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Closing the circle

Bringing Integrated Sustainable Waste Management Home

Solid waste management and good governance are two sides of the same coin. This point was made clear by the British scholar Sir David Wilson who said that the state of solid waste management in a city is perhaps the best indicator of the state of urban governance.

Or to put it more simply: no one takes the government of a city seriously when there is garbage all over the place. This publication is primarily intended for practitioners in the field of waste management in developing countries. It is a reference that combines theory and practice. In the first chapter of this publication the Integrated Sustainable Waste Management (ISWM) framework is introduced. In the following chapters the sub-themes of the LOGO South Thematic Programme are discussed: (1) Integration of Solid Waste Management in Municipal Policies, (2) Financial Sustainability, and (3) Community Participation and Communication. For each, case examples are given from LOGO South and other solid waste programmes. The publication ends with some final conclusions based on the overall approach.

VNG International committed to strengthening democratic local government worldwide

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Table of contents

Chapter 1 | Introduction to LOGO South 5

Chapter 2 | *Focus area 1*
Integration of Solid Waste Management in Municipal Policies 23

Chapter 3 | *Focus area 2*
Financial Sustainability 39

Chapter 4 | *Focus area 3*
Community Participation and Communication: *one-way traffic or two-way street?* 61

Chapter 5 | Final conclusions on the overall approach 75

Annex 1
Contact information for the Logo South Programme 76

Annex 2
References, sources and additional reading 77

Annex 3
Glossary of waste management and recycling terminology 81

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Chapter 1 Introduction to LOGO South

This publication has been prepared in the context of the LOGO South Programme of VNG International. VNG International is the International Cooperation Agency of the Association of Netherlands Municipalities (VNG). The LOGO South Programme seeks to strengthen local government by developing capacity. LOGO South has a strong focus on human capacity: target groups include local governors (politicians and decision-makers) and civil servants (policy makers and implementers). The programme consists of three main components: Municipal International Cooperation, Association Capacity Building and Research.

The Municipal International Cooperation component, currently being implemented in 11 countries, involves municipalities implementing projects on a specific subject with their Dutch partner municipalities in so-called twinning relationships. Regular exchanges between the partners and dissemination of the lessons learned from these projects to other municipalities are key elements. Apart from the 11 country programmes, there are four 'Thematic Programmes' in which South-South exchanges are a central element. The Thematic Programme on Solid Waste Management is one of these programmes, and serves as a framework for bilateral projects with one or more of seven Netherlands municipalities. The objective of the programme is to enable the participating local governments to deliver improved services in the field of waste management. Currently, two municipalities in Indonesia, three in South Africa, five in Sri Lanka and one in Nicaragua participate in the programme. Drafting the LOGO South Thematic Programme on Solid Waste Management was a participatory process in which all the stakeholders were involved.

The framework of the Programme is made up of three focus areas:
1 Integration of solid waste management in municipal policies
2 Financial sustainability
3 Community education concerning waste and health issues

Each activity organized within the framework of the Thematic Programme on Solid Waste Management addresses at least one of the focus areas, which VNG International and partners see as crucial for successful implementation of integrated sustainable waste management (ISWM) projects.

Solid waste management and good governance are two sides of the same coin. This point was made clear by British scholar Sir David Wilson who said that the state of solid waste management in a city is perhaps the best indicator of the state of urban governance. Or to put it more simply: no one takes the government of a city seriously when there is garbage all over the place. This publication is primarily intended for practitioners in the field of waste management in developing countries. It is a reference that combines theory and practice. We trust that it will inspire and guide you in your pursuit to 'close the circle'. May your municipalities be clean and prosperous.

Readers of this Publication

This publication aims to contribute to improved sustainability, fairness, effectiveness and efficiency of solid waste management in all countries, for the benefit of all stakeholders. A list of websites and references is provided inside the back cover for those wishing to go into the subject more deeply, or to explore certain themes covered in more detail. Information on joining or participating in the LOGO South programme is also included in annex 1.

This publication is designed for:

- LOGO South participants in South partner countries and cities, including staff of waste departments in LOGO South countries, solid waste managers, mayors, city councillors, community participation and communication specialists, NGO and CBO representatives, private recycling entrepreneurs and the like.
- LOGO South participants in Dutch partner municipalities, including staff of waste departments in Dutch municipalities, solid waste managers, regional co-operation organizations, mayors, city councillors, community participation and communication specialists, VNG staff, other solid waste specialists and consultants who are or expect to be involved in international co-operation, twinning, or LOGO South itself.
- Staff and officials of bilateral donors and multinational organizations such as the World Bank, UNDP and Habitat.
- Participants from South, Transitional and EU countries who are involved in city twinning or other exchanges with a focus on solid waste management.

Thematic focus of LOGO South

In discussions leading to its thematic focus, the LOGO South programme staff, management and partners chose to focus on solid waste as one of the topics because:

- Solid waste is a key indicator of urban governance.
- It is a high priority for many southern mayors and city councils, and makes a large claim on municipal budgets.
- Failures of solid waste management can cause significant problems in other sectors.
- Successful solid waste and recycling activities create win-win situations: they create or improve livelihoods, clean up the city, reduce pollution loading and improve health.
- Many small-scale solutions are possible and within reach of south municipalities at moderate cost.

Working on solid waste provides a kind of 'living laboratory' for strengthening many administrative skills and capacities: it improves municipal abilities to listen to constituents and design participation strategies; serves to introduce techniques for budgeting, cost accounting and cost recovery; creates many opportunities for public-private

partnerships; and requires permanent infrastructure for feedback and multi-channel communication between citizens and their governments. Moreover, twinning as a co-operation approach has a particular value in solid waste because the period of rapid modernization that occurred in the Netherlands over the last 30 years is coming to a close. This means that there is recent, relevant and accessible history of change and improvement in Dutch municipalities, and many of the Dutch participants in this change are still active in the field and available to support the programme.

Structure of this Publication

This publication is structured as follows. In the introduction, we introduce LOGO South and some of the working concepts in the Solid Waste Thematic Programme. Chapter 1 also introduces the framework that will be discussed, Integrated Sustainable Waste Management (ISWM), and introduces the reader to the modernization of waste management systems. The chapter concludes with an orientation on the solid waste theme within LOGO South.

Chapters 2, 3 and 4 focus on the LOGO South Solid Waste sub-themes: (1) Integration of Solid Waste Management in Municipal Policies, (2) Financial Sustainability, and (3) Community Participation and Communication. For each, some examples are given from LOGO South and other solid waste programmes. Chapter 5 provides conclusions, and includes references, resources and other programme information.

Introduction to ISWM

Integrated Sustainable Waste Management (ISWM), as shown in Figure 1 (p. 8), is a framework for understanding solid waste management. It was developed in the mid-1980s by WASTE, a Dutch NGO, and WASTE's South partner organizations. It is a system approach for understanding the who, the what, the why and the how of solid waste management and change. It has been used in LOGO South as part of the exchange activity and to train both Dutch and South partner representatives. ISWM frames and supports good practice and the inclusion of all stakeholders in planning and decision-making. The ISWM framework recognizes three important dimensions in waste management: stakeholders, waste system elements and sustainability aspects.

The 'integrated' in ISWM reflects the fact that solid waste management consists of a variety of activities, including prevention, recycling and composting, operated by a variety of actors at many scales. 'Integrated' also refers to the linkages between system elements, and suggests that not only technical, but also legal, institutional and economic linkages are necessary to make the system function. For example, in ISWM, the choices made about set-out, storage, collection and transportation are interdependent with frequency and timing of collection, as well as with routing and choice of vehicles and the relationship between primary and

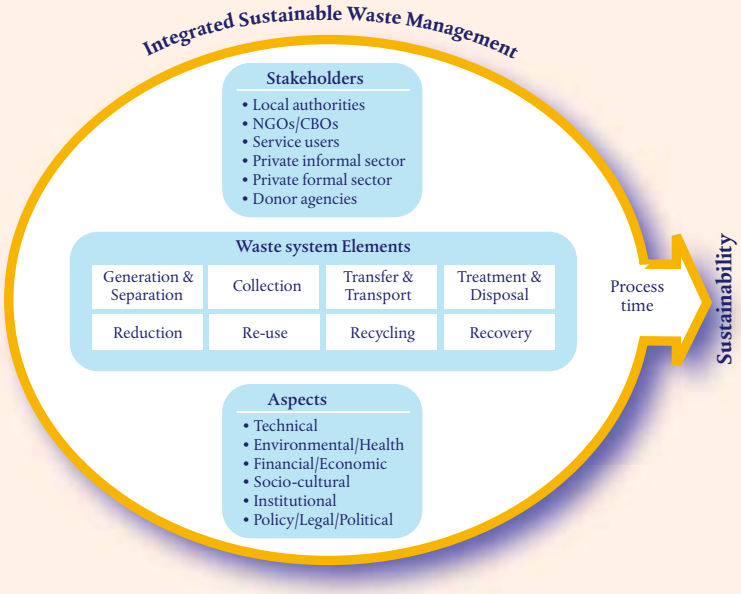


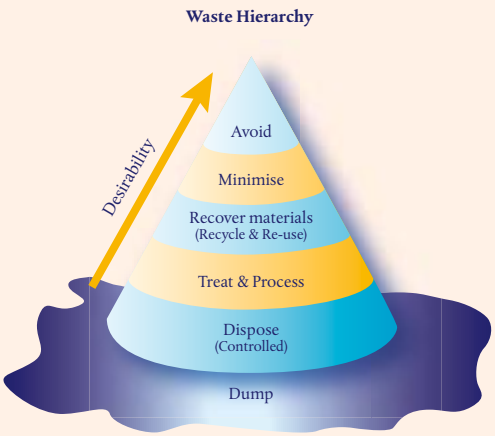
Figure 1
The Integrated Sustainable Waste Management (ISWM) Framework
Source: IJgosse, Anschütz and Scheinberg, 2004, based on Klundert and Lardinois, 1995.

secondary collection. For example, many public works departments assume that, in tropical countries, it is necessary to collect waste every day. Even in hot climates, where containers are appropriate for the volume and type of waste, this can often be reduced to two or three times per week, and sometimes, in combination with separation of organic waste, to once per week or less. This makes collection more affordable, while maintaining an acceptable hygiene standard, especially for low-income areas.

A 'Sustainable' system in ISWM is robust and can continue without collapsing. Sustainability, as explained below, is considered to include operational, financial, social, institutional, political, legal and environmental aspects.

Stakeholders, the first of the ISWM dimensions and listed in the box in the upper third of the ISWM 'egg' shown in Figure 1, are people or organizations with a stake, or interest, in waste management. In most pre-modern urban waste systems, such as those in the US in the 1980s, or in the Netherlands, Germany and Denmark in the 1970s, and in many LOGO South countries today, the main 'recognized' stakeholders include the local authority (mayor, city council, solid waste department), the national environment or local government ministry, and one or two private companies working under contract to the municipality. But in the LOGO South partner cities, there are literally thousands of others living from, working with, and affected by waste management. In ISWM these are referred to as 'unrecognized stakeholders.' Stakeholders can be male or female and, in some cases, different sexes have different stakes. Unrecognized stakeholders may include (female) street sweepers, (male) workers on collection trucks, dumpsite scavengers or 'waste pickers', some of whom may actually live

Figure 2
The Waste Hierarchy



on or at the edge of the dumpsite, and family-based businesses that live from recycling.

In addition, micro- and small recycling businesses (usually called 'junk shops') buy materials that have been extracted from waste containers, collected from households or bought from businesses. They sell these to medium and large recyclers, called 'dealers' or 'intermediate processors', who, in turn, sell them to end-user industries. Industrial waste generators, households, institutions such as hospitals and schools, and government facilities such as airports or the post office are also solid waste stakeholders, although they would not normally see themselves as such.

The second ISWM dimension is the waste system elements. These are the technical components of waste management. Part of the purpose of using the ISWM framework is to show that these technical components are part of the overall picture, not *all* of it. In Figure 1, the boxes in the top row all relate to removal and safe disposal, and the bottom row of boxes relate to 'valorization' of commodities. This distinction is important in LOGO South because the situation is quite different in the Netherlands to that in most LOGO South countries.

The elements represented in the central part of the ISWM diagram become institutionalized in a management 'hierarchy', giving priority to waste prevention and recovery, shifting the destination of materials away from land disposal to formal and informal reuse, recycling and composting (Scheinberg 2003). The principles of the SWM hierarchy, shown in Figure 2, were developed in the Netherlands and incorporated in Dutch legislation in the late 1970s and early 1980s in the early phase of modernization. Today, they form an integral basis for the solid waste policy of the European Union.

Modernization of Waste Management, a short orientation

Development co-operation programmes such as LOGO South tend to assume that changes or improvements come about as a result of the *development intervention*, that is a project or programme focus or activities. In this publication, the term '*modernization*' is used instead to indicate a process which is under way in most countries in the world, even when there is no development co-operation or donor activity. 'Modernization' of the solid waste sector is a global process, in line with the gradually increasing understanding of the negative environmental consequences of poorly managed waste. The most obvious aspects of modernization relate to changing standards for dumping and landfill, based on increasing prioritization accorded to environmental protection, and a political commitment to reducing water pollution related to the dumping of waste.

In Northern countries, the process of modernization has been mainly

driven by internal political events and has occurred gradually, as shown in Case Example 1. In South countries, where solid waste competes with more urgent issues of water, sanitation, disease control, transport and housing for budgets and professional attention, modernization may take place after a period in which solid waste is pushed to the bottom of the priority list. There is a general tendency for local authorities to solve water and sanitation and housing problems first, and only then to turn their attention to upgrading and modernizing solid waste facilities.

Modernization really starts when there is a health or environmental crisis, or a push to clean up the city for economic or political reasons such as in Nairobi where, in 2000, economic and political pressures led to a push to close a centre city dumpsite so that the land could be used for housing. An essential feature of solid waste crises is that they both challenge and reinforce cultural ideas that waste is essentially unseen and also slightly shameful, 'private' or 'dirty', and in some cultures a source of spiritual contamination. This means that having a rational conversation about waste can be difficult, and also that those working with waste have low social status and little influence.

In South countries, an external driver, such as donor interest or the opportunity to participate in LOGO South or other international programmes, rather than a crisis, can also stimulate the modernization process. This can delay or hinder the commitment of political authorities to integrate planning and solid waste operations into municipal functioning. In most cases, it is usually not the crisis or the driver itself, but the political story about the crisis (the so-called 'crisis narrative') that sets the modernization process in motion.

Modernization changes the 'problematization' of waste. Before modernization, the presence of waste and the difficulties in removing it are seen as the main problems; during and after modernization this changes to an understanding that the generation of waste, the overuse of materials and resources, and the impacts of waste on the environment are the important problems. Prevention, recycling and composting become priorities in waste management during modernization, which usually includes the following developments:

1. Closing of local landfills and regionalization of the disposal function (which is in itself a complex process, involving new stakeholders and new institutional agreements).
2. A shift in institutional responsibility so that, for the first time, supra-municipal entities have a role in solid waste management and are required to develop and manage regionalized disposal.
3. A rapid upward spiral in solid waste costs, due to (a) a large and sudden increase in costs of collection and the introduction of tipping fees, and (b) increased transfer and transport costs related to the regionalization of disposal.
4. Strong pressures for the largely public municipal waste and public service sector to expand its activities to include recycling, composting and recovery activities, which previously were entirely under the micro-, small-, and medium-sized private recycling sector.

CASE EXAMPLE 1

> The AOO and Modernization of Solid Waste Management in the Netherlands

In the 1980s, in the Netherlands, there was a great deal of pressure on municipalities to modernize their waste management systems. The direct driver was the goals for recycling decided upon in the National Environmental Plan (NMP) which meant that 50% of municipal waste should be recycled by 2000. More importantly, waste had to be diverted from landfill, as the NMP included a target of landfilling no more than 3% of the municipal waste by 2012. The recycling and (energy) recovery goals derived from this intital objective. The Ministry of Housing, Land Use Planning and Environment (VROM) initiated a platform, called the Waste Management Consultation Council (AOO), and financed its staff. This platform provided an institutional place for municipalities to discuss their ideas, problems and experiences, and to share these with the national policy-makers and regulators. The AOO operated from 1986 to 2004, when it was merged with Senter Novem, a regulatory agency financed by the Dutch government. The official ending of the AOO was a form of acknowledgement that the period of modernization was coming to an end, and an implicit claim that the main policy work was done. Indeed, most Dutch waste stakeholders do consider the Dutch system to be complete, and mature, except for responding to new materials or new developments in EU law.

Source: Scheinberg and IJgosse 2004 and experience of the authors.

5 Prohibition and/or criminalization of traditional solid waste practices, especially those relating to informal recovery at landfills.

The result of most modernization processes is an 'integrated' system, following the hierarchy. In most cases the integrated system includes more of the elements in the middle bar of Figure 1, above, and includes source separation, repair and re-use, collection, processing, composting, transfer, marketing of materials recovered from waste, and land or thermal disposal of the residues. Regionalization changes power structures and implies shifts in responsibility, accountability and inter-municipal arrangements. In the Netherlands, there is national legislation that governs this process, and the hierarchy is broadly accepted and depoliticized. In LOGO South countries, in contrast, the push to diversify the elements of solid waste management may cause conflicts and tensions. National government policies and international trends and ideas about sound practice also push the modernization agenda.

The ideas about integration originate from a global set of ideas about good practice in solid waste management. To understand the global nature of the modernization process, as it affects LOGO South municipalities, we make a small detour to orient the reader to key points.

Services and Commodities in Integrated Sustainable Waste Management

In understanding change in the solid waste sector, both in the South and in the North, two concepts are critical:
1 Providing solid waste **services**
2 Trading recyclable **commodities**

SOLID WASTE SERVICES: A CORE PUBLIC SECTOR ACTIVITY IN ISWM

Solid waste **services** are about the removal of waste or other undesired materials from their point of generation to a site – usually far away – where they are burned, buried or stored. Services are traditionally a **public sector** activity; and removal and disposal are considered a public responsibility. Various forms of removal are included in the 'core business' of solid waste service providers:
1 Street sweeping **removes** litter from streets
2 Waste collection **removes** household or industrial waste
3 Drain clean-outs **remove** litter and organic materials from gutters, drains and ditches
4 Green space maintenance removes branches and litter
5 Sewer and latrine emptying are forms of human waste (excreta) **removal**

For removal to be effective, it requires that there is a place to remove the waste to, a means of transport, institutions for organizing the removal, and systems for covering costs and distributing benefits.

