- And finally, the last item. I will not express my own opinion. My role is to run the discussion so that every one of you may get a possibility to speak out, and make myself certain of the fact that all matters in question have been discussed. As you may see [THE MANUAL TO BE SHOWN], we've got a lot of topics to be discussed. So, any questions from you?

Introduction of Participants

Let us start with introducing each other. Please, advise your names, how many children do you have, what is position (if you are working). I'll start with myself [INTRODUCE YOURSELF].

II. Main problems (15 minutes)

All of you probably know and feel that life in such a big city as Tashkent is connected with a lot of problems relating to environment. With this in view, I would like to speak a little about those problems which you believe the most vital for today.

- Please, indicate an environmental problem which, to your opinion, is the most important for us as the inhabitants of Tashkent.
- It is critical for me to not only hear from you that this or that problem is the most important, but I would like you to substantiate somehow your opinion.[TRY TO FOCUS ON ISSUES RELATED TO AIR, WATER, SEWERAGE SYSTEM, GARBAGE REMOVAL, NOISE AND TRAFFIC, HARMFUL EFFLUENTS]
- How serious is the problem of garbage and household wastes removal in Tashkent? [TRY TO CLARIFY IN CASE THE PARTICIPANTS DO NOT MENTION THE PROBLEM AS THE MOST IMPORTANT]

III. Removal of Household Solid Wastes (80 minutes)

Now I would like to discuss the situation with removal of garbage and household wastes at your houses. Please, try to speak out in more details about everything that might be related to this issue.

A. Collection of garbage and solid wastes at households

- Please, describe how you usually collect the garbage at your home. Do you have any special bins or bucket to collect the garbage in? What are those made of? Whether dimensions of those are convenient? Maybe, they are too big, or too small? Why do use the capacities of that type? Would you like to replace those with something else? What exactly?
- If you would like, why haven't you done it yet? Maybe, it is difficult to find the right ones? Or you are not satisfied with the price of items available for sale?
- Where the garbage collection capacities are located at your house? Whether you are satisfied with such a location? Why - 'yes', and why - 'no' ? Would you like to change location, and if yes, then where to exactly?
- Do you face any problems with garbage collection at your home? What are these problems? How do you manage to settle such problems?
- How do your friends, or acquaintances usually collect the garbage? Have they ever told you about any problems related with the garbage collection? What are those? Who do they solve those problems?
- Are you satisfied with the method of collecting the garbage at your households? If not, then - why? Have you thought out how the collection of garbage could have been arranged in an other way? If yes, then - how?

Now let us speak a little of whether you sort out the garbage and household wastes at your home, and how you do this?

- Whether you separate garbage and solid wastes to some portions? What exactly are those portions? Why to such portions? Where do you collect in the separated portions of garbage or solid wastes?
- How, in your opinion, does the major part of people that you know act? Whether they separate the garbage and solid wastes to any portions and what portions exactly?
- Have you ever left anything for solid wastes with you so as to re-use those? Namely, what? Why?

[TO INVESTIGATE MATTERS IN RESPECT TO GLASSWARE, POLYETHYLENE BAGS, SCRAP PAPER AND PAPER BAGS, SOME FOODSTUFF WASTES, CLOTHES AND SHOES]

B. Outdoor Collection of Solid Waste

Now I would like to discuss how the collection and removal of garbage is done outside your house (apartment). We should discuss where your garbage is thrown away to, who and when removes it, to what extent you are satisfied with the manner it is done, and many other issues. I also would like you to remember as many details as possible from your everyday life. It would be great if any one of you could recall any unusual or “terrible” story connected with such problems, etc.

- So, let us start with the question where usually you throw away the garbage and solid wastes formed in our household. Please, describe in more details.

[INVESTIGATE THE ISSUES RELATED TO OPEN HEAPS, BINS, VEHICLES, ETC.]

- Who is usually in charge to bring out the garbage at your home? Whether there is a member of your family who is assigned with this duty? [TO CLEAR UP IN RESPECT TO SMALL CHILDREN]

- Who, as per your observations, is usually carrying away the garbage from the houses (apartments) of your neighbors? Any peculiarities in connection with this, if any have been noted by yourselves? Namely, what are those?