Most solid waste crises (including the one in Naples, Italy, at the time of writing in February 2008) are failures of **removal**. Either there is a lack of dumping capacity; or the existing landfills are closing; or the waste is not removed well or on time; or it is not transported efficiently or effectively; or the place it is removed to is not accessible, safe, or sufficiently removed from dwellings and businesses; or the neighbours living near the disposal site protest against the waste being or coming there, or there is contact between the waste and soil, air (through burning) or water which releases the 'removed' materials to the natural environment. Failures of removal cause water or air pollution, soil contamination, sickness or death of people, plants or livestock, and other environmental and health problems.

COMMODITIES TRADING: THE PRIVATE SIDE OF ISWM

The 'other' part of solid waste management is not about services, it is about **commodities. Valorization** (in Europe) or **recovery** (in North America) means claiming resources from the waste stream, upgrading them and selling them. Effective recycling or organic recovery activities are based on capturing the value that remains in waste materials, preparing the materials for new use as an industrial or agricultural input, and selling the materials so that they can be used to make new products.

Recycling is a private sector industrial activity which is globally organized. Prices and standards are set on the global level and applied by local private businesses in the **recycling supply chain**. The businesses in this chain are some of the most intensely private enterprises in the world. Before modernization, recycling only occurs when the commercial value of the recycled materials covers the cost of extracting them from the waste stream. It is a private source of personal or business income. When modernization raises the price of disposal, municipalities often become interested in recycling or composting because it a) can reduce the amount of materials to be disposed of, and so lower their overall disposal costs, or b) they think it will provide sufficient income to finance the rising cost of solid waste management.

While both of these are partly true, 'a' is a win-win situation, whereas there are some difficulties with 'b' since only a few municipalities know how to manage materials in such a way that they are able to earn money in a competitive global marketplace. Further, the already existing private recycling activities usually focus on the more valuable materials, specifically ferrous and non-ferrous metals and the more valuable grades of paper, as shown in Box 1 (p. 15). In case the municipality wants to recycle these materials, it has to force private businesses out, and this usually creates a problem for the **solid waste informal sector** - the tiny, often family-based, businesses at the bottom of the recycling supply chain. There are millions of people doing this work: in Cairo 40,000; in Lima 17,000; in small cities at least several hundred and sometimes even thousands.

RECOVERING ORGANIC WASTES, A HYBRID OF SERVICES AND COMMODITIES

There is a significant difference between **recycling** industrial materials and **recovering** organic materials as compost: recovery of organic wastes is highly localized. In some places, for example in West Africa, household waste generally consists largely of dirt floor sweepings, food wastes and excreta, and is itself a commodity that farmers are willing to pay for. In other places, organic waste can be recovered through separate collection and composting, the situation in the Netherlands. In East Asia and Latin America, organic materials are collected for feeding to swine. India is one of the few countries where the informal sector is involved in composting; elsewhere compost is used but (prior to modernization) it is not usually a marketable commodity. If there is interest in large-scale composting, the government usually has to be willing to use the compost in public places such as parks, cemeteries and green spaces; and in the process the government 'creates a market' for the compost. When modernization makes disposal more expensive; composting can be an attractive, lower-cost 'removal' option.

MODERNIZATION, A 'MARRIAGE' OF SERVICES AND COMMODITIES

Modernization has one predictable effect everywhere in the world. When solid waste services are modernized, the public authorities become interested in recycling, and the private recycling sector has to, and will, respond. In this way, modernization pushes – even forces – these two systems, with different rules and different cultures, to integrate with, or 'marry', each other. In the case of LOGO South, it may well be the twinning relationship or the project that pushes this development but, in all the LOGO South cities, this has become an issue. When municipalities such as Emfuleni begin to investigate recycling, as is shown in Case Example 2 (p. 17), it is useful to first understand the existing recycling system, and then have the municipality target those materials not already being recycled and to see whether it is worthwhile to target them in a municipal programme.

ISWM and LOGO South: Core of the Solid Waste Thematic Programme and Exchange Activities

ISWM served as a framework for the LOGO South solid waste Thematic Programme and, specifically, as the focus for skills and capacity strengthening during the 2007 and 2008 LOGO South exchange activities. In 2007, these activities were organized on four 'levels'. As shown in Box 2 (p. 16), on all four levels, communication and participation served as the main continuing themes. In the formal training, the sessions focused on using the ISWM framework, on using ISWM to assess the waste management system, and on researching and modelling the waste pathways in a 'process flow diagram.'

BOX 1

> Six Levels of Value-added in Recycling Paper

Paper is a manufactured surface for writing, and the highest conserved value- added is when it is re-used for the same purpose. When a sheet of paper is used on one side, the other side can be reclaimed and reused for writing something else. This is the first level, the second level is as a packing material, or in many societies (including in the Netherlands until quite recently) as toilet paper in emergencies. When there is no empty or unused writing surface left, the physical nature of paper still allows its use as a surface protector for other items, or as a filler of volume. When paper is wet or dirty, it is no longer usable as paper, the wood fibres that hold it together can still be recovered and used as inputs for new paper. Long fibres are thus a third level of value-added. When fibres are broken or short, they can be used as a fourth level material in certain low-grade forms of cardboard which do not require tensile strength, called 'boxboard' or 'corrugating medium'. The fifth level is use as a carbon source in composting, and the sixth level is that the carbon can be burned for heat and energy, or the resulting charcoal, ash,and the like.

Source: practical experience of the authors

BOX 2
Framing the 2007 LOGO South exchange activity

Level 1, learning to look	• Understanding ISWM • Understanding stakeholders • Diagramming the waste flow in a city • Understanding the steps in an assessment
Level 2, understanding what you see	• Understanding the principles of a waste system • Similarities and differences between solid waste in the Netherlands and your country • Formal and informal systems • Private, public, micro- and small enterprises (MSEs) and NGO actors • History of Dutch waste management, to understand Dutch partner municipalities • A presentation on the role of communication as part of solid waste management and environmental education in Leiden
Level 3, critical analysis: identifying desired changes	• Understanding the role of citizens in monitoring and feedback in the Netherlands • Identifying problems and failures in the Dutch partner municipalities • Assessing your own solid waste system and setting priorities for change • Socialising the analysis and critique with key stakeholders
Level 4, communication tools for change	• Understanding the role and methods of community participation and communication • Engagement, , communication • Setting goals for the communication strategy • Practical tools for communication

CASE EXAMPLE 2

Recycling in Emfuleni, South Africa

In May 1996, the municipality of Eindhoven signed a declaration of intent to work with the Lekoa Vaal Metropolitan Council, now called Emfuleni municipality. After a multi-year project on Integrated Development Planning, Tilburg and Eindhoven, the Netherlands, and Emfuleni, South Africa, started a LOGO South project on Waste Management in 2006. The main objective of this project is to reduce the household waste stream and illegal dumping in newly developed areas. Therefore the project is focusing on recycling and environmental education.

At the end of 2006, two students from Tilburg University started researching into options for recycling household waste in the municipality of Emfuleni. This resulted in a plan to develop legal mini-dumps and a sorting centre in two townships, Evaton West and Bophelong. Although Tilburg left the twinning relationship in 2008, Eindhoven continues to support Emfuleni in implementing the plan. To create support for the project several cleaning and greening activities were organized during the process.

Source: LOGO South programme materials and the City of Eindhoven

PRIORITIES IN THE WASTE MANAGEMENT THEMATIC PROGRAMME WITHIN LOGO SOUTH

The LOGO South solid waste Thematic Programme has three priority sub-themes, or focus areas, around which the seven municipalities have constructed their programmes and activities. All of these support the implementation of new or improved solid waste initiatives. 'Integrated' waste management offers many possibilities, for the municipality and for the private sector, NGOs, CBOs and individuals, in implementing specific activities, with the municipality as the main responsible organ of government.

The first focus area is '**Integration of Solid Waste Management in Municipal Policies**'. The focus here is on (a) the use of the planning process to support institutional development and (b) good environmental governance. The activities involve exchanges and supporting the South partner in developing policy and rules, and in contextualizing solid waste in national, regional and local environmental governance, with the aim of producing a broadly supported and soundly reasoned solid waste management plan, as is illustrated in Case Example 3.

The second sub-theme is '**Financial Sustainability**'. Financial issues are about the relations service providers and users, and the 'micro' questions of cost recovery and fee-setting, budgeting and other practical aspects of the money in the system. Economic concerns have more to do with the 'big picture', for example, the issues of environmental externalities and their impact on disposal costs; the effects of solid waste policy on employment; the relationship of recycling and recovery to use and conservation of resources and energy, carbon footprints and carbon policy. LOGO South activities here include support to Southern partners in relation to financing, tariffs, budgets and investment plans. While the economic aspects have less focus than the financial ones, they involve finding the right role for recycling, composting, and PPPs.

The third LOGO South solid waste sub-theme is **Communication**, which can also be considered as **Community and Stakeholder Participation**. Communication is important in solid waste modernization: to build trust, share information, and invite participation so that users and providers can 'get the mix right'. Multidirectional communication requires that the municipality is able to listen as well as promote its activities; that the community members feel invited and empowered to participate in planning and in decision-making; and that there are open channels of communication for users and other stakeholders to offer feedback to the local authorities at any time, not only when they receive a survey form.

Communication becomes more important during modernization, because the process changes the relationship between municipalities (as providers) and their citizens (as users and also as taxpayers). The citizens

CASE EXAMPLE 3

> Solid Waste Master Planning and Governance in Banda Aceh, Indonesia

The December 2004 tsunami heavily affected Banda Aceh and other coastal towns and villages in North-West Sumatra, Indonesia, causing heavy casualties and material losses. The Sanitation and Parks Department (DKP) took much of the burden of the local government in dealing with sanitation issues, removal of enormous amounts of debris and damaged infrastructure, and providing amenities and care for homeless people. DKP was itself also hit due to lost personnel, vehicles, equipment, and facilities, and functioned continuously under heavy stress and strain, trying to survive on a day-to-day basis.

After the initial clean-up, the political leadership and the management of DKP realised the need for a structural approach to its solid waste management (SWM) responsibilities. Towards the end of 2005, this stimulated a dialogue between the municipalities of Banda Aceh, Rotterdam and Apeldoorn. This resulted in co-operation protocols, including a proposal to establish a SWM masterplan for Banda Aceh. In August 2006, a visiting team of Dutch SWM experts held introductory discussions with the political establishment, the heads of relevant municipal departments, a cross-section of the decentralized local government at sub-district and neighbourhood levels, a number of community-based organizations, the relevant donor organizations, and the Co-ordinating Indonesian Reconstruction Agency BRR.
A workshop organized to highlight the co-operation process, the nature and merits of the envisaged Masterplan, and the way the masterplan would be jointly developed was positively received by the stakeholders attending.

There followed additional visits to Banda Aceh, and a study visit to the Netherlands for Indonesian SWM experts in the context of the VNG Exchange Activity. The focus was put on

1. Service delivery and its organizational and operational aspects
2. Communication with and education of the different target groups and local communities, and
3. The financial basis for SWM

In addition, attention was paid to legal/regulatory, institutional, environmental and materials recovery aspects.

Stakeholders, municipal politicians and officials, and the staff of DKP came together to discuss the initial situation analyses, and the fundamentals of SWM. Gradually the contours of the SWM Masterplan emerged and these same stakeholders developed shared visions, objectives/goals, strategy, implementation trajectories, and partnerships between government and (non-)governmental partners and stakeholders.

In June 2007, a conference for various stakeholders and discussion partners was organized, during the visit of the Dutch partners to Banda Aceh, to highlight the results of the interactive development process, and to discuss the immediate and short-term actions proposed. The objectives of the Masterplan and the suggested implementation measures received broad acceptance and political support.

The SWM Masterplan, translated into Bahasa Indonesia, has been widely distributed. It has been officially approved by the municipal political leadership, and serves as the guideline for current and near-future developments. It has already led to implementation of broader coverage for service delivery, the introduction of two-shift daily operations, enhanced communication and education activities, and to cost recovery being decentralized to DKP (and away from the local taxation department).

Source: Frits Fransen, ROTEB

shift from passive recipients to active participants in waste management. When citizens are asked to change their behaviour, and to pay for things that used to be free and learn new rules, they pay greater attention to whether the services they are 'buying' actually work for them in their daily lives.

Participation in planning is the practical way to connect citizens and businesses, as **users**, with the city and its contracted agents, who are the **providers**. While citizens cannot usually change the system on their own, their input is critical to achieving sustainability in the operational changes coming from the municipal waste service, or the political changes from the city council or mayor. If everyone has participated in choosing what happens next, there will be better compliance, more consistent payments and a cleaner city, such as occurred in Dar es Salaam as described in Case Example 4. Given the importance of communication, both the 2007 exchange activity and the individual training activities organized by Dutch municipalities for their staff and South partners have had a strong focus on the strategic and practical aspects of communication in moving to modernized, sustainable, integrated, fair and affordable waste and recycling systems.

Summary and conclusions for Chapter 1

To summarize, the process of modernization, also referred to as upgrading or improvement or development, creates all kinds of new pressures for the municipality, and these have influenced the LOGO South solid waste programme's selection of focus areas:

- Integration of solid waste in municipalities – and garbage governance – creates pressures because it changes expectations and influences the relations between users and providers. Users begin to expect value for money in return for what they pay in taxes or fees: better service, greater transparency, more choice, cleaner neighbourhoods and a better image for their immediate environment.
- Financial sustainability is a source of pressure because, for the public sector as provider and as government, modernization is often about pressure to monetize the services they already provide or plan to provide.
- Communication creates pressures because all stakeholders pay increased attention, and may become more assertive about getting what they need and want from solid waste management.

Integrated Sustainable Waste Management (ISWM), and its three dimensions of *Stakeholders, Waste system elements and Sustainability aspects*, forms the framework for discussing these three focus areas in the following chapters.

CASE EXAMPLE 4

Communication, participation, and sustainable financing in support of better waste service in Dar es Salaam, Tanzania

Dar es Salaam was one of the first cities to have a fully participatory, multi-actor, micro-privatization strategy for improving solid waste services. The International Labour Organization began in the 1990s to facilitate discussions between community based organizations (CBOs), micro- and small enterprises (MSEs), and women's groups who wanted to see their communities cleaned up, and were willing to take action on their own. Waste collection is the responsibility of the three sub-municipalities of Ilala, Temeke and Kinondoni, and the ILO facilitated a micro-tendering process, where really small organizations could apply for the right to collect waste and recyclables in one or more micro-zones.

The sub-municipalities are responsible for setting fees transparently and consistently, based on size of private provider and zone, and perceived capability. The problem arises with the payments, because each collecting organization has to collect the fees directly from their clients, an approach that is typical in Africa. The ILO and the Dar es Salaam Institute of Technology (DIT) provided periodic training for the MSEs and CBOs, and later a different UN organization, UNIDO, built a plastics and paper recycling centre to improve the income possibilities from recycling. The programme is seen as a model for Africa - of a PPP where the municipalities create the enabling environment, and organize the relationship between providers and users, and the providers and users themselves do the rest.

Source: Papers written by Alodia Ishengoma of the ILO Dar es Salaam, and experience of the authors.

Chapter 2
Focus area 1
Integration of Solid Waste Management in Municipal Policies

The waste management sub-theme 'Strategic planning and integration of plans in municipal activities' has three main **focus areas** within LOGO South:

1 Strategic Planning in Waste Management (=Elaboration of long term waste management strategies and waste management plans)
2 Institutionalization of Waste Management (=Waste management departments are part of the municipal organization)
3 Solid Waste Governance (=Stimulate active involvement of politicians in solid waste management plans)

These three areas will be discussed after the introductory paragraph which looks at why many waste management plans end up in a drawer.

Why many waste management plans end up in a drawer

Waste management plans are part of the process of integrating modernized waste management into normal operations. There are many advantages to having a waste management plan in place: it helps organize the service, the budgeting, the administration and the management of the system. Yet, even in countries with a strong planning tradition, the plan itself may end up in a drawer. This is because the plan is prepared by technical experts or consultants – within or outside of LOGO South – who know their discipline but may not know the ins and outs of the city, the culture, or local traditions.

Unfortunately, planners may treat the system's users and existing recycling entrepreneurs and solid waste system workers as objects, not subjects, of the process. If there is any consultation with the broad group of stakeholders, it usually comes at the end, when the draft is complete, and only provides the option of either 'yes' or 'no'. At that point, many of those involved will prefer to simply say 'no'.

The situation in LOGO South and other twinning programmes is complicated by North-South geopolitics and cultural differences: the Northern person may be shocked by his first encounter with Southern poverty, disgusted by informal dumps and transfer stations, and/or horrified to see waste pickers working on the dump. They may not have the experience to contextualize these experiences, or may see them 'through Northern eyes' and make incorrect assumptions about where the problem lies.

In LOGO South, it is often a resource person or team from the Dutch partner municipality who support their Southern counterparts in preparing an '(Integrated) Solid Waste Management Master Plan'. Too often, there is a strong focus on technology or economics, and only a minimal analysis of interests or institutions, with barely any investigation of the causes behind the problems observed. Partly this is because the institutional and local part is difficult, without knowing the language it is challenging to understand institutions or laws, while the language of technology, money and machines is much more universal.

The resulting report almost always recommends a new landfill, better collection equipment and routes, greater involvement of citizens in recycling, an incinerator in the middle term, fees payable by all clients of the system, 'new' recycling efforts and other features commonly found in solid waste systems in medium- and large-sized cities in Europe or the Netherlands. This report is then normally presented to the mayor and/or the city council, who endorse it but do not have the means or the knowledge to implement it. It is then archived and adds to the reading material for the next consultant who comes along in five years to repeat the process.

Plans tend to be ignored because they threaten established interests. Planning can change institutions, materials flows and financial arrangements, causing shifts in power, claims and benefits. If the process is open and transparent, most stakeholders can explicitly negotiate their priorities, make or earn concessions, and gradually arrive at a

consensus set of recommendations. In cases where there is a primary technical focus and the 'soft' issues are ignored, stakeholders may fear for what they will lose but have no way to take constructive action, and the result may be that they prefer to torpedo the whole effort.

A more sustainable and useful approach to waste management assessment and planning would look different:

- Experts from the Southern municipality would either be involved directly, or would be invited to critically evaluate, or 'domesticate', the Northern knowledge and recommendations.
- Politicians, public officials and other stakeholders in the Southern municipality would feel that they understand and 'own' the recommendations, because they have contributed to formulating the plan.
- The planning team would have checked and rechecked that the recommendations are appropriate to the local circumstances, and that the plan is feasible and affordable.
- The planning team would know whether their plan poses potential threats to powerful interests and influential stakeholders, and would have taken steps to gain broader understanding and acceptance of the concepts to minimize resistance.
- Stakeholders and users of the system, local people and organizations, would have given their opinions and reached compromises such that they feel responsible for the outcomes.
- MSEs, CBOs and informal groups would have been invited to contribute to the assessment and decision-making, and their participation in implementation would be included in the plan.
- Local knowledge would have been considered to be just as important – if not more critical to sustainability – than the experience and insight of the experts from the Dutch partner municipality.

Sustainable and transparent plans are based on a good connection with the practical reality, and they speak to the citizens and other stakeholders about those things that are important to them, such as: meeting community needs, cleaning up eyesores where children play and get ill, being affordable, and respecting cultural and religious ideas about waste. Feasible plans are those that propose using understandable and locally available technology, providing work for the unemployed, and building on existing private recycling initiatives. Successful planning interventions work hard to earn a 'buy-in' from the elected and professional officials, which is essential if they are to get from the drawer to the drawing board. LOGO South support activities focus on strengthening the capacity of both Southern and Dutch partners so that the planning process is professional, participatory and transparent.

Strategic Planning: elaboration of long-term waste management strategies and waste management plans

Strategic planning is about the future, about thinking about the place of waste management, and urban environmental health, over the longer term. Strategic planning concerns the fundamentals of the system, and a good strategic plan considers not only the relationship between the elements in the ISWM model in Figure 1, but also their relationship to other environmental institutions and infrastructure. Strategic planning, and the elaboration of waste management plans, is arguably more important in South countries than in the Netherlands, since there are already plans and rules at EU and national levels that make it clear to local Dutch authorities what their waste management system is going to look like, even without a plan. Dutch cities already have systems in place for removal, recycling and composting, and for collecting revenues and taxes to pay for this. Coverage in the Netherlands is 100%, and most materials and products fall under 'producer responsibility' agreements that give manufacturers and importers responsibility for environmentally-sound end-of-life management of their products.

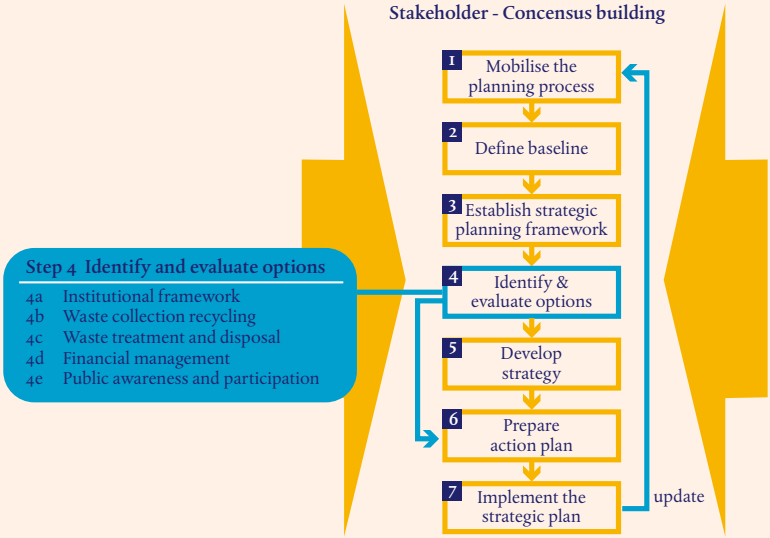


Figure 3. Schematic of the Strategic Planning Process
Source: Strategic Planning Guide, World Bank, 2000

In countries like Sri Lanka, or South Africa or Nicaragua, in contrast, there is much more variation in local circumstances, resources and economic boundary conditions. There are enormous differences between large regional or national capital cities on the one hand, and secondary cities or towns on the other. In most South municipalities, there is, therefore, a much larger 'space' for solid waste decision-making: many options are possible, and there are also a greater number of non-governmental stakeholders with an interest ('a stake') in solid waste decision-making. There is less money in the system and fewer surpluses, and there are more likely to be losers, as well as winners, in the modernization process. This makes waste management planning harder to manage, and more complex, in the LOGO South cities than it is for the Dutch partners, Therefore, it is especially important that this process is transparent, inclusive and open to local solutions.

One useful tool for planning is the ERM-World Bank Strategic Planning Guide ('The SPG'). The SPG divides the planning process into seven steps or stages, and has useful and practical tools for each one as shown in Figure 3. Following the steps ensures a thorough and comprehensive planning process. The SPG was developed for solid waste management practitioners, such as local government officials, facility owners and operators, consultants and regulatory agency specialists. The SPG contains technical and economic information to help these practitioners meet the challenges of planning, managing and operating municipal solid waste programmes and facilities. It is designed for use in cities and regions. In small municipalities, the principles remain valid although the number and complexity of steps can be simplified. The SPG was tested by WASTE in three cities in the UWEP Plus Programme, as part of a project funded by DFID, the British government's department for development co-operation.

The SPG aims to support stakeholders in producing municipal waste management plans which will encourage the reduction of waste at source and foster the implementation of integrated solid waste management systems that are cost-effective and protect human health and the environment. It encourages individuals involved with waste management to expand their professional skills and to help other practitioners and community members better understand the challenges and opportunities of waste management. By broadening the view of waste practitioners and

offering tools to involve a wider range of actors than normal, the SPG also strengthens the capacities of its users to become 'all-round professionals' capable of looking at more than just the technical and economic aspects.

The SPG also introduces both process and substantive tools to support municipalities in implementing source reduction, recycling and environmentally sound disposal. Each stakeholder can find information on how they can contribute to better waste management in their municipality both individually and by working together. Communities, businesses, institutions and individuals are encouraged to coordinate their goals for waste reduction and management, environmental protection, community development and employment. The working groups build trust and invite stakeholders to be creative in drafting policies and designing programmes that prevent the generation of waste in the first place. Bangalore, the city discussed in Case Example 5, is one of the cities where the SPG was tested.

Institutionalization of Waste Management

LOGO South projects pay specific attention to the process and steps involved in modernizing solid waste management and integrating the modernized system into the municipal organization. During the planning period, the planning team coordinates solid waste activities and becomes the focal point of the planning project. The team will usually be led by city planning professionals from the planning and development office; this ensures professionalism but puts the focus outside the division charged with daily solid waste operations. Sustainability requires close consultation with the operations department and so a process of re-integration is therefore necessary that includes key staff from the operational division, and ensures that they own and accept the recommendations.

Once a plan is ready, it requires approval by the relevant municipal councils if it is to have a 'real' impact on what happens on the ground. This is a challenging process, because a plan is a document that changes power relationships. In particular, three features of most solid waste management plans have the potential to threaten existing bureaucratic and economic relationships.

1 Planning potentially threatens bureaucratic structures and claims. Planning is often an occasion to propose a reorganization of civil service activities at municipal level, in parallel with a reorganization of ministerial responsibility for solid waste regulation and inspection at the national level. The plans generally propose or create a municipal waste department, with a technical or administrative director and specific staff. While this is a 'win' for professionalizing solid waste, it looks like a loss or a threat to the public works or public health department, which had solid waste responsibilities prior to the planning or modernization process. Even if these departments resent having to work on solid waste management because of its low status, they will not want to lose it, because that would mean a loss of budget, status and power. This can create resistance, and that resistance can translate into a failure to approve the plan, with the result that it ends up on a shelf and nothing changes.

2 Solid waste plans often recommend institutional reform, and have sections proposing a reorganization of the disposal function and a new, often regional, landfill. This takes both control and financial responsibility away from the municipal council or mayor's office, and places it at regional, provincial or even national level. This does not only happen in LOGO South countries, it has happened several times since 1979 in the Netherlands, and represents an experience that most Dutch municipalities have had or participated in. Regionalization is a challenge because the institutions at regional or provincial level do not usually have either the technical knowledge nor the institutional capital to manage this function, and they need time, investment and experience before they can do it well.

CASE EXAMPLE 5

> Strategic Planning in Bangalore, India

Bangalore, the Green Garden City in South India, is known for its strong industrial ICT sector. In 2003, the SPG was used for the preparation of the Strategic Plan for Integrated Solid Waste Management in Bangalore.

The strategic planning process took place under the umbrella of the municipality. A wide variety of stakeholders joined a Working Group. Hands-on solid waste practitioners from the municipality, called the Bangalore Mahanagara Palike (BMP), were joined by the business forum Bangalore Agenda Task Force (BATF), the NGO platform Swabhimana, the Waste Wise Resource Centre, and Project Agastya, with WASTE as an external facilitator. This Working Group, responsible for facilitating and steering the planning process, was assisted by a dedicated Core Group, which served to facilitate the Working Group but had no decision-making authority. The Working Group received methodological guidance from a national and international External Resource Group and was further supported by an Advisory Panel consisting of SWM opinion makers, experts and government organizations. The BATF, an urban planning initiative financed by the industrial ICT sector, took on the role of lead agency during the entire planning process.

In accordance with the principles of ISWM, the entire process had a strong focus on integrating all the initiatives that were happening on the ground, and harmonizing them with an emerging long term vision as foreseen by State and National Policy. Throughout the different planning stages, direct and indirect stakeholders were consulted, and invited to contribute opinions but also expertise and experience. This commitment to participation successfully neutralized some potential conflicts and created trust and a sense of commitment and ownership. The resulting thinking process led to a number of intermediate documents being shared with the stakeholder groups and the Advisory Panel for inputs and feedback. The final document with expert comments and inputs and stakeholder consensus was presented for acceptance and approval to the City Council, and is being implemented.

Source: elaborated by the authors from UWEP Programme documents.

Municipal officials may question the capacities or motivation of their provincial-level counterparts, because the province is governed a different political party, or because they prefer to retain control. These can be reasons for not wanting to approve or operationalize a plan.

Moreover, the proposed high-tech landfills are more expensive to operate than pre-modern disposal practices, and transporting the waste to them is also expensive, especially when fuel prices are high. If the plan is successfully implemented, just moving the disposal facility 15 km outside the city can mean that existing vehicles are no longer usable, or that a transfer station is needed. The city council or mayor's office is often completely unprepared for the implications of regionalized disposal. One of the most important consequences is that disposal shifts from a revenue source, which the municipality controls, to a cost, for which the municipality has to pay the province or the region. Also, instead of becoming a magnet for donor or national government investment in the municipality, the investment will instead go to the provincial, regional or national government. This may further explain resistance and/or failure to approve or implement plans.

3 By shifting financial and operational responsibility to a different level of government, elected officials may feel that they are giving up the power to please 'their' citizens, and thereby promote their own re-election. When investment goes elsewhere, when the fees are set at the regional level and when the municipality has to 'sell' these fees to its citizens, it can affect the chances of re-election of sitting councillors or mayors. In most LOGO South countries, solid waste is more politicized than in the Netherlands, which can contribute to shelving and ignoring a good plan.

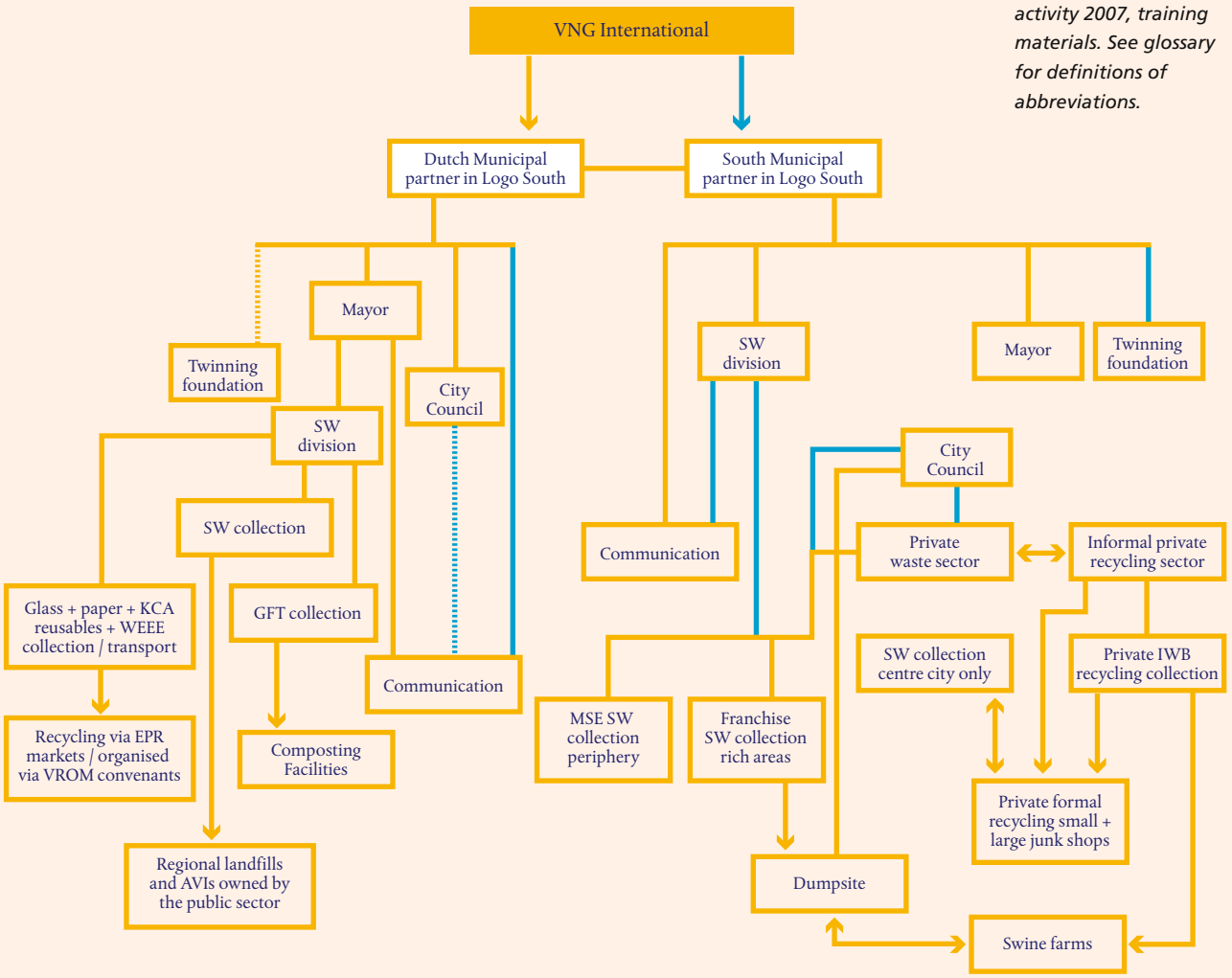
How does LOGO South help to overcome these potential threats, strengthen the planning process, and facilitate fair, transparent and sustainable modernization? First of all, the emphasis is on opening up the planning process to more stakeholders, and looking at costs and benefits in a transparent way. This may not completely eliminate the friction, or potential pain, that accompanies change, but it can reduce tensions and create trust, and this is a better climate in which to make decisions that affect many different types of people and organizations.

A careful analysis of the stakeholders in the LOGO South training and exchange activities can be a truly eye-opening experience for many of the South partners because the situation in their cities is quite different from that in the Netherlands. It can be also a major learning opportunity for Dutch partners, especially when the planning process focuses on recycling, because the situation in the Netherlands is unique in the world.

Dutch municipalities only have to collect the recyclables; marketing is done through producer responsibility agreements, so-called 'covenants', between the Ministry of Environment and the sectoral trade associations for products and materials. The situation in most LOGO South partner cities is very different, as can be seen in Figure 4. The left side of the figure shows the links between a Dutch municipality and municipal activities in solid waste and recycling. Most lines originate from the mayor (alderman, commissioner), who is the political official charged with supervising operations. Operations include collecting solid waste, recyclables, organic waste (GFT) and other materials, which go to regional disposal facilities or – via the extended producer responsibility (EPR) covenants – directly to the recycling industry.

On the right side of Figure 4, one can see that the situation in a typical LOGO South partner is quite different. If the municipality is involved in solid waste, it is usually through the city council, not through a commissioner or the office of the mayor. Moreover, many activities which are part of the overall solid waste system, especially those that relate to recycling, have nothing to do with the municipality at all.

Figure 4.
Solid Waste Organizations in South and North Municipalities in LOGO South
Source: Adapted from LOGO South exchange activity 2007, training materials. See glossary for definitions of abbreviations.



This means that LOGO South cities and their Dutch municipal partners have to learn together how to address the issues facing the South counterparts.

This creates some risks for the exchange relationship. For example, when a Dutch solid waste commissioner or mayor talks to their LOGO South counterpart about solid waste, one of the questions may be: 'What are you doing about recycling?'. The Southern mayor may get profoundly worried, thinking that 'we are not doing anything about recycling'. Both forget the hundreds, maybe thousands, of people in the LOGO South city making a living from recycling. The municipality does not need to create recycling, it is there already. In the modernization process, it is often more sensible and cost-effective to build on what is already there than for the municipality to create something new.

Solid Waste Governance

'Governance' is a relatively new term that attempts to capture elements of formal government, communication, participation, transparency and accountability, all in one single word. In LOGO South, supporting solid waste governance is based on two strategies:

1 Stimulating the active involvement of politicians in Solid Waste Management plans and planning processes, and
2 Introducing local legislation and/or regulations and procedures for waste collection and disposal.