- How often do you carry away the garbage and household wastes?

- Whether there have been any outsiders to ask for some household wastes? What exactly do they ask for? Could you describe in more details those people who ask for wastes from you, - their clothes, appearance, nationality, etc.?

[INVESTIGATE MATTERS IN RESPECT TO GLASSWARE, POLYETHYLENE BAGS, SCRAP PAPER AND PAPER BAGS, SOME FOODSTUFF WASTES, CLOTHES AND SHOES]

- How often is the garbage and household wastes which is thrown by you and your neighbors removed? What are the vehicles arriving to pick up the garbage - specialized or usual loaded with garbage by manpower?

- Who, in your opinion, is responsible for the garbage removal? Whether the persons responsible for garbage removal do their work perfectly?

- Whether the quality of garbage removal during wintertime and summertime is same? When it is better cleaned?

- Are you satisfied with the current quality of garbage and solid wastes removal? If not, then what is the point?

[TO INVESTIGATE THE FREQUENCY, REGULARITY AND QUALITY OF CLEANING, CONDITIONS OF PLACES WHERE THE GARBAGE IS THROWN TO, LOCATION OF DUSTBINS, ETC.]

- Are you satisfied with the design of dustbins located close to your house, i.e. its volume, height, width, etc.? Maybe, you would like to suggest some modifications that could change, to your opinion, the design of dustbins?

- Now the question regarding the refuse chutes designed in multi-storied buildings. Some of the participants believe that such chutes shall be closed. And what do you think? Why do you think so? What shall the people living in upper floors do?

- Whether the garbage collected nearby your house is burnt? How often it happens? Who sets, as to your observations, the garbage on fire - those who are responsible for its removal, or, just playing children? Are you worried with this situation? To what extent?

- How often have you observed that children were playing in places of garbage collection? Whether the adults interfere? When, during a day, this happens more often?

- If those who are obligated to follow over the garbage removal do not fulfill their duties, what would be your actions? Whether you pay to anybody else to make this job? If you pay, then how often and how much? Whom exactly you pay to?

- Whether it ever happens that the garbage in a place where you usually carry your garbage away to, is not removed for a long time? For how many days it is usually last? Whether it happens frequently?

- What are your actions usually in such cases? Have you ever appealed to anywhere with your complains? Maybe, you would try to do something else? What?

- Have you ever observed that there were some people searching for some useful wastes in garbage heaps? What exactly do they collect? How often have you observed them? Could you describe in more details those people who ask for wastes from you, - their clothes, appearance, nationality, etc.?

- Do you know where the garbage from garbage heaps and dustbins is transported to? Please, indicate the specific place, if you know. How far is this place from Tashkent?

- Do you know what happens with removed garbage, that is if it is subject to annihilation or reprocessing? What happens with the garbage? Are you satisfied with this manner of garbage reprocessing? Why - 'yes', and why - 'not'?

C. Payment for Garbage Removal

Now I would like to discuss some issues related to garbage and household waste removal.

- How many sums a month do you pay for garbage removal? Whether you usually pay every month or sometimes the payment is delayed by you? Whether it is possible that anybody does not pay for garbage removal at all? Why?

[TO CLEAR UP ALL DETAILS WITH RESPECT TO REASONS AND MOTIFS OF NON-PAYMENT OR IRREGULAR PAYMENT FOR GARBAGE REMOVAL]

- What is the procedure of payment for garbage removal? Do you pay for garbage removal in a complex with other services, or separately? Where do you usually pay for garbage removal? Is such payment system convenient? Why - 'not', and why - 'yes'?

D. Alternative Methods of Garbage Removal

- As to your opinion, whether the whole process of garbage collection and removal could be arranged in some other way? How it could be done?

[TO INVESTIGATE ABOUT SPECIAL BAGS FOR WASTES: HOW THOSE SHALL BE DISTRIBUTED, WHETHER ANY CHARGE SHALL BE IMPOSED, OR THOSE SHOULD BE DISTRIBUTED FREE OF CHARGE, ETC.]