Stimulating active involvement of politicians in Solid Waste Management plans and planning processes

The active participation and 'buy-in' of national, provincial, regional and local politicians in solid waste decision-making is essential. Political commitment is necessary for the elaboration of waste management plans, and the internal organization of waste management services within the municipality, because the important decisions are political, not technical. Politicians will have to identify constituent interests, make the rules, pass the laws, purchase the land, find the investment money, capitalize the system, conceive its operation and, in a nutshell, to be responsible to their constituents. Strategic planning ensures the involvement of politicians by getting working groups of stakeholders to contribute to certain parts of the planning process.

For these groups to have legitimacy, it is very helpful to have a politician involved. However, since politicians are sometimes in the government, and sometimes out of it, it is useful to make sure that politicians from all political parties become involved in the planning process. This can also be a way of building trust and avoiding conflicts.

Sometimes politicians think that they are too busy for something as ordinary as planning, or they believe it should be left to experts. So, something extra is necessary to convince them of the importance of being involved. Sometimes building study visits into the programme for the working groups is a good way to indirectly get politicians to become more involved in the content and process of planning. To be effective, study visits need a goal and a theme, based on ISWM, a clear assignment for the participants, and a design where seminars, visits to facilities and sessions where writing and reflection alternate[1].
A study visit is nothing like the 'selling tours' organized by the waste industry sector, whose primary motive is commercial.

Feedback mechanisms and publicity strategies are also part of planning, and these represent good reasons for politicians to get involved in waste management planning. When there is a telephone number to call or a place to make complaints, people use them. When this is linked to the portfolio of a politician and the information and complaints are directed to that politician, the connection between waste management and politics becomes clearer.

1 It is useful to include a limited social, cultural and shopping agenda to prevent participants from feeling that they have to find time for these things during sessions.

CASE EXAMPLE 6

> Regional governance for five municipalities in the Southern Province of Sri Lanka, supported by the Dutch municipality of Velsen.

The municipality of Galle in the Southern Province of Sri Lanka struggles with serious solid waste management problems. Since the existing dump site was officially closed, in 1992 due to reaching its capacity, illegal dumping has been carried out by the local authorities. Since 2002, waste experts from the municipality of Velsen, a partner of Galle since 1976, have been supporting their Galle counterparts. Until the summer of 2007, little visible progress was achieved. A breakthrough in the process was realised when the mayor of Galle and the mayors of four other local authorities in the Southern Province (Matara, Welligama, Akmeemana and Habaraduwa) agreed that it had come to the point where their individual local authorities could no longer solve their own solid waste problems and that a regional solution was necessary. Together, they approached the Governor of the Southern Province and requested her support, which was granted. With the continuing support from Velsen, the municipalities and the Province are working together to draw up integrated solid waste management plans and to find one or more collective Material Recovery Facilities (including a sanitary landfill). LOGO South agreed to support this regional approach as a valuable supplement to the twinning concept.

All actors agree that the long term involvement of Velsen, made possible through the LOGO South programme, has been conducive in building the level of trust that was needed for the municipalities and the Province to start their cooperation, which is unique in the Sri Lankan context.

This model of regional co-operation has also contributed to ideas about the two-year extension of LOGO South covering 2009 and 2010.

Source: LOGO South programme staff.

The case example of the Costa Rican WEEE exemplifies the additional benefits that can be obtained from letting a range of stakeholders work together in a setting different from their daily surroundings. It also shows the benefit of including an assignment to apply what they have seen in a different situation to their own daily practices.

Introduction of local legislation, regulations, and procedures for waste collection and disposal

Plans do not implement themselves. First, they have to be accepted by the City Council, and sometimes by the mayor, by state or provincial governments, or by County Councils and made part of the official plan for a city or region. Then they have to be implemented. An important step in implementation is the introduction of legislation and rules that change the way waste management and recycling happen.

Sustainability depends on making a realistic and appropriate choice for institutional responsibility for enforcing laws. For example, in the Netherlands, all waste management laws are made at national government level, and apply to municipalities (rather than directly to households). They require municipal authorities to manage solid waste in specific ways. They also require businesses, industries and public institutions like hospitals and the military to manage their wastes appropriately and in conformity with the law.

Rules are even more practical than laws. Solid waste rules, variously called 'regulations', 'by-laws', 'ordinances' or 'decrees', require certain actions or behaviours, allow some others, and prohibit others. Some solid waste laws require waste generators to pay an annual fee, or buy specific waste bags, if they want to use the system.

An example of a rule *allowing something* is the Dutch rule that allows households to place their garbage on the street in a bag after 10 p.m. on the night before a collection is due. In some places in the world, it is not allowed to use bags, or to put waste on the street at all; instead, it has to be given to a collector directly, or taken to a depot. Another form of rule is an informational rule, or *reporting requirement*. In some places, the waste management system requires that businesses, industries and institutions report how much waste they have and what they are doing with it. Alternatively, businesses may have to prepare a *waste audit* and provide it to the municipality or waste authority. A permit for landfilling, or a decision that waste must be incinerated in a hazardous waste facility, will depend on the results of the waste audit.

Examples of rules *prohibiting something* are those that prohibit pouring used engine oil into the city sewers, or prohibit the disposing of old light bulbs into the glass recycling container, or prohibit sending recyclable materials to the dumpsite, or prohibit burning waste in your back yard or stove, or even prohibit putting waste out on the street in bags.

However, a law or rule is not sufficient to make something change. First, people and municipalities and institutions have to be *informed* about the law or regulation, and what it means for them. This allows them to know how to *comply*, that is, to follow the instructions and rules. Secondly, regulations have to be *enforced*. In most solid waste situations, the laws are enforced against municipalities: that is, if the municipalities do not organize the waste system to comply with the laws, the national ministry denies them financing, or imposes a fine. At the next level down, municipal laws and regulations apply to households: if households do not comply, the laws are enforced against the individual households. For example, if households in The Hague in the Netherlands put their waste out before 10 p.m. the night before the pickup, they violate the municipal law, and risk a fine of € 240.

CASE EXAMPLE 7

> Study visit of the Costa Rica WEEE Technical Committee to the Netherlands

In 2004, WASTE and ACEPESA were working together on a programme to facilitate a system for managing Waste from Electronic and Electric Equipment (WEEE) in Costa Rica, with support from Dutch stakeholders involved in the Dutch WEEE decree. As part of this project, a delegation of nine people from Costa Rica, representing the partner organization, three ministries (staffed by a combination of civil servants and political appointees), the private ICT manufacturing sector, the Chamber of Industry, the Technical University and the glass processing sector came to the Netherlands to study the Dutch system. The study visit lasted two weeks and was a mix of visits, seminars and reflective sessions. During this visit, the Costa Rican delegation, representing many different stakeholders, worked together to craft their own vision of the options and best choices for Costa Rica. An expected result was that they were able to make a proposal for how the system would work, that most stakeholders could accept and approve. An unexpected result was the creation of strong bonds and a sense of commitment between the members of the delegation, which also represented the core of the platform running the programme in Costa Rica. This commitment was so strong that the project continued, virtually unaffected, during a gap of six months between the first and second phases when there was no external financing. The process took longer than anticipated but, in 2008, the proposal by the Technical Committee was the basis for national WEEE legislation in Costa Rica.

Source: WEEE project documents and Jeroen IJgosse, former project manager

Sustainability in Solid Waste Governance: the Solid Waste Platform

As part of the 2007 exchange activity, as well as in bilateral trainings for Velsen-Galle, Tilburg-Eindhoven-Emfuleni, and Leiden-Buffalo City, the solid waste platform was presented as a way of increasing ownership and anchoring institutional memory in relation to the LOGO South projects. The Swabhimana platform was key to the success of planning in Bangalore, as Case Example 5 explains. Additional activities focusing on platforms and ownership are planned to be part of the 2008 exchange activity.

As used here, the term 'solid waste platform' refers to a collectivity:

1 With permeable borders and a shifting membership, sometimes, but not normally, registered as an NGO or an Association
2 Consisting of a core group of committed organizations and individuals who call and chair meetings and keep minutes, one of whom may be designated as the Secretariat
3 That comes together at regular or irregular intervals to participate in a planning process; or to maintain contact and dialogue between the members
4 Whose membership consists of a diverse group of individuals, businesses, organizations, government officials and institutions
5 With a shared focus but diverging interests and influences on an interrelated set of issues, problems and activities, such as solid waste planning, recycling, composting and the disposal of sludge
6 With a shared commitment to provide a 'safe social space' for airing of differences and arriving at innovative solutions
7 And with the intention of maintaining open channels of communication between actors who are normally isolated from, or actively antagonistic to, each other

Platforms are often created in solid waste management at the beginning of the modernization process, under the general rubric of 'stakeholder mobilization'. What makes a platform more than just a series of meetings is it continuity over time, the fact that it does not depend on the results of elections, and the fact that it provides a safe social space for discussing differences, resolving conflicts and arriving at a common way of looking at the situation.

Summary and conclusions for Chapter 2

The experiences of LOGO South and the insights from the exchange activity suggest that solid waste is indeed a rewarding area for working on governance, political experience and environment. Key ideas drawn from Chapter 2 include the following:

- The growth and development of urban areas, in combination with changing ideas about solid waste, sets a modernization process in motion, in both Dutch and LOGO South cities.
- The involvement of all stakeholders and their engagement at different levels in the planning process is necessary to ensure ownership of plans and recommendations, and to minimize process obstruction from those who might feel excluded.
- Planning using the ISWM framework begins with an assessment of the on-the-ground realities, prior to as a precursor to planning something new. This is especially important when Northern partners or 'experts' are involved, as they will not be familiar with the local situation.

CASE EXAMPLE 8

> Solid Waste Platforms in the UWEP and UWEP Plus Programmes

The solid waste platform first came to the attention of UWEP programme staff in Bangalore, India. There, the Swabhimana Platform was formed prior to any UWEP interventions, and was a key factor in attracting the programme to the city. The Swabhimana Platform is a classic solid waste platform in the broadest sense of the word, and its characteristics serve as a general description of what a platform is and does:

1. Providing representatives for planning or evaluation teams or meetings
2. Sponsoring, promoting, organizing and attending events, ranging from promotional days to study tours to training events to working meetings
3. Organizing themselves into working groups for specific purposes
4. Mobilizing technical expertise to complement or counterbalance the expertise offered by the formal authorities
5. Sharing information among the members and also with other platforms
6. Preparing or commissioning key knowledge products, such as handbooks and brochures

COGEVAD, the Committee for the management and recycling of waste, in Commune VI (one of six cities in the Bamako district of Mali), was another key platform in the UWEP programme. After the exit of the UWEP programme from Bamako, COGEVAD and the corresponding platform in Commune IV, COPIDUC, were the focus of the programme's exit strategy. Each platform became the formal owner of the physical, social and information infrastructure in its city, and the institutional home for further developments in waste management.

Source: Elaborated by the authors based on UWEP programme documents

Chapter 3
Focus area 2
Financial Sustainability

Introduction: 'Financial sustainability' is about more than money

There is a tendency, even in project-based city twinning programmes like LOGO South, to assume that 'financial sustainability' is all about money. An introductory look at some typical solid waste-related dilemmas facing LOGO South Municipalities suggests that the reality is broader and more varied.

A dump is contaminating the water supply. The national government demands closure within six months. What does this mean for me, and how can LOGO South help me?

This question relates to financial sustainability, because it turns on the cost of disposal. For a start, who is responsible for the existing dumping site, and how is it paid for?

With a new landfill, it is almost certain that disposal costs will rise – they will probably at least double and possibly rise tenfold. This is more than a municipality can generally afford, and this means that closure of a local landfill usually leads to regionalization of disposal. What kinds of financial sustainability issues arise in this process?

1 A new regional landfill is even more expensive than a local one: and even after the initial investment, it costs a substantial amount to operate a landfill correctly.
2 This expense may stimulate policies for different approaches to cost recovery.
3 Regionalization requires new institutions to manage it, and these new institutions require financial tools and a basis on which to raise investment funds and manage operational costs.
4 Public and private collection companies may choose to dispose of waste illegally rather than pay tipping fees.
5 A regional landfill will serve a larger number of municipalities with different political colours and so has a risk of creating conflicts of interest of a political and/or financial nature.
6 There is lots of room for conflict about where the landfill will be sited, and resolving this conflict can cost a great deal of time and money.

Only if all of these issues are considered and discussed transparently, will the answer to the question become clear. LOGO South can support the municipality in understanding the risks and benefits of a new landfill, and in making the advantages and disadvantages clear to citizens and politicians.

My city is under pressure to start a recycling programme, can LOGO South help us earn money from recycling?

There is a common misconception that recycling can finance, or provide income to support, new solid waste activities. Unfortunately, this is generally not the case, for several reasons. First, those materials that are profitable are probably already being recycled by the private informal sector. Examples of this kind of recycling include collecting cardboard from shops, collecting and selling ferrous and non-ferrous metals, and buying bottles and cans from households. The existence of informal recycling initiatives may not be known to the LOGO South country officials or their Dutch counterparts.

Further recycling to help meet environmental goals could be a good idea, especially if it involves targeting new materials which are not already being collected, such as plastic or organic waste, or low grades of high-value paper and metal waste streams. However, these can only be recycled if there is a market for them, and municipalities are not usually experienced in selling materials to the market. This is because municipalities and the private sector have two different objectives in collecting recyclables: a municipality wants to avoid the wastes going to the landfill (possibly saving landfill costs), and the private sector aims to make money by selling the recyclables to the next link in the chain who is prepared to pay for them. Thus, in Southern countries, municipal recycling initiatives can have negative economic impacts: a municipal programme that is motivated by removal goals may actually flood the private recycling chain with low-value materials, and make it difficult for private recyclers to sell their goods. Alternatively, the municipality risks spending

good money collecting materials for which there is no local market. So recycling may be a good idea, and a way to save on disposal costs, but it is rarely a way to 'earn money'.

My Dutch partners have compactor trucks and street sweepers that they are taking out of service, and they are willing to send them to us if we pay for the transport. It seems like it will save us a lot of money to have good trucks. So is this a good idea?

The main practical advantage of compactor trucks is that they can compress waste but, of course, only if it is compressible. In most countries in the South, more than half of the waste is organic and dense, inert materials, or bulky wastes, which are not compressible. In the rainy season these materials are so wet that compression works like squeezing a wet sponge, and leachate (the 'juice' from the waste) is squeezed out onto the streets. In the dry season, floor sweepings, dust and grit, and large metal items, damage the compaction mechanism, necessitating frequent repairs which require replacement parts. Tropical temperatures may stress the motor and cause the engine block to crack. Moreover, the truck may be too wide for the streets in the city, and the tyres may get punctured from metal, glass and stones on the ground. Compactors use a lot of fuel. Overall, the different circumstances may mean that the compactor is less efficient, and more expensive to operate, than the seemingly more primitive vehicles or animal traction systems that it replaces.

The same is true for Dutch mechanical sweepers are designed for paved or cobbled streets, and are not practical for dirt roads or where streets are dusty, and they can create a hazard. Although they could be useful in the paved central business districts, automated sweepers end up replacing the many women who sweep the streets for a livelihood. LOGO South can help cities answer the question as to whether using fuel to replace the labour of local people is a good trade-off.

In terms of financial sustainability, the point here is that accepting a 'gift' is the beginning of a financial commitment, not a final solution. Vehicles require fuel and parts; and have to be operated, garaged, maintained and repaired. Even when donated equipment works, its design 'efficiency' of means that labour and equipment which is based on the local economy are replaced by fuel and parts which are based on global prices and costs. Even with donated equipment, actual costs may be higher than they would be for simpler, locally purchased alternatives. Financial sustainability, like good planning, is based on careful analysis of the costs and benefits.

Two types of money in Integrated Sustainable Waste Management

Broadly speaking, in solid waste management, there is money to be earned (and spent) in only two kinds of activities. These are solid waste services, which are generally the responsibility of the public sector, and specifically of local authorities, and the recovery and trading of commodities, which is generally a private sector activity. Recovery of organic materials through composting or anaerobic digestion, and the recovery of energy through burning, are special cases combining elements of removal and processing services with valorizing energy and materials.

We saw in Chapter 1 that solid waste services focus on the removal of waste and other undesired materials. A clean and healthy environment is a public good: everyone benefits from the convenience, cleanliness and economic attractiveness of a well-functioning waste system. As modernization expands the focus in solid waste, new services and operations come into play, and both the private benefit and the public good increase. This may require the financial responsibility for some services to shift from the municipality to the household or business 'client' who is 'willing' to pay for them[2]. The financial relationships in ISWM services are between the users of the service and the providers of the service.

The service providers are the local authority solid waste department, or private companies working directly for users, or indirectly

2 In solid waste services, users are usually households, businesses, or institutions. However, the health department of the local authority, in its role of protecting public health, represents the users, and ensures that there is a service, even when the payment system fails to work or the clients are too poor to pay.

through a contract with the local authority. Services are paid for by the hour, or by some other specific 'service unit'. Examples of service units are:

- Kilometre of road for street cleaning
- Number of households served
- Volume or weight of waste collected, transported, disposed of or processed
- Area of green space or numbers of parks maintained
- Numbers of litter baskets emptied

Users and providers are connected in a 'system of provision', as shown in Figure 5, and are connected in daily life through the normal practices of storing waste in a house, separating it into different categories, handing it over for collection, paying for this, etc. Commodity-related activities are differently organized. Commodity activity is based on a financial relationship, not between users and providers, but between buyers and sellers of materials. The buying and selling is organized in a 'recycling supply chain' as shown in Figure 6 (p. 44). Materials which are placed in the waste stream by one set of actors (households, businesses and institutions) at the top, are traded to a number of other economic actors on the basis of their residual value added. The recycling supply chain is a global phenomenon, a kilo of paper recycled in Nicaragua may end up in a paper factory in Taiwan; PET bottles flaked and sold in Tanzania almost certainly end up in China. The prices paid are also globally determined, based on supply and demand for specific grades of secondary or recycled materials in competition with the new alternatives. Local businesses apply global prices based on their own situation. For example, while 38 grades of paper are traded globally, in most countries only six to ten are recognized by national or local buyers.

The remainder of this chapter provides more detailed information on budgeting and cost accounting for services and commodity activities.

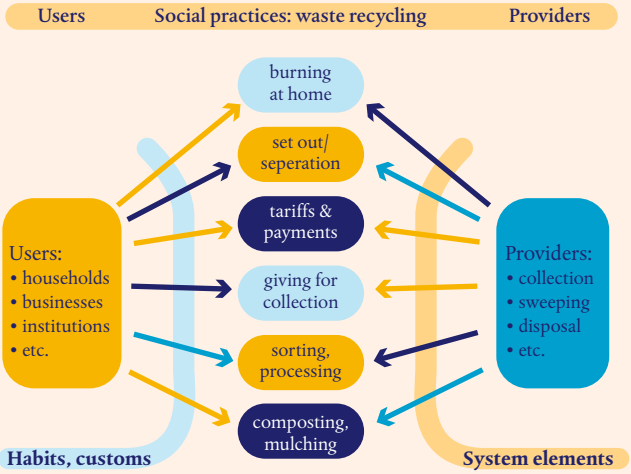


Figure 5. Systems of Provision, following the Social Practices Model. *Source: Adapted from Spaargaren (2003), and Spaargaren and van Vliet (2000).*

Uses of Funds: Budgeting of solid waste services

In most countries and cities, there is a strong belief, usually encoded in national law, that cleanliness and orderliness are a common or public good, and solid waste disposal is a public responsibility. This has not always been the case: since the first cities – in the Roman Empire, in China, and in the great Aztec and Maya cities of the Americas – urban cleansing has oscillated many times between public and private responsibility. Many variations in responsibility can be seen in the LOGO South cities, whereas public responsibility for solid waste is the norm for all the Dutch city partners.

LOGO South has, as a general point of departure, the view that, in most countries, the involvement of the local authority in organizing and managing solid waste services is essential, although the execution can be done

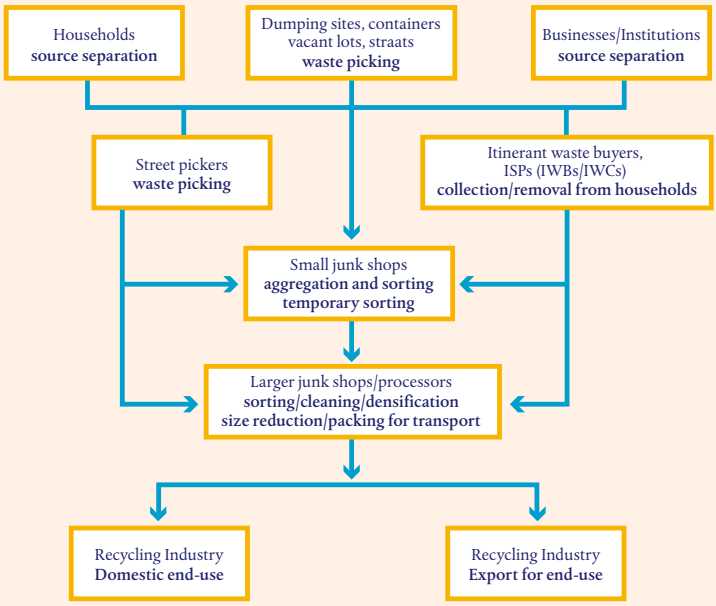


Figure 6. The Recycling Supply Chain
Source: Adapted from Marchand 1998

by other economic actors. For this, the local authority has to be effective and accountable, and, to achieve financial sustainability, the essential instrument is a 'solid waste budget'. Budgeting is the basis for all public sector activity: budgets are not only a road map for how the municipality will spend public money, they are also a tool for taxpayer-citizens to hold the municipal authority accountable.

ACTIVITY-BASED COSTING IN SOLID WASTE MANAGEMENT

A key to modern solid waste budgeting for municipalities is the concept of 'activity-based costing'. Activity-based costing simply means that the solid waste division is able to analyse the costs of each part of the service separately, even if the budget lines cover more than one activity. Activity-based costing makes it possible to identify the cost involved in a single activity that is part of a larger waste management package.

Most public sector division or department budgets have a specific number of generic cost categories and formats, which are the same for all divisions, and are based on national governmental accountancy and tax instructions and local bookkeeping practices. Common examples are equipment, labour, utilities, maintenance, supplies, purchased services, and, in some systems, amortization and depreciation. These generic cost categories describe the global inputs to the budget, and the way bookkeeping is practised normally allows no focus on specific activities, although it is possible to group them and calculate the total yearly expenditure for budgetary purposes. In the grouping process, some information will be lost, but this is not such a problem provided all the activities are carried out in a single department. In contrast, when many operations are involved and these are spread across several departments, working out the cost for street sweeping in the city or waste collection in one zone becomes a nightmare.

Moreover, in the public sector in general, expenses related to planning, legal fees, capital investments, offices, buildings and major facilities, land (if relevant) and permits are

BOX 3

> Public and Private in Solid Waste Activities around the World

In very general terms, one can look regionally at how solid waste responsibility is organized, and arrive at some regional classifications that may be useful to LOGO South partners in understanding the context for financial sustainability in their own region.

1 In South Asia, i.e. in the nations of the Indian Subcontinent, and in the transitional NIS countries and South East Europe, the public sector has strong policy, financing and operational responsibility. In some places, there is increasing space for private contracting under the general responsibility of the local authorities. Private, informal and formal, recovery and recycling activities in a long and complex recycling supply chain handle large quantities of materials completely outside the public domain although, in some places and especially in India, they are increasingly being recognized and integrated into the solid waste systems.

2 In East Asia, the public sector has policy and financing responsibility but there is a great deal of private participation in operations. The integration of private informal and formal recovery and recycling activities into the solid waste systems is more common, and very large quantities are recycled and recovered by the private sector or by PPPs. The recycling supply chain is very long and has many levels, and supports millions of people, including a very large number of waste pickers at the bottom of the pyramid.

3 In Africa, the public sector has official responsibility but neither the funds nor the institutional arrangements, nor in many cases the expertise, to organize implementation. Coverage in African cities is poor but, where things are happening, this is usually through private-to-private service relationships between micro- and small enterprises (MSEs) and community-based organizations (CBOs) working as providers for household and commercial users. Recycling is limited; there are few viable markets (the exceptions are South Africa and the Mediterranean North African countries) and the supply chain is short. The private informal sector is active as community or micro- service providers, some of whom earn additional revenues at the margins through valorization of the collected materials. The world-famous system of the Zabbaleen in Cairo is an extreme case of the autonomous development of a private-to-private solid waste service system. As happened in Cairo, when African local authorities try to gain control of this sector, they often do so by forcing the local private sector out, and looking for international partners with deep pockets. Many international privatizations fail once the international partners find out that there is too little money in the system to provide a return on investment. In a more sustainable modernization scenario, authorities recognize the value of the informal sector, and work to institutionalize and improve the arrangements.

4 In Latin America, there is a great richness and variety of competence, experience and interest to be found in MSEs in the private solid waste service sector. Guatemala City is the textbook case where private, individually owned 'yellow trucks' began to offer a private waste collection service in 1955. The private recycling supply chain is very long and varied and, until modernization, was completely separate from the solid waste service sector, with its own institutions, organization and culture. Cities like Lima have formal and informal private collectors for waste, and other MSEs that specialize in recycling, collection and valorization. In contrast to the situation in Europe, Africa or Asia, the involvement of local authorities in solid waste is a relatively modern phenomenon that has resulted from a combination of the globalization of public administration standards, and the activities of city twinning, international organizations, multilateral development banks and donor organizations, many of whom focus on new landfills and international privatization.

Source: Elaborated by the authors based on 25 years of experience in waste management

often separately financed and accounted for outside of the operational department(s). Few municipal departments depreciate or amortize their capital equipment, as the private sector does, precisely because it comes from a different budget. Moreover, certain forms of overhead such as the costs of management, (social) marketing and public education, crew supervision or the provision of a cafeteria are not usually included in municipal budgeting procedures even though, strictly speaking, they are a part of the activity cost.

Activity-based costing helps with budgeting because specific solid waste functions do have their own specific costs, in terms of labour, infrastructure and operating expenses. During and after modernization, when there is a policy trend towards recovering costs for services, transparent and sustainable cost- and fee-setting depends on being able to differentiate and allocate costs such as the specific cost of collecting from one household or one ward, or the cost of sweeping streets separately from the cost of operating transfer depots. Activity-based costing is necessary in modern waste management because there are many different operations that contribute to the overall result.

We have seen that, during modernization, the number and type of activities is likely to grow (as shown in Box 4), so that an overall solid waste budget will include a variety of activities implemented by actors from more than just one municipal department. Furthermore, international standards for financing and transparency increasingly require a more detailed insight into actual and combined costs per activity, both for private and public sector solid waste operators, and similarly, because of modernization, we expect an elevated level of awareness about solid waste, which places a high value on transparency in generating, processing and explaining solid waste system costs and fees.

Municipal procedures and local circumstances are the basis for assigning costs to cleaning processes; to logistics such as collection, transfer, transport and storage; and to sorting, processing, marketing of recyclables, and disposal operations. If the municipality is directly involved, there will usually be budget categories covering capital, operating, labour and other costs. If a formal or informal private operator is involved, they can sometimes enter the budget as a single line for fees.

In the regrouping of cost data, the following issues should be taken into account:

1 Capital costs: purchasing of land, vehicles, durable goods, and investing in siting and other one-off costs:
   a How are capital investments in land, buildings, facilities, vehicles, processing equipment and household infrastructure handled in budgets and financial reports?
   b. Does local practice involve calculating depreciation and amortization?
   c Do public institutions have the ability to borrow money and pay interest?
   d If not, how are capital investments financed and accounted for?
   e Can other one-off costs such as siting, gaining permits and legal fees be capitalized, or are they considered as overheads?
2 Recurrent operations and maintenance: operating trucks and vehicles with animal or human traction, sweeping streets, cleaning gutters and maintaining and repairing capital and office equipment:
   a What are the physical operations and processes, and how do these relate to direct and indirect labour costs, supervision, administration and data handling?
   b How does local practice handle operational and maintenance costs of vehicles, equipment, personal gear, etc. necessary to perform the job?
   c Does this also include costs such as fuel, oil, tyres, insurance and containers; and household infrastructure such as bins and consumables such as garbage bags?
3 Overhead costs:
   a How should management, support and administrative services, and personnel and general office costs be handled, based on accounting rules and specific agreements among financial experts?

BOX 4

> Separate activities to be considered in activity-based costing.

1. Street sweeping
2. Waste collection from households and apartment blocks
3. Collection of waste from commercial organizations
4. Collection of waste from public and parastatal institutions (post offices, hospitals, schools) where they receive different services or alternative payment conditions than commercial organizations
5. Gutter, drain and sewer cleaning
6. Park, beach, sport field and green space management and cleaning
7. Emptying of pit latrines, septic tanks and other excreta storage systems if considered part of the solid waste system
8. Separate collection of wet and dry waste, organic waste, recyclables
9. Separate collection of hazardous wastes from households and small-scale generators
10. Operation and management of secondary collection points, transfer stations and depots
11. Expenses associated with storage, processing, transporting and marketing of organic waste and recyclables
12. Final disposal points for solid waste, sewage or industrial sludge, residual waste and materials emptied from latrines and septic tanks

b What about one-time costs?
c Can these be allocated according to ratios of distribution and relevance, or are other methods preferred?

4 What specific costs are considered as general municipality costs, and therefore not charged to specific activities? For example, how is it best to allocate permit and licence costs, environmental fines, enforcement costs, communication charges and costs of fee collection, client relations and complaint management?

Activity-based cost data can be expressed at the level of the city or town, or at the level of sub-districts and quarters provided the input of labour, vehicles and equipment (hours and costs) is administered in this detail. When seeking to calculate per-unit costs, it is important to decide which units are relevant, so as to have the correct denominator in the calculation. Integral costs per hour relate all costs to the cost of labour, but these can also be calculated for other relevant service units. Once this approach is adopted and functioning, the system will also serve as a foundation for setting fees for service delivery.

The year-to-year application of this approach to activity-based costing is based on forecasting, or budgeting, expected expenditure in the forthcoming (fiscal or calendar) year. At the end of a budget year, the data can be consolidated, taking the actual costs into account, to arrive at 'real' historical costs. This is a helpful exercise and strengthens the credibility and legitimacy of the waste management department.

There are naturally a few dangers in activity-based costing: when taken out of context, costs for an unpopular but important activity can lead to political pressure to eliminate it; a private firm interested in privatizing a service can 'cherry-pick' those activities which seem the most profitable, leaving the municipality without enough revenue to finance the remaining activities; or the political authorities can get ideas about micro-managing the solid waste department.

Nevertheless, on balance, the benefits are greater than the drawbacks. Activity-based costing can be a powerful tool for well-considered decision-making, and can create a language for co-operation between the management of the waste management department and the financial experts of the city council, the finance department and the national ministry. Case Example 9 discusses some of the difficulties in setting fees and tariffs, and an essential component of cost recovery, in the twinning cities of Velsen, in the Netherlands, and Galle, in Sri Lanka.

Sources of funds: financing the service budget

A service budget shows how the funds are used and how much money is needed. In the sections below, we discuss how to raise the service budget.

INTRODUCTION TO MUNICIPAL FINANCE

Municipal finance is a difficult subject, as shown in a comprehensive report covering 15 Asian and Pacific countries by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). Before money can be spent, it has to come from somewhere. Figure 7 (p. 50), based on the above report, gives a schematic overview of where municipalities can get funds. With the possible exception of Indonesia, none of the 15 countries have financing systems where local authorities keep the revenues from providing solid waste services. Some Indonesian cities do have cost recovery systems that are executed by local tax departments.

CASE EXAMPLE 9

> Solid waste budget from Velsen , the Netherlands and Galle, Sri Lanka

Waste collection in the Dutch city of Velsen is organized by HVC, a regional authority that collects household waste in 22 municipalities. HVC uses activity-based budgeting to provide a transparent budget and a fair price to each of its client municipalities. The collection price covers all costs, such as capital costs for buildings, facilities, and vehicles, depreciation and amortization costs, direct and indirect labour costs, operational and maintenance costs and processing costs.

Each municipality pays for activities (or services) depending on the number of households and the agreed quality level. In 2006, Velsen paid € 6.3 million, or € 214 per household per year, for waste collection and € 805,000, or € 27 per household for city cleaning. Velsen's 26,300 households have, on average, 2.3 people per household. Labour absorbs 40% of the cost for both activities, a total of € 2.8 million. The total figure of € 241 per household represents approximately 0.4% of the average annual income in the Netherlands.

The city of Galle, Southern Province, Sri Lanka, has its own municipal solid waste management unit. In 2006, the city budgeted SLR 45 million for waste management and city cleaning for 75% of its 19,300 households, which have an average of 5.8 people per household. The labour costs are SLR 35 million, or 75% of the total costs. Based on the 75% coverage target, the costs were SLR 3,100 per household. In the price and budget calculations, capital costs for buildings were excluded. Only approximately 10% of the full depreciation costs and 60% of the necessary maintenance costs were included, and the extent to which indirect labour costs were included is also unclear. Processing of the waste is achieved at little or no cost by dumping it on marshy areas owned by private individuals, who would like to have their land raised for house building purposes. SLR 3,100 per household represents approximately 0.15% of the average annual income in Sri Lanka.

Based on their own experiences, staff of HVC and Velsen are working to convince Galle that improving and modernizing their solid waste processes will involve an increase in costs, and need greater transparency in how these are calculated. Not only is it necessary, according to Velsen, for Galle to modernize its solid waste management unit and work together with neighbouring local authorities, but a different kind of budgeting process is also required.

One important first step would be to collect waste from households, rather than picking up heaps of rubbish dumped by households and others in the street. Part of this involves selecting or designing appropriate 'set-out containers' (sometimes called trash cans or dustbins) that can be used by households for storing waste and carrying it to the street, where the collection crew can empty the container. Depending on the design of an updated collection system, this could be one bin or basket, or several, each with a different purpose, such as dry recyclables, organic waste and residual waste. Designing and modernizing a collection system also involves optimizing routing, and will probably involve reducing the frequency of collecting each type of waste. The goal is to increase efficiency. Redesigning the collection system can increase cost-effectiveness, and potentially change the ratio between labour costs and capital costs. The pace of further modernization should be in line with the economic developments of the country.

Source: Documents and experience of Velsen

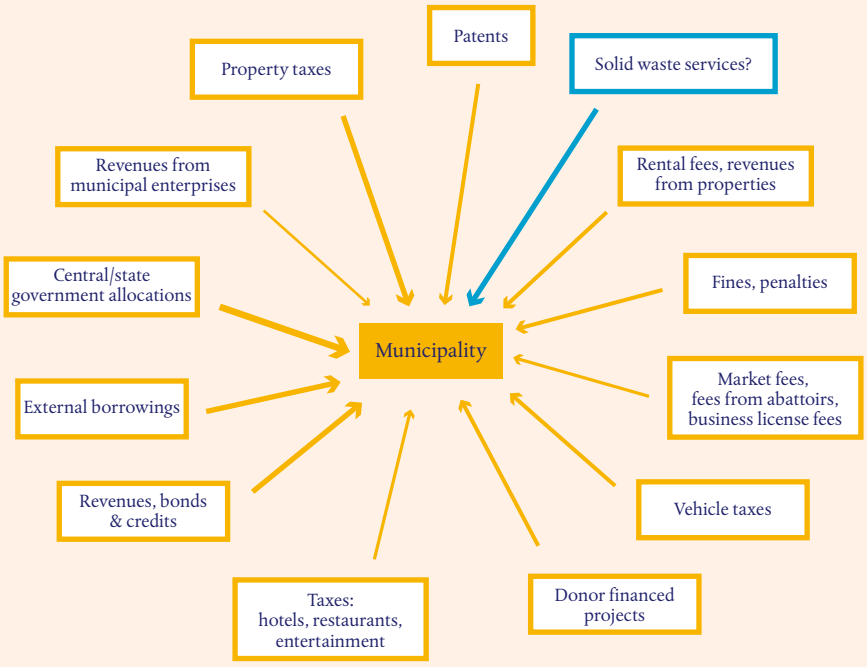


Figure 7 Sources of Funds in Solid Waste Management. Generally speaking, darker arrows indicate more important sources of funds. Note that not all of these sources of funds are available for all types of solid waste activities in the countries included in the study. For example, external borrowings are not normally available for covering operational costs
Source: UNESCAP 1999.