IV. Willingness to Pay for Improvements (20 minutes)

So, we have discussed together the entire process of garbage collection and removal from your households. We have only to remained to discuss what kind of information might be needed for us, what could be likely improvements in the sector of garbage collection, and your willingness to participate in such improvements. It is natural that you may be involved thereto only in one way - to pay more for cleaning and transportation of garbage and solid wastes.

- Do you need any specific information relating to collection and removal of garbage, which, to your mind, could help you to better influence upon this process? What is exactly the information you need?

- Are you ready to pay 15 soums a month per each member of your family provided that garbage removal would become better, i.e. more clean and regular, etc.? Why - 'yes', or why - 'not'?
- Whether you are ready to pay 30 soums a month per person under same conditions? Why - 'yes', or why - 'not'?
- What is generally the maximum amount you would be ready to pay for more qualitative garbage removal? What do you think other people would be ready to pay?
- Whom you would prefer to pay for garbage removal - to a private or governmental company? Why?
- How would you prefer to pay for garbage removal: in the same manner it is done now, or in some other way? If in other manner, then how? Why it would be convenient for you to pay in this or that way?

[TO INVESTIGATE ABOUT VARIOUS FORMS OF PAYMENTS: IN SAVINGS BANK; IN HOUSING MAINTENANCE ORGANIZATION; COLLECTING MONEY IN MAKHALLYAS OR AT RESIDENCE PLACES, ETC.]

V. End of Discussion

That is all with our discussion. Thank you very much for making the time available to participate. Please, receive your remuneration.

Tashkent Solid Waste Management Project

Guide for In-Depth Interviews

Hello, My name is _____. I work in the Center for Social & Marketing Research of Tashkent. I would like to speak with you about some issues related with garbage collection and removal. The purpose of our conversation is to understand what should be done to improve the solid waste situation in this sphere. In order not to miss any moments of our conversation, I would like to record it on a Dictaphone, but you shouldn't worry, because the contents of this conversation will be used only for scientific purposes.

First of all, let's speak on general problems, arising out the collection of garbage at your enterprise (organization).

1. Solid Waste Collection

- What are the sources of solid waste at your enterprise? How much solid waste is accumulated per a day? [IT'S NECESSARY TO CLEAR UP THE APPROXIMATE NUMBER]
- How usually are solid wastes collected? Have you the special workers, dealing with it? Have you possess the required number of those workers? If no, what are the reasons? [LOW WAGES, LOW PRESTIGE, ETC.]
- Where are the containers for garbage collection located at your enterprise? Are you satisfied with their location? Why yes or why no? Would you like to change their location, if yes, where exactly?
- Have you any problems with garbage collection at this enterprise (organization)? What are the problems? How do you solve these problems?
- Are you satisfied with how garbage is collected at your enterprise (organization)? If no, then why? Haven't you thought over that is possible to organize the garbage collection differently? If yes, then how?
- Do you sort garbage or solid waste into any parts? What parts are you sorted garbage? Why are exactly into these parts? Where do you put the separate parts of garbage and solid waste?

2. Removal of Garbage and Solid Waste

Now I would like to speak about how garbage and solid waste removal is executed away the bounds of your enterprise (organization).

- How often accumulated garbage and solid waste at your enterprise (organization) are removed? What are the trucks come for garbage - special or ordinary trucks, where garbage is loaded manually by people?
- Who is responsible for garbage removal? How do they cope with their duties? How far are you satisfied with their work?
- If those responsible for garbage removal have not carried out their duties, what do you do? To whom do you complain about the service? Have you paid anybody to do this work? If yes, how often and how much do you pay? Who exactly do you pay?
- Do you know where the garbage from your enterprise (organization) and other organizations are taken for disposal? Please, name the exact place, if you know. How far is this place from Tashkent?

3. Charge for Garbage Collection

Now, several questions about how do you pay for the services on garbage and solid waste removal from your enterprise (organization).