In the Netherlands, municipal budgeting is well-organised and follows national rules. The rules for setting fees come down from the Ministry to the municipalities, who administer solid waste fees as a municipal service tax billed once, twice or four times per year together with municipal taxes, and possibly with water and sewage fees, or other utility functions. Solid waste taxes fall under Dutch tax law which gives municipalities recourse to enforcement: non-payment of a municipal waste tax breaks a national fiscal tax law, and non-payers can be brought to trial, resulting in fines or even the loss of their house and property.

The Southern partners in LOGO South, have a variety of arrangements: some have private-to-private user-provider arrangements and others, with varying degrees of public responsibility for solid waste management, have a range of options to finance this role. Some of them collect property taxes and some local levies. Some bill citizens directly, some via water or electricity utility bills. Collection takes place with varying levels of efficiency. In some countries, there are simply not enough taxpayers, and therefore insufficient financial resources to provide their communities with anything beyond the barest essentials.[3]

Transfers from central government are nearly always an important source of funds for municipal services, but come with many strings attached. The involvement of central governments in the collection and subsequent distribution of revenue varies. Indonesian experience suggests that central governments collect those taxes that are easiest, leaving local government with the most difficult options. The UNESCAP report uses Bangladesh as an example of the situation found in many countries:

'The tax management of municipalities is weak, resulting in poor tax collection. There are many reasons for this, including a poor assessment system, lack of efficient manpower and legal issues (e.g. more than 50 % of property assessments are appealed with proceedings taking time and judgment generally going against the municipalities). Corruption is another major reason for low collection of taxes.' (UNESCAP, 1999).

3 The bulk of expenditure by Fijian local governments, for example, is spent on maintenance with few funds available for new work or major reconstruction.

OPTIMIZING COSTS AND INCREASING PROFITABILITY

Even when solid waste services are completely public, there may be pressures to increase 'profitability'. There are, generally speaking, two ways to do this in solid waste services, one is to reduce costs, and the other is to increase revenues. The options for achieving this are varied, but many of them push the municipality to do more with recycling and recovery, as can be seen in Table 1.

The activities marked with an asterisk are not necessarily cheaper in absolute terms, but the municipality may choose to use the private sector as a buffer, or to privatize because debt financing is privately available but there are no public lending instruments available. Another possibility is that the municipality may have a union that sets worker salaries, and hiring a non-unionized private firm may allow the private firm to pay less. At the same time, the necessary investment may be easier to obtain from the private sector than from the public sector.

Reduce costs
Increase efficiency / improve economies of scale
Substitute an older, inefficient way of doing something with a newer, more efficient one, and use savings from scrapping the old one to finance the new one.
Pay the workers less / reduce crew size
Reduce costs for maintenance, or skip maintenance
Use vehicles for longer / amortize over a longer period
Reduce the quality of service / offer fewer services
Reduce the frequency of collection
Require users to set out / bring waste to special points so that the collectors have less to do
Reduce the number of households or businesses that are eligible to receive the 'free' service
Reduce the area that the municipality is responsible for
Privatize collection*
Privatize disposal*
Privatize street sweeping*
Require receivers of social service to work for the waste management systemif they want their grants

Increase revenues
Initiate or increase existing taxes or fees
Require that businesses pay for waste removal
Require that businesses pay for container rental
Collect franchise / licensing fees
Create new paid services using existing equipment and personnel
Sell capital goods or real estate, or the dumpsite
Sell equipment or parts
Sell rights to collect revenues
Require landfill recyclers to pay a fee for the right to extract recyclable items
Collect, process and market recyclables –in such a way that revenues exceed costs
Collect organic waste, produce and market compost – in such a way that revenues exceed costs
Separate re-usables and sell them – in such a way that revenues exceed costs

Table 1.
Options for optimizing solid waste finance
Source: experience of the authors
*** see paragraph above**

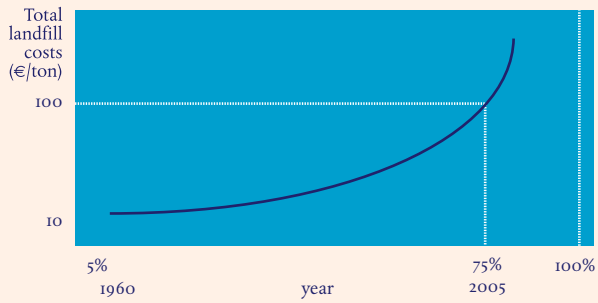


Figure 8: Relationship of total landfill costs to recycling rate
Source W. Sierhuis, 2008, in communication with Cok van Bergen Henegouw

It is not difficult to see that most of the options to reduce costs, and many of those to increase revenues, are likely to create political problems for the local authority. Others, like selling capital goods or the dumping site, may seem too radical or likely to create problems later. As Figure 8 shows, recycling and managing organic waste often seem like win-win options. These options will likely improve the environment, making environmental advocates happy, and they have the potential to reduce overall system costs. Moreover, many local authorities think that by embracing recycling they will also 'make money', something which is actually unlikely since there are substantial costs involved in organizing recycling and making stable agreements with private sector markets. A careful analysis of recycling is necessary to understand what it costs, how it works, who is doing it already and what is involved in getting to a point where it produces real revenues.

In the Netherlands, the increases in tipping fees for waste disposal in landfills is seen as the 'economic' engine behind the high recovery rate for both energy and materials, as is illustrated in Figure 8.

INCREASING REVENUES

Establishing the cost of a service is the basis for the sound economic functioning of any public service activity. In fact, this is equally important for the private sector, especially for micro- and small enterprises in the South.

When a micro- or small enterprise fails to correctly analyse its costs, and therefore asks or accepts fees that are too low to break even, it is usually the entrepreneur or their family that pays the difference – with their time, their health and sometimes their lives.

FEES AND PRICES FOR URBAN WASTE SERVICES

A fee is what someone must actually pay for a service. A fee is a special case of a price since many things go into a fee other than the cost of the service. A fee includes pricing information (based on costs and profit margin[4]), but may also incorporate policy goals or introduce a cross-subsidy through which certain services that can support higher fees actually raise money to support others which cannot pay their own way. Underlying the setting of fees should be basic information on the clients that will be served, including their willingness to pay.

PRICE ELASTICITY AND WILLINGNESS TO PAY

A key concept in setting prices is the idea of price elasticity –how flexible people are in their need for a product or service and how much they are willing to pay for it. Water is an example of something that has a very high price elasticity: people need water to live – and so they are willing to pay virtually anything for water. In recent years, municipalities have begun to look at the concept of willingness to pay in a more organized manner, and have surveyed their client base to find out what they are willing to pay for a reliable service. One such example is shown in Case Example 11 (p. 55).

FULL COST RECOVERY: NECESSITY OR LUXURY?

Changing ideas about sustainable finance, specifically from development banks and multilateral financial institutions, regularly raise the ideal of full cost recovery (FCA). FCA systems are based on setting fees that, when collected, cover the cost of all activities. This means that the entire cost of waste management activities is charged directly to the beneficiaries of the service provision.

4 Profit may accrue to the authority or the private contractor. The margin may also include a surcharge – an extra amount on top of the regular fee – to build up a reserve fund for an anticipated new investment – such as a new landfill site. The margin may also include a contingency – a reserve in case something goes wrong.

CASE EXAMPLE 10

> Bin Bag Money in Naledi, South Africa

The municipalities of Naledi (South Africa) and Assen (the Netherlands) joined forces to look at upgrading their set-out system, by introducing a container for storage and collection of waste, instead of plastic 'bin bags.' Their combined efforts resulted in the acquisition of a refuse truck with funds from Logo South and co-financing from Naledi. However this solution created a new problem: Naledi lacked the funds to buy set-out containers that were compatible with the truck's lift technology.

Together, the two authorities reviewed Naledi's budget and they discovered that, in the townships where the containers were introduced, they no longer needed the bin bags, worth about one rand each (the currency of South Africa) which the municipality traditionally paid for. Naledi municipality transferred their remaining bin bags to another authority that still used them, and received a contribution from that authority. Through that contribution, combined with the savings from not having to purchase more bin bags, Naledi was able to fund the new containers. Old money was therefore turned into an improved situation for the people of Naledi.

Effective cooperation between Naledi and Assen produced a creative solution; using the bin bag money resulted in a cleaner town and contributed to the 'Keep Naledi Shining' awareness campaign. This case is a good example of how it is possible to use an existing situation to finance a new situation, without having to find 'real money'.

Source, Municipality of Assen, the Netherlands

The main value of FCA is perhaps its symbolism as a public administration ideal, because it hardly ever occurs in its purist form. In Southern countries, FCA does not work very well, and in the Netherlands it has taken years to even approach full-cost recovery: users still do not pay the full (marginal) cost of the services they directly receive. In LOGO South countries, much depends on the current practices and legal obligations in the country concerned of municipalities and especially the larger cities. The legal context, the rules governing local taxation and the setting of charges, the degree of modernization and the status of waste management contribute to the decision as to whether FCA is appropriate and feasible. In general, a well-designed and transparently functioning tariff or fee system can recover some of the costs of operating the service, but much of the true cost has to be paid for by the municipality or the national government from the sources shown in Figure 7.

In Africa, where local governments often do not have the capacity to organize waste management services themselves, most services are provided through some form of mediated private-to-private financial relationship and regulated by the local authorities (see Case Example 4). In these situations, the city council or municipal department generally awards zones, or gives micro-zone monopolies, to firms, MSEs or CBOs who also have the right to collect fees (itself a difficult and expensive task). In such situations, the city council also sets the price for the waste collection and removal service even though the service is provided by a private contractor, and sometimes without the council knowing anything about the actual cost of providing the service, as is shown in the story in Case Example 12 (p. 56).

Although municipalities do not technically need to make a profit like the private sector does. They do need to create margins and financial reserves to cover normal operations. Moreover, during the modernization process, the amount of waste to be collected tends to increase, peak and then decline over time. Initially, more waste enters the system year on year, due in parts to increasing coverage, to population growth, to consolidation and annexation of physical areas and in part to increasing material standards and associated growth in quantity and type of waste materials. It takes some time before full coverage is achieved, and activities such as recycling and organic waste recovery begin to reduce the quantities requiring disposal. For most LOGO South cities, the coming years will see increased waste, more people, more vehicles, more labour needed for collection, more transfer stations, more types of collection, more administration, and more space taken up by landfills. The costs will go up, and discussions on cost recovery, even if not on FCA, are probably inevitable.

Once a discussion on cost recovery is started, it tends to have a beneficial impact on the whole system, whether or not the fee-setting approach actually changes. Focusing attention on costs tends to result in the actual service delivery receiving more attention from political officials and users. To this end, the value of a comprehensive, activity-based, cost picture that can be presented to the political management and municipal council is high, and helps shift the discussion from purely financial issues to one that considers quality of service delivery in relation to its costs.

If cost recovery becomes a serious issue, one of the first steps is to analyse the potential for differentiating fees by categories of household and business users, so that those who are able to pay more cross-subsidize those who can pay only a little. In Southern countries this is complicated because the number of individuals and sub-units within a 'household' or 'compound' varies widely, especially in cultures that support polygamy. A more feasible approach is to set a fee per 'connection' based on average socioeconomic characteristics in the different wards in the city, with the possibility of granting exceptions to the general rule based on specific characteristics. A second approach is to announce that cost recovery is

CASE EXAMPLE 11

> Willingness to pay in Tingloy, the Philippines

In 1998, a study on willingness to pay in poor communities on the island of Tingloy, in the Philippines, confirmed that most people were willing to pay just under 1% of their monthly income as solid waste disposal fees. This was true even for the very poor and residents of marginal areas and squatter settlements. While waste management has a lower priority than water supply or sanitation, experience shows that poor people can and will pay a small percentage of their income for a service that meets a need. In other documents, the internationally accepted benchmark for willingness and ability to pay for household waste removal is between 0.7% and 2.5% of monthly income. Thus, a common belief in city twinning - that very poor people cannot pay for waste management services, is not supported by practical experiences.

One important factor in sustainability is that the providers should be operating in the same economy as the users, and ideally the workers should come from the community served, or at least be personally known to most of the users. The failure to observe this principle is the reason why many international privatizations fail.

Source: Elaborated by the authors, based on Marchand 1997, Cointreau-Levine 1994, Pfammatter and Schertenlieb 1996 and UWEP Programme documents

CASE EXAMPLE 12

> Why the donkeys die in Bamako, Mali

In Bamako, Mali, the donkeys and the owners of the GIEs (Groupes d'Interet Économiques, or MSE collection enterprises) are the casualties of the poorly conceived efforts to achieve full cost recovery. The city council sets the tariffs per household for waste removal for Communes 1 to 6, based on what the city councillors believe is feasible and politically acceptable. They do not consider what it actually costs for the GIEs to service the households, nor do they include the cost of transporting the waste to transfer stations, which has gone up because (following a law passed by the same city councillors) the donkey carts are no longer allowed to use paved roads, and so have to travel three or four times the previous distance. The collectors are forced to overload the carts and under-feed the donkeys in order to make ends meet. The result is that the donkeys do not take in enough calories to be healthy, and they usually die within a year of entering the waste collection service.

This is a textbook example of a failed cost recovery initiative. First, a cost analysis is not considered as relevant in fee-setting. Secondly, the cost analysis is incomplete, and key elements like transport and fuel (in this case fodder) for the vehicles are not included. Thirdly, the municipal and communal governments do not do their share in terms of organizing, providing and servicing secondary collection (transfer) points for the GIEs - instead they introduced a law about donkeys on paved roads that increased costs. Fourth, the municipalities do not pay their share of the costs – that is, the share related to the public good of municipal cleanliness. There is incomplete cost recovery, and the donkeys pay the price, together with the GIE owners who have to buy replacement donkeys.

This failure, compounded by incomplete analysis, has resulted in a citywide discussion about replacing donkeys with small tractors. This might be more humanitarian, but without changing the basis for price-setting, it will not solve anything. While tractors will not die for lack of food, they will end up sitting in a field rusting away when the GIEs cannot earn enough from the provided service to buy fuel or maintain them.

Source: Elaborated by the authors, based on UWEP Programme project documents

coming, but to start without charges for a period of time, such as a year, and to use this time to gather data, to evaluate the impact of rainy and dry seasons and cyclical changes on the waste stream, to optimize routing, to organize fee administration and to open communication channels with users. Actually recovering costs may take even longer.

Cost recovery and public participation: two sides of the same coin

Political and social acceptance of cost recovery requires a well thought out communication strategy. Cost recovery is like any kind of negotiated agreement, it only works if there is a sense of a contract covering who pays for what in what circumstances. In solid waste management, the users have to participate in planning, make choices and pay; and the providers have to interpret the choices made in terms of implementation, provide the service, satisfy the users and use the income wisely. The users have to say what they need, know what they are supposed to do, and actually do it. They also need to be able to give feedback, and to hold the providers to their side of the bargain. If this is not possible, they will be less willing to pay for the service. Without payments, cost recovery is just a dream. The system works as a kind of dynamic tension where each party knows what they are supposed to – and does it most of the time.

Using fees to create incentives and disincentives

Fees can also be used to influence waste-related behaviour. Volume-based pricing is used in the North to encourage household and business generators of waste to make use of recycling and composting options, so that they have less waste to throw away. One approach is that, in order to use the disposal system, clients have to buy special bags or special tags to prepay for disposal. One private contractor in Nairobi, Kenya, also uses a prepaid bag system for residential waste clients. In the Netherlands, consumers pay a fee at the time they buy certain durable goods that pays for recycling and responsible disposal at the end of the product's useful life. Such 'extended producer responsibility arrangements' are in place for white goods such as washing machines and refrigerators, consumer electronic and electronic equipment, computers, car batteries, tyres and automobiles. In other countries there may be a fee charged at the time of disposal to remove these items.

The principle behind this use of fees is to make ordinary disposal more expensive so as to stimulate and finance recycling and safe disposal, and to push people to choose more environmentally friendly alternatives. This only works when the alternatives are easily accessible and the clients know how to use them. When there is no convenient recycling system, raising fees can result in an increase in both legal and illegal dumping.

Prices, costs and expenditures in commodity activities: is recycling a source of financing for solid waste management?

From a solid waste system perspective, the main value of recycling, composting and other commodity-based activities is the reduction in the amount that needs to be removed to a dump, to a landfill, or that is 'lost' and ends up in nature. Recycling is complicated and should not be seen as an easy way for municipalities to earn money from solid waste: not all materials are recyclable, and even some that are recyclable, cost more to recycle than they are worth. Table 2 (p. 59) presents a classification of recyclable materials according to their commodity, or economic, value. The handling and the potential for recovery of these materials also changes quite substantially during and after modernization. For LOGO South partners, this information is highly relevant in combined planning and decision-making between Dutch and Southern municipal partners.

Municipalities who believe that they can earn revenues from recycling usually focus on Type 1 materials. This creates a problem in that, in

most Southern countries, it is precisely these materials which provide livelihoods for hundreds, if not thousands, of micro-entrepreneurs in the informal or semi-formal private recycling sector. If the municipality wants to take over recycling, it usually gives itself an advantage by making informal recycling illegal, impossible, or even by labelling it a criminal activity and so stimulating or condoning police harassment, fining recycling businesses for violating zoning laws or not paying taxes etc. Such an approach may succeed in giving the municipality (or its formal private sector contractors) a form of monopoly in access to the more valuable materials. However, in terms of municipal policy it is a lose-lose situation, and can put thousands of people out of work unless deliberate measures are taken to include them in municipal recycling efforts. In the worst cases, a successful recycling programme in terms of the municipal solid waste budget can be a disaster in terms of the municipal social service budget.