- How many sums does your enterprise (organization) pay for garbage removal? How is the charge effected - every month, once per quarter, once per year or somehow otherwise? Is this system of payment comfortable for enterprise? Why yes or why no?
- Is it possible, in your opinion, to organize the whole process of garbage collection and removal differently? How exactly?
- Is your enterprise ready to pay more than today for garbage removal if this removal will be better - pure, save and more regularly etc. Why yes or no?
- What is the maximum amount that your enterprise is ready to pay for improvement?
- What type of enterprise would you prefer to pay for improvement of garbage collection - private or state company? Why?

- Will it be more comfortable for you to pay for garbage collection - as you pay today or somehow otherwise? If otherwise, then how exactly? Why will it be more comfortable to pay like this or that?

Yemen Solid Waste Environment Project

Beneficiary Assessment

Moderator's Guide for Focus Group Discussion

I. Introduction

Hello. My name is _____. I work for _____ in _____. I also would like to introduce _____ who have been working with the government in trying to find a solution to the garbage situation in Yemen. First, I would like to thank you all for taking the time to come here today. Our job during the next week is to assemble groups similar to this one to involve them in discussions about various issues concerning the garbage situation in (name of town). Before we begin, I would like to discuss the main purpose of the discussion and how it will be conducted.

Purpose of Discussion

The main purpose of this discussion is to find out what you as residents of (name of town) think about the solid waste conditions in your town, and from your perspective, what might be the most appropriate ways for improving the garbage situation. I am not here a solid waste management expert. Rather, you yourselves will be the experts. I am here to learn from you. In addition to this group, we will conduct other group discussions on this topic with the residents of other towns. The results of these discussions will be used to help design a solid waste management system that will dramatically improve the garbage situation in this and other towns similar to yours.

Discussion Procedure

Now I would like to explain some of the basic rules for the conduct of our discussion.

- First, our discussion will take approximately two hours and will be tape recorded. In case there are any problems with the recording equipment, my assistant will take notes as well. I want to assure you, however, that no one except the investigation group will ever hear anything you say in this discussion. Although your opinions will be summarized in a report, your names will never be mentioned anywhere at any time.
- Next, we would like to hear your opinions about every issue that will be discussed from the perspective of your own experience. During discussions, no answer will be treated as either correct or incorrect; thus, please feel absolutely free to say anything you think. It will be normal for you to express both positive and negative opinions, disagree with other participants, or change your opinion in the course of a discussion. Please be completely relaxed.

- Third, it is very important for us to hear each of you. While you are not required to answer every question, please try to express your thoughts any time you have something to say and let other participants speak as well. Also you are kindly requested to avoid talking about other unrelated matters so that everybody can hear those who are expressing their opinion about solid waste issues.
- Finally, I will not express my own opinion. My role is to lead the discussion so that every one of you gets a chance to speak and to ensure that all of the important solid waste management issues have been discussed. Before we begin, are there any questions?

Introduction of Participants

Let us start by introducing each other. Please tell us your name, how many children you have and how many people live in your household (including yourself), and what is your position (if you are working). I'll start with myself [INTRODUCE YOURSELF].

II. Main Problems

First I would like to talk a little about general problems what you think is the most important environmental problem for the inhabitants of (name of town)? And please try to substantiate your opinion (give examples).

Do you think the solid waste situation is a problem in (name of town) ? How serious is this problem?

Removal of Household Solid Wastes

Now I would like to discuss how your household garbage is currently removed from your homes. Please try to include as much detail as possible about everything that might be related to this issue.

Household Practices

Please describe where you usually store garbage in your home. Do you have any special bins or buckets to store the garbage in your house until it is taken outside? What is it made of? Would you like to replace them with something else? Please describe what type of container you would want to replace them with?

Do you have a special container (metal or plastic) for storing solid waste outside your home?

Are there any particular problems your household faces with regard to the storage of garbage either inside or outside your home? What are these problems? How do you manage to solve or cope with these problems?

How do your friends or acquaintances usually store garbage in and/or outside their homes? Have they ever told you about any problems related to garbage? What are those problems? How do they solve or cope with those problems?

Outdoor Storage and Collection of Solid Wastes

Now I would like to discuss what happens to your household's garbage once it leaves your home. We want to know where you or someone in your household takes your household garbage to be removed. We want to know the extent to which you are satisfied or dissatisfied with the manner in which this is done, and many other issues. I would like to hear as many details as possible from your everyday life. It would be particularly beneficial for us if you could recall any particularly serious stories or anecdotes connected with these problems.

First, where do you or someone in your household usually take your garbage when it leaves your home? Please, describe in detail (for example, we throw it in the yard, on the street, in a pile near my home, take it 20 feet from my house to a bin, etc.)

What member of your family is usually responsible for taking out your family's garbage?

Based on your observations, who usually takes out the garbage from your neighbors' houses?

If there is a bin close to your home where you dispose of your household garbage, are you satisfied with the design of that bin (i.e. its volume, height, width, etc.) or its distance from your house?

How often do you or someone in your family take out the garbage and place it in a garbage bin or open pile?

Approximately how far or how many minutes walking time one-way is it to dispose of your household's solid waste container?

Does your household receive collection service of any type? Please describe this service?

If your household does receive collection service, how often is the garbage removed? What type of garbage collection vehicles pick up the garbage - for example, specialized or usual loaded with garbage by manpower?

Who is responsible for garbage removal in your town? How do the sweepers or other staff perform their duties (for example, very well, poorly, etc.)?

In cases where garbage is placed in an open pile, is the garbage in that pile ever burned? If yes, how often does this happen? Who usually sets the garbage on fire - those who are responsible for its removal, or, just playing children? Are you worried about this situation? To what extent?

How often have you observed children playing in or near the areas where there are piles of garbage? At what time during the day does this tend to happen most often? Do adults ever try to stop this behavior?

Do you know what happens with the garbage once it is removed by truck? Please indicate the specific place. Are you satisfied with this manner of garbage disposal? Why "yes" or "no?"

How you ever paid anyone to remove garbage from your neighborhood? How much did you pay? Who did you pay or how was the money collected? Did you have any problems with this method of payment?

III. Preferences and Willingness-to-Pay for Improvements

We have discussed together the entire process of garbage collection and disposal from your households. As you know, upgrading the solid waste system in towns such as yours is under consideration by the government. And we would like to discuss what you think would be the best approach to introducing a better system of managing solid waste in your town and how much money you would be willing to pay for such improvements.

Service Preferences

I would like to discuss your views on various aspects of a new solid waste collection system for your town.

How far would you carry your garbage to a collection point where a garbage truck would regularly remove your neighborhood's waste (for example 50 meters, 100 meters, etc)?

Rather than taking your garbage to a collection point, would you prefer to take your garbage directly to a truck that comes to your neighborhood once a day (and rings a bell).

Would you purchase a garbage bin at a cost somewhere between 10 and 50 riyals so that you could store your garbage outside your home for about 2 days before a truck comes to pick it up?

If you currently have a garbage bin near your home, do you have any suggestions as to how to better design and locate these bins so that they are more useful and safe?

To ensure that the costs of a new solid waste system are affordable, would you be willing to participate in some type of user association whose members would be responsible for carrying out some type of solid waste management activity (for example, tariff collection, street sweeping, carrying other household's garbage to the collection point)?

Willingness to Pay

Who is responsible for paying bills in your household (not earning money, but actually paying the bill)?

Would you be willing to pay 150 riyals per a month per household provided that garbage removal would become more sanitary and reliable? Why "yes" or why "no?"

If you would not be ready to pay 150 riyals, what is the highest amount you would be willing to pay?

If you are not ready to pay for a solid waste service, what is the reason?

Would you be willing to pay 300 riyals per month under same conditions? Why "yes" or why "no?" If you would not pay 300 riyals, what is the highest amount you would pay?

IV. Institutional Issues

Who do you think is responsible for solid waste management in your town?

Who do you think should be responsible for solid waste management in your town (that is, a private or government agency)? Why?

How would you prefer to pay for garbage removal: paying a solid waste charge that would be added to some other bill (for example, electricity, water supply) or having a member of a community user group collect the charge?

What do you think would be best way to collect this charge from your neighbors to ensure that they would pay on a regular basis?