A different approach requires the municipality to recognize and build on the existing recycling efforts, and also to support the private recycling sector in increasing its activities in keeping Type 2 and Type 3 materials out of landfills. In doing this the municipality can gain the benefit of extra tonnes of recycled or composted waste by the informal private sector. Some approaches include:

- Contracting informal recyclers to remove recyclables on a sorting line (Bogotá, Colombia)
- Stimulating informal recyclers to provide a home or business composting service (Jakarta, Indonesia and Delhi, India), or
- Matching waste pickers with businesses who need cleaning and waste service and are not interested in recycling their own waste (Bangalore, India)

To summarize, recycling is not a guaranteed source of revenue, and cannot be relied upon to finance solid waste modernization. Nevertheless, it is a source of benefits, and can lower the costs of modern, environmentally sound, services.

Summary and conclusions for Chapter 3

Experiences from LOGO South suggest that 'financial sustainability' is more than about money, it is a link between financial and economic issues and other elements with the ISWM framework.

- Urban expansion and the growth in waste generation stimulate a process of modernization. The net result of modernisation is that the costs associated with the waste management public service are likely to increase.
- A budget for solid waste management is important for organizing the use of funds. Budgets guide the municipality in spending public money, and they are a tool that taxpayer-citizens can use to hold the municipal authority accountable.
- Cost recovery is one of the sources of funds for solid waste services. Southern municipalities have more variety but less structure for cost recovery than their Northern municipal LOGO South partners, so they have a greater need for legal, fiscal and institutional support for analysis, policymaking and implementation.
- Cost recovery depends on the 'willingness to pay,' another term for the price elasticity of public goods, and is a complex and often misunderstood issue. Fees have to be in line with priority of citizens for a clean immediate neighbourhood, on what is understood to be an adequate and reliable service.
- Recycling materials within the recycling supply chain involves a completely different set of rules than that of public services and should be seen as the private trading of private goods characterized by supply and demand.
- Modernization requires municipalities to understand the differences between solid waste services and commodity trading.
- Recycling is not a source of revenue, and should not be relied upon to finance solid waste services. Nevertheless, it is a source of benefit, and can reduce the costs of modern, environmentally sound, services.

Table 2

Type	Examples, incidence in waste	Pre-modernization approach	Economic value	Modernized valorization strategy
Type 1: high intrinsic value, globally traded commodities	High grades of waste paper, aluminum UBC, ferrous and other non-ferrous metals, ± 10 to 15% of household waste. In recent years, also PET (to China).	Recycled by individuals or enterprises through private initiatives and very rarely end up at dumping sites, except in extreme circumstances such as the global paper market crash at the end of the 1980s.	Price paid for the materials covers or exceeds the cost of labour and equipment involved in extracting or collecting them.	Prepare waste materials according to the specifications of the (potential) buyer in the recycling supply chain. Store them until there is a sufficient quantity to sell, then transport them and sell them.
Type 2: moderate intrinsic commodity value, locally traded commodities	Glass, tin, steel cans, rubber, non-PET polyolefines (PP, LDPE, HDPE), textiles, low-grade paper. Total is about 10-15% of household waste.	Recycled by private enterprises only when there are local markets or a temporary shortage raises the price.	Have some value but not enough to cover the cost of extraction, processing and marketing. Recycling is not 'profitable,' or even able to cover costs on its own.	When the cost of disposing of materials reaches the local cost to collect and recycle, usually between € 15 and € 25 per tonne, recycling of these materials becomes less expensive than disposal, and it is worthwhile to cross-subsidize this with the so-called 'avoided cost of disposal'.
Type 3: non-commodity materials with local options for 'beneficial reuse', subject to 'market development'	Kitchen, garden and small livestock waste for composting (± 40% of household waste); mixed waste with high organic content combined with high-density floor sweepings (as found in some West African countries ± 60% of household waste).	Small-scale private arrangements for removal by swine farmers or by cultivators who use the waste in composting or as a soil conditioner, with or without payments to generator or to remover.	Not a commodity, and so no intrinsic commodity value, but with some use value and some environmental value. May depend on willingness of government to 'purchase' compost for public uses: cemeteries, parks, sports fields, mine reclamation, erosion control, landfill cover and highways.	When the cost to dispose of materials (legally, for example, in a dumpsite or landfill) rises clearly above € 40 per tonne, separate management of organic waste and compost production avoids the high cost of disposal, and this so-called 'avoided cost of disposal' helps finance recovery. Successes in Bangalore and in Pune, India and in Lima, Peru combine a removal service with a price per kilo for selling compost.
Type 4: negative value materials that damage the environment ('highly negative environ-mental exter-nalities')	Healthcare waste, hazardous wastes, chemicals, fluorescent light bulbs, used engine oil, end of life E-waste, automobiles, accumulators, batteries, white- / brown goods, less than 5% of household waste.	Illegally dumped or traded for parts or residual use value, often partially burned to more easily extract metals.	Some residual value added, but not enough to cover cost of safe management with or without recovery.	Producer responsibility (EPR) systems that combine the maximum feasible recycling and guaranteed safe disposal with marginal repair, refurbishing and other recovery strategies, all financed by the avoided cost of disposal.

- Poorly conceived recycling schemes can be a lose-lose proposition, with poor people losing their livelihoods, markets for recyclables flooded with low-value materials, and an increased burden on municipal dumping sites.
- Well-designed recycling that builds on existing private sector activity can be a win-win proposition, protecting the environment, feeding resources to local industry and agriculture, and reducing municipal costs for waste management services and disposal.

Chapter 4
Focus area 3
Community Participation and Communication:
one-way traffic or two-way street?

Introduction

Solid waste was chosen as a Thematic Programme in LOGO South because it is a real problem for cities, and they actively want assistance. However, there are also other reasons for organizing a twinning activity with a focus on solid waste. Solid waste, as was noted in the introduction, is a good entry point for working on governance. Citizens in South countries, like those in Europe, want to live in clean, healthy environments. Children want safe and clear spaces to play football or run around, and people are often willing to engage with their political authorities to make this happen. Cities want a good image to attract business investment and tourists, and solid waste is a good area in which to improve perceptions. The list of stakeholders involved in solid waste is very long, because everyone either produces garbage, or is faced with problems from too much garbage when it is managed badly. Solid waste is a highly social area of urban environmental management.

Main sub-themes within LOGO South

With this in mind, it is useful to return to Figure 1, the ISWM framework, and to look at the stakeholder dimension in the upper part of the ISWM 'egg' diagram. There are many more stakeholders interested in waste management than the few that are listed. Communicating with those stakeholders about their preferences for, and problems with solid waste management is essential to sustainability, which is one reason why it forms a strong focus in LOGO South. The core of the communication is between government and citizens, especially in their respective roles as providers and users of the solid waste system. Communication is also important in the recycling supply chain because only when businesses and households know what materials can be sold can they store and prepare them properly.

Within LOGO South, the general field of communication and participation has two sub-themes:

- Transparency and Participation: with a focus on creating feedback mechanisms for citizens and promoting participation.
- Education and Capacity Strengthening: including awareness raising and health education activities in projects.

Both of these depend a great deal on recognizing a wide range of stakeholders and including them in decision-making processes. Box 5 (p. 64) shows some of the solid waste stakeholders.

Communication and the social, economic, health and institutional issues in ISWM

Solid waste is at the intersection of many disciplines, with communication at its core. Solid waste management is a social issue because it is about behaviour, institutions, and the ways people live their lives, and because cultural and social ideas have a strong influence on practices. Solid waste is an economic question because, in many countries and cities, it is the largest single item in the municipal budget, and also because it is about resources, the basis of all economic systems. Too much solid waste is an indicator of major inefficiencies in the functioning of the resource economy.

Solid waste is a health issue because, when garbage ends up in the wrong place, it pollutes water, air and soil, creating negative health impacts, and offering bacteria and pests a friendly environment in which to multiply. Hazardous wastes generated in health-care and military institutions or factories can offer an immediate threat to those in contact with them. Waste disposal sites can attract dogs and rats, and sometimes also pigs and cows and goats, and these can be a mechanism for spreading disease. The informal and formal sector workers in waste and recycling are on the front line in health terms; they are exposed to dangerous substances and face risks of negative health impacts.

BOX 5

> What is a 'stakeholder'?

The term 'stakeholder' is used a great deal in environmental work these days. In English, the word 'stake' means a pointed piece of wood (or metal) that is hammered into the ground. During the colonization of the United States, colonialists could get title to land from the government by 'staking a claim', that is, literally putting stakes in the ground to mark the property they were claiming. So a 'stakeholder' is someone who has a claim to influence a process or participate in making a decision. In planning, the literal meaning is expanded to include claims based on social, political, economic, health, or other concerns. 'Actor' is sometimes used as an alternative word for 'stakeholder,' Stakeholders that are typically recognized as having a clear stake in waste management are listed below in the left column. However, there are also stakeholders that go unrecognized, listed below on the right. What is likely to be their stake in modern solid waste management?

Recognized stakeholders in solid waste include:
Households and businesses who generate waste
Municipal works or waste departments
The mayor and/or the city council
The environmental ministry or inspectorate
Private companies who offer waste services
The 'abutters'- households next to the dumpsite
Employees of the municipal department
Private owners of dumpsites or recycling companies
A women's union interested in a clean community
Environmental NGO's

Unrecognised stakeholders can be:
Schoolteachers and students
Farmers and gardeners
Nurses in a hospital or medical school
Players in a football team
The political party in opposition
The hydroelectric utility company
The hewlett packard or phillips company
The national bank
The university's department of economics
The World Bank

Institutionally, solid waste is kind of an orphan. Prior to modernization, it is usually considered as part of the work of the health ministry, where it has a rather minor position because more urgent issues like HIV and infant mortality are closer to the health ministry's 'core business'. As part of the task package of local authorities, it sometimes comes under the interior or local government ministry, or land-use planning department, where it is seen as less urgent than decentralization, taxation, migration or more direct poverty alleviation activities. In the modernization process, it usually gets assigned to the environmental ministry, along with water and sanitation, but, even there, the 'green' issues of nature protection and biodiversity and the 'blue' issues relating to water, marine environments and fisheries usually get more attention and larger budgets.

Communication and participation in relation to solid waste touch on all these aspects, and many others as well.

COMMUNICATION BETWEEN PROVIDERS AND USERS

In the social practices model, shown in Figure 5, it is clear that providers and users are in a dynamic relationship focused on solid waste practices; but what do they actually do, and what are their communication needs? The users of the service have a right to say what kind of service they want, and the main communication mode for this is participation in planning. Moreover, compliance and payment behaviour are also forms of communication: people communicate their satisfaction or disgust by complying with, or disregarding, what they are asked to do, but also by showing what they are willing to pay for, as Case Example 13 (p. 66) suggests.

Users cooperate better if they understand why solid waste services are set up in a particular way, and they are in a good position to monitor effectiveness and serve as a source of information as to how it is working. Therefore, part of sustainable waste management is setting up *permanent, multidirectional channels of communication.*

The providers of the service are what make the system work. They usually focus on the technical parts of the service, and are under constant pressure to please the political and administrative authorities. Public sector service providers tend not to have very frequent contact with the clients; private providers who are paid directly often have more, especially in Africa where they usually have to collect their own fees directly from households. The people in provider organizations tend to be overworked and underpaid, and they suffer from the fact that their work has a low status: there is a tendency to assume that anyone who does 'dirty work' is somehow a 'dirty person'. [5] In the midst of this stress, providers and their staff may forget why they are working and for whom.

Because the success of solid waste management depends on a high degree of co-operation and trust between users and providers, successful initiatives to improve and modernise solid waste services require that both users and providers change habitual attitudes and learn new behaviours. In order for this process of innovation and mutual adaptation to work smoothly and effectively, there is a need for clear and repeated communication, and the information channels need to be maintained.

CATEGORIES OF COMMUNICATION

There are many different kinds of communication that are important in ISWM. Table 3 (p. 67), illustrates some different types of communication activities. Case Example 14 (p. 68) shows how these different forms of communication can be applied within a single community.

5 In many countries, waste work in both the formal and informal sectors is reserved for members of disadvantaged religious or ethnic minorities: in Egypt, Coptic Christians; in India, Muslims; in the Balkans, Roma people; in New York, the dominant group of new immigrants.

CASE EXAMPLE 13

> Creating trust and willingness to pay

When the Japanese development agency JICA prepared a solid waste plan for Nairobi in 1995, they found that no-one was willing to pay for solid waste services, because no-one believed that improvements in their horribly dirty city was possible. JICA, together with the city council and some private companies, set up an experiment to test this result, and to see whether it was possible to change opinions. They organized waste collection in several low-, medium-, and high-income communities, 'free' for the first three months. After three months of experiencing what it was like to live in an area that was clean and free of waste, the residents of all of the 'test' communities indicated that they were willing to pay quite a lot, in order to have the service continue.

Source: WASTE feasibility study for a PPP in Nairobi, 1999

Educational communication	The main goal is for the sender to explain and for the receiver to understand something intellectually, or in practice, that they did not understand before. The content is usually information.
Instructional communication	The main goal is for the sender to make clear what is expected of the receiver, and for the receiver to act differently and according to the instructions received. The content is usually instructions.
Participation	The main goal is to stimulate a contribution to – or to contribute to – processes of decision-making or priority setting. In participation, communication is multi-directional and there are multiple senders and receivers. The content is usually questions, discussions, proposals, problem-solving.
Feedback	The main goal is to provide practical information on how something is working or what people think. The sender is usually not the provider, but the user or beneficiary. The content is usually observations or criticisms.
Strategic communication or propaganda	The main goal is to change power relations, boundary conditions or opinions. The sender is often taking indirect action to improve their own image or situation, and the goal is for the receiver to 'buy' the message. The content is usually interpretations.
Reinforcement or advertising	The main goal is to increase the familiarity, approval, understanding or name recognition of a product, service or behaviour. The sender has already sent the main message, the goal of reinforcement is to stabilize the information and stimulate continued practice, until the new behaviour becomes habitual. The content is usually images, slogans or pictures.

Table 3.
Types of communication in ISWM

TRANSPARENCY AND PARTICIPATION (=CREATING FEEDBACK MECHANISMS FOR CITIZENS AND PROMOTING PARTICIPATION)

Solid waste systems function well when communication occurs on a regular basis, and there are basic, accepted agreements about responsibilities. Communication strategies can help bring about a situation where users agree to:

- Participate in decision-making
- Follow the rules
- Adapt habits and behaviours
- Pay their fees fully and on time
- Communicate with neighbours and authorities
- Report problems

A related issue refers to creating feedback mechanisms: how is the population invited to provide feedback to the municipality – on the waste service, on the use of resources, and on the more abstract issues of transparency and accountability? Feedback on the organization of collection and disposal is necessary both to be able to make improvements to the service and to create sufficient trust among inhabitants that their opinions and ideas are taken into account.

Communication and feedback are also important in holding providers to their side of the bargain, which involves:

- Making decisions transparent

CASE EXAMPLE 14

> Different kinds of communication in Nijmegen and Masaya

In June 2006, the Dutch municipality of Nijmegen started a LOGO South multi-year project with the municipality of Masaya, Nicaragua. The project aims to strengthen the capacity of the municipality of Masaya in the field of solid waste management; a key sub-objectives is development of capacities in the area of environmental education. In 2006, the Environment Education Centre Nijmegen (MEC) worked with the environmental education staff in Masaya to develop a strategy and plan for environmental education was in the framework of the multi-year LOGO South project. The primary educational objective was to raise the level of awareness among system users, of the necessity to pay for the collection of solid waste. A secondary goal was to change the attitude of the population towards solid waste in general. Using the classification of types of communication activities in Table 3, it is possible to say that most of the activities that were implemented within the bilateral Nijmegen-Masaya project fall into category six, and consist of reinforcement and advertising. A variety of activities have been implemented, including the development of publicity films, radio commercials, billboards, T-shirts and caps. These provide physical reminders to the citizens of Masaya of the need to change their solid waste and recycling behaviour.

Source: LOGO South staff and programme materials

- Providing effective and consistent services
- Using the fees that are collected for the services that they are designed to pay for, and not for something else, even if that 'something else' is urgent or has a high priority
- Being accountable to and listening to the users
- Communicating clearly and explaining the system clearly to users and political constituents

Sustainable community participation, based on multidirectional communication, is more than simply public relations, public education, or awareness raising. It should give the clients and the community a real voice in decision-making, asking them for and listening to their opinions and comments. A really good community participation strategy encourages increasing levels of responsibility and commitment, often in the form of a working group or platform, and includes client participation in:

- Identifying problems
- Communicating wants and needs
- Understanding options and constraints
- Prioritizing problem-solving activities
- Assessing feasibility and practicality
- Providing continuous and critical feedback

Participatory planning techniques can support users in understanding and influencing:

- How they sort, store and prepare waste
- The rules for transferring waste from the household to the collector ('set-out')
- The timing and frequency of waste collection
- Complaints procedures

EDUCATION AND CAPACITY STRENGTHENING (=INCLUDING AWARENESS RAISING AND HEALTH EDUCATION ACTIVITIES IN PROJECTS)

Continuous commitment to facilitating citizen participation and awareness raising is crucial in any municipal project, and in solid waste management it is essential. For example, if local fee collection for Solid Waste Management services is being introduced, the active involvement of the local population is key. This can be organized, for example, by creating local environmental committees.

Educational or PR events can help providers organize and communicate options or choices relating to:

- The types of wastes that will be accepted
- The definition of hazardous waste
- The procedures for separate collection of organics or recyclables
- The billing and fee collection procedures
- The enforcement and penalty approaches

Environmental education and awareness campaigns, such as the ones in Case Example 14 and Case Example 15 (p. 70) can stimulate users to know and care about:

- Public health issues
- Technical aspects of the system
- Trade-offs between cost and quality
- Prevention, reduction and re-use
- Environmental effects of their actions

Practical approaches for engagement and participation

STRATEGIC COMMUNICATION AND A COMMUNICATION STRATEGY

It is important to identify the goals of the communication strategy. Is the goal to raise the interest of stakeholders and in this way to engage them in a process? If so, airing controversial opinions or having messages given out by popular figures may be effective, as was the case when Amsterdam was introducing the collection of organic waste ('GFT') in the 1980s. Asking for specific information or opinions can be useful in opening communication channels, along with asking those who are the most vocal to participate in researching practical solutions or analysing the functioning of current systems. Communication can have a strategic impact in helping project leaders understand preferences, identify potential sources of resistance, reach solutions that please most of the stakeholders most of the time, and harmonize the expectations of providers and users.

CASE EXAMPLE 15

> Leiden and Buffalo City: how knowledge about education and communication in the Netherlands can be transferred to a LOGO South partner

In the 1970s, the Dutch municipality of Leiden started a twinning relation with the municipality of Buffalo City in South Africa. Within the framework of this twinning relationship, the municipalities of Leiden and Buffalo City started a LOGO South multi-year project in the field of solid waste management in September 2006. One goal of the project is to promote community involvement in solid waste management.

A project team was established in 2006 within the Solid Waste department of Buffalo City, consisting of communication experts and ward councillors. Since 2007, the project team has developed and implemented a communication plan and strategy in co-operation with the communication and health departments of Buffalo City. The communication plan was developed with the assistance of a communication expert from the municipality of Leiden and is good example of a product produced jointly by staff of a Dutch and South African municipality.

Source: LOGO South programme staff of the Municipality of Leiden, the Netherlands

Strategic communication approaches involve focusing on:

- The intended content of the message
- The target group
- The context and timing for release of information
- The likely effect on the target group
- Possible sources of confusion or distress

Good communication staff tend to think strategically about:

- Who should be bearing and hearing the message
- The interests and influences of those receiving the message
- The impact on the message bearer of becoming associated with the message
- The invitation/opportunity that the message carries, and how it asks hearers to reply or respond

Once the goals are clear, it is useful to think about, and create, a clear strategy that becomes the basis for your plan and activities. This involves finding answers for the following questions:

- What is the main message: invitation, identification, instruction, information?
- Is the communication one-way or bi-directional?
- Are you inviting or expecting a response, and in what form do you want it?
- What mode matches the communication goals? For example, to promote source separation, you need the communication to reach the house, and preferably the kitchen.

ONCE IS NOT ENOUGH

Experience suggests that it takes seven communication events each year to get a message across, and to maintain the level of participation that is desired. This type of reinforcement works best when the seven messages are transmitted in different modes or through the use of different media. This is especially true if you are trying to encourage behavioural change. In LOGO South, we call this '7 times in 7 ways'; it takes a lot of effort, and achieving this level is critical, but it does work.

- *mail, email or messenger*
- *moving posters on buses, trucks or collection carts*
- *posters in shops or on billboards*
- *meetings with community leaders*
- *information painted on buildings*
- *community meetings (in community halls, health centres, social clubs, etc.)*
- *radio or TV ads or announcements*
- *focus groups at home or at work*
- *poster, art, song or slogan contests*
- *workshops, training, courses*
- *fairs, festivals, puppet shows*
- *clean-up and launching events and events*
- *surprise home visits with prizes*
- *community contests (cleanest street, building, park)*
- *home discussion / demonstration visits*
- *sermons by religious leaders*
- *distribution of leaflets*
- *school events, field visits*
- *newspaper or magazine articles*
- *announcements at sporting events*

Table 4.
7 times in 7 ways – a resource list of activities

Factors which contribute to success and sustainability in all solid waste activities include a committed and active community, and frequent, trusted two-way communications between providers and users. Participatory planning and monitoring not only help get there, they support and maintain trust and transparency.

On the operational side, success factors for sustainability include financial transparency, a reliable, flexible and regular service, and plenty of low-threshold opportunities for feedback through walk-in possibilities, hotlines or frequent evaluations.

PROGRESSIVE CITIZEN ENGAGEMENT

Progressive citizen engagement is a strategy through which the LOGO South partners invite their citizens to engage with ISWM at increasing levels of intensity. At the first level, the goal is to help citizens, in their roles as users, to feel individually responsible at the neighbourhood level. On this first level, you can ask users to:

- Clean around their homes and compounds
- Educate children not to litter

CASE EXAMPLE 16

> Education for Solid Waste Management in Vlissingen, the Netherlands, and Ambon, Indonesia

The relationship between Ambon and Vlissingen dates back to 1987 and started with an agreement between the Hogeschool Zeeland in Vlissingen and the Universitas Pattimura in Ambon. In 1989, a letter of intent was signed between the municipality of Ambon and the municipality of Vlissingen, but approval of the relationship by the Indonesian Ministry of Internal Affairs had to wait until 1996, when the so-called 'Pronk dispute' was resolved. In 1996, a feasibility study was carried out in which solid waste was identified as a desirable field for cooperation, and an official sister-city agreement between the two municipalities – the only one in Indonesia at the time – was signed in the same year in Ambon.

In the period 1998-2001, the municipality of Vlissingen was unable to secure financing for these projects because rioting between religious groups meant that donor organizations were very reluctant to grant funds for projects in Ambon. By 2003, the riots were diminishing and a new agreement was signed between the two municipalities in which solid waste management was named as an area for co-operation.

In November 2005, a proposal for a LOGO South project was submitted to VNG International and the contract for this project was signed in July 2006. One of the aims of the multi-year project is to raise the awareness of the citizens of Ambon regarding the handling of solid waste and the need to pay for waste collection. At the start of the project, the Ambon population were only hearing about the importance of waste collection through radio, television and posters. Within the framework of the multi-year project, local public educators were trained by MICMEC, the environmental information and education centre of the municipality of Vlissingen, and began educating the people of Ambon by making presentatons in schools, churches and other public venues. The bilateral partners are now working on the establishment of an environment education and information centre in Ambon town hall within the framework of this project. The training of public educators will continue in 2008 to equip them to manage the centre. It will offer programmes and materials focusing on how to handle waste in a sustainable manner, to use natural materials instead of plastics, to collect materials for recycling such as plastics and empty bottles, and to practise home composting. All of these activities are already being carried out in some schools in Ambon as pilot projects.

The current focus of the educational exchange is translating educational materials from Vlissingen for use in Ambon schools. Some primary schools in Vlissingen have a special exchange relationship with the primary schools in Ambon and will be following the same lessons, and exchanging ideas and experiences.

Another important goal of the relationship is the upgrading of the daily solid waste service operated by Ambon's waste department. This ranges from waste collection and dumping and processing of waste up till the organizational management of the department and the maintenance of vehicles and equipment. In addition, the department will shortly start collecting old batteries in co-operation with some retail shops that sell new batteries.

The twinned cities believe that increasing awareness of the importance of sustainable waste handling in Ambon will stimulate citizens such that they will be willing to pay more for the collection and processing of waste by the local waste department. Part of the upgrading of the department will involve raising the tariff for waste collection and modifying the regulations related to waste collection and processing. Income should cover almost all of the costs of the waste department, when combined with revenues from the recycling of collected materials and the sale of compost from the Ambon composting plant, which was donated by UNDP.

Source: LOGO South and Municipality of Vlissingen staff and volunteers.

- Prepare and set out waste at the right time, use the waste collection points correctly, practice source separation
- Exchange information on health risks
- Provide feedback to the municipality on services, problems, cleanliness of public spaces, etc.

The second level of progressive citizen engagement has the goal of establishing and stabilizing collective or community participation. This builds social capital and trust, through increasing the social benefits of group participation. Examples are:

- Organizing clean-up campaigns, sweeping public spaces, meetings with associations and local authorities
- Leading awareness-raising actions as coordinators, voluntary sweepers, community health workers, area supervisors, etc.
- Leading door-to-door actions or campaigns in public spaces

At the third level, progressive citizen engagement can encourage users to take on some of the roles of service providers, through even more active participation. This is particularly important in peri-urban or village settings in the South, where there is little infrastructure or the municipal authorities cannot provide much assistance. It can also be effective in promoting affordable services – where poor people pay other poor people at a level they can afford and manage. In this category, one can think of users making material or financial contributions to activities by:

- Physically participating in the operation of services (cart operators, sweepers, etc.)
- Paying regular fees for waste management services
- Donating funds for equipment, donating or lending land for sorting and recovery operations
- Becoming a master composter, or working on other areas of modern self-provisioning.

At the fourth and highest level, progressive citizen engagement can mean assuming operational or political responsibilities in community and city management. When community leaders or micro-entrepreneurs in solid waste are elected to city council positions, this has a significant impact on waste services. This happened with the election of two micro-entrepreneurs in Commune IV in Bamako in 2001, and immediately raised the profile and priority of solid waste management. High-level engagement can result in citizen-users participating politically or financially in management, chairing platforms and public health committees, and assuming responsibility and accountability for decisions taken.

In general, the benefit of high-level participation and engagement are that this reduces the likelihood of conflict and resistance, and avoids the costs associated with conflict. In technical terms, engagement can translate into:

- High recovery rates for recyclables and organics
- Better performance by providers
- Greater motivation of provider staff
- Decreased littering and illegal dumping
- Faster feedback and information on problems

Summary and conclusions for Chapter 4

Solid waste is a highly social area of urban environmental management. Communication, seen as a form of community and stakeholder participation, is even more important during modernization than before because it helps in building trust, sharing information and inviting participation.

- The key actors in communication within the solid waste system are the local government and its citizens, in their respective roles as providers and users of the services associated with the solid waste system.
- Identification and recognition of the wider list of stakeholders involved in solid waste management is crucial, because everyone is either affected by it or influences its functioning. For this reason, solid waste is a good entry point for working on governance.
- Communication needs to be multidirectional

and continuous; the municipality needs to both listen and promote its ideas and activities; empowered community need to to participate in planning and decision-making, and able to provide feedback.

- Trust and the opportunity to share are crucial when creating permanent and open multi-directional channels of communication for stakeholders to offer feedback to the local authorities. This enables them to monitor effectiveness and to serve as a source of information on how the solid waste management system is working.

Chapter 5
Final conclusions on the overall approach

There are considerable challenges in using a city twinning relationship as the basis for working on solid waste issues. In the text, and in the case examples, some of these challenges have been presented in the context of a general introduction to solid waste management.

LOGO South is a programme which combines political and professional exchanges with twinning organizations: with the goal of improving solid waste management and recycling in seven South municipalities. Some of the key challenges have included:

- Building trust and a shared understanding of the problems of solid waste management
- Getting beyond stereotypes that everything works well in the Netherlands and badly in the South
- Deconstructing the misunderstandings and reaching a consensus
- Distinguishing between the structure and nature of solid waste services and of commodity trading
- Understanding that there are many actors in solid waste issues – and especially recycling – in the South, and that this field is, therefore, much more diverse in such cities than in the Netherlands

Perhaps the most critical insight from the programme is that governance, finance and participation form a critical circle, with integrated sustainable waste management at the centre. For sustainable waste management and high-performance recycling one has to close this circle. We hope that the information in this publication will help readers to succeed in this endeavour.

Annex 1

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Annex 2
References, sources and additional reading

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Website Description

www.waste.nl
Website of WASTE, specialists on solid waste in South countries. Most documents available for free downloading

www.cwgnet.net
Website of the Collaborative Working Group on Solid Waste Management in Low- and Middle-Income Countries (the CWG). Has access to articles, conference proceedings, networking information, and a working group on the global informal sector in solid waste.

www.epa.gov
Website of the United States Environmental Protection Agency. Has a publication called 'full cost accounting for municipal solid waste management: a handbook' (ca. 60 pages); EPA 530-R-95-041, September 1997

www.ilo.org
Website of the International Labour Organization. The ILO has a wide variety of very useful publications on solid waste services by and for the poor, including 'Start your own Waste Collection Service; Business Plan'

www.iswa.org
Website of the International Solid Waste Management Association. ISWA publishes Waste Management World, www.waste-management-world.com

www.skat.ch
A Swiss NGO consultancy. Secretariat of the CWG, and specializes in the Brown environmental agenda

www.worldbank.org/solidwaste
Website of the World Bank. Contains, has a great deal of very good information on solid waste management in developing countries

www.unep.or.jp/ietc/issues/Urban.asp
Website of the former office of UN-International Environmental Technology Center in Japan, publisher of the UN Solid Waste Source Book.

Annex 3
Glossary of waste management and recycling terminology

Term	Other Terms or Abbreviations Used	Working Definition
Activities at source	prevention, re-use, backyard burning, source reduction	The document refers to waste management activities by households and household-related personnel such as burning, burying, feeding waste to animals, segregation, re-use for own consumption
AVI	WTE, incinerator	The Dutch term for a waste incinerator that generates energy
Avoided cost of disposal	diversion credit	The amount that would have been paid per kilo for disposing of materials in a controlled or sanitary landfill by paying the official tipping fee
Broker	stockist, dealer	A trader in one or more types or grades of recyclables who trades without ever being the physical owner of the materials, usually having no storage place
Capital cost	investment cost, capital, purchase cost	The amount it costs to purchase new equipment, facilities, space, buildings, etc.
Capture rate	separation rate	A percent or ratio relating the amount of recoverable materials that are directed to processes of recycling or composting and the total amount collected
CBO	community-based organization grassroots organization	A group organized to provide a solid waste function or service in a community, often fully or partially staffed by volunteers
Characterization study Waste audit	composition study	Describing the components of a particular waste stream: results in a list of materials and their percentage occurrence
Coefficient	ratio, parameter	A mathematical relationship that describes part of the waste system, such as kg per waste picker per day
Collection coverage	coverage, effectiveness	The percentage of the total (household and commercial) waste generating points that have regular waste collection or removal
Collection efficiency	efficiency, collection coefficient	One or more measures of the performance of the collection system, usually expressed as households/vehicle/day or tonnes/litre of fuel used or distance travelled/litre of fuel

Commercial waste	business waste, shop waste, small quantity generator waste	Waste which comes from shops, services and other generators which are neither residential nor industrial. Sometimes includes institutional or public sector waste.
Community	barrio, barangay district	A grouping within a city, it may be as small as a group of neighbours or as large as a sub-municipal division, and may or may not have formal governance functions
Composition	characterization physical composition	The aerobic decomposition of materials from living organisms under controlled conditions and in the presence of oxygen
Construction & demolition waste	debris, c&d, rubble, contractor waste	Waste from the process of construction, demolition or repair of houses, commercial buildings, roads, bridges, etc. Generally divided into commercial construction waste from construction companies, and do-it-yourself (diy) waste from homeowners making their own repairs.
Co-operative	co-op, buyers association, sellers association	An enterprise organized as a cooperative with multiple owners who participate in the activities. In some Latin American countries, cooperatives have a special tax status and so are a favoured form for establishing a business.
Coverage	collection rate	See collection coverage
Depot	deposit, drop-off, community collection point, community container	A container, site or facility designed to receive waste materials and/or separated recyclables directly from the generator.
Diftar ('Differentiated Tariff, Dutch)	volume-based fee, prepay bag system, sticker, pay-as-you-throw	A system for assessing the cost of removal and allocating it to users based on the volume or weight of the waste and/or materials handled
Disposal site	dumpsite, dump, depot	The site where solid wastes are deposited on land without precautions regarding human health or the environment.
Dry waste	recyclables, packaging, inorganic waste	What is left after organics are separated at source. Alternatively, a way of describing a fraction that is to be further sorted into its components
Dump picker	scavenger, waste picker	Woman, man, child or family who extract s recyclable materials from disposal sites
Dumpster	container, skip	A vessel to contain waste, usually larger than 1 m3 and used for more than one household
Effectiveness	coverage	See coverage
Efficiency	collection efficiency	One or more measures of the performance of the collection system, usually expressed as households/vehicle/day or tonnes/litre of fuel used or distance travelled/litre of fuel

Fee	tariff, solid waste fee	The amount paid by a user for a service, generally refers to what is paid for the combination of primary (from the house to the storage place) and secondary collection, transfer and disposal.
Ferrous metals	iron, steel, ferro-metals	Metals which contain iron and which react to a magnet and are subject to rusting.
Formal sector	official, government	Used to mean the official solid waste authorities and the activities they sponsor and operate.
Formal waste sector	solid waste system, solid waste authorities, government, materials recovery facility	Solid waste management activities planned, sponsored, financed, carried out or regulated and and/or recognized by the formal local authorities or their agents., usually through contracts, licences or concessions.
Generator	user, waste producer, household, business,	The source of the waste, that is, the first point it becomes waste.
GFT (Dutch terminology)	kitchen and garden waste, organic waste, household organics, wet waste	Primarily plant waste from cooking, leftover food, flowers, plants, branches, leaves and other plant wastes from garden and yard.
Household container	set-out container, bin, waste or garbage can, waste or dustbin	The vessel used by a household or commercial generator to store and set out waste materials, usually made of metal, plastic, rubber or a basket.
Household waste	municipal solid waste, domestic waste, msw, non -dangerous waste	Discarded materials from households which are generated in everyday life
Incineration	burning, combustion	Controlled process by which solid, liquid or gaseous combustible wastes are burned and converted into energy, gases, and residues, including fly ash and bottom ash
Informal sector	waste pickers, rag pickers, scavengers, junk shops, informal private sector, micro private sector, micro private recyclers	Individuals or enterprises who are involved in waste activities but are not sponsored, financed, recognized or approved by the formal solid waste authorities, or who operate in violation of or in competition with formal authorities.
Itinerant waste buyer	IWB	Woman, man, child, family or enterprise that purchases source-separated waste materials from households, shops or institutions, usually focusing on one specific material or type of materials.
KCA (Dutch) *HHW (English)*	Household hazardous waste,	Materials such as household chemicals, medicines, detergents, paints which are used in normal households safely but are dangerous when disposed of in a dumpsite.

Landfill	dump, dumpsite relleno sanitario	The engineered deposit of waste onto and into land.
Mass balance	process flow diagram, materials flow diagram, chain analysis	A visual schematic representation of the movement of materials through the entire waste system or only the formal or informal waste system, which indicates the weight of each fraction at each stage
MRF- Materials Recovery Facility	ipc, ipf, intermediate processing centre/ facility, recycling processing centre	An industrial facility of moderate scale that is designed for post-collection sorting, processing and packing of recyclable and compostable materials. It is usually of moderate technical complexity with a combination of automated and hand-sorting. The inputs are usually mixed recyclables rather than mixed waste. The outputs are industrial grade materials, usually crushed or baled and separated by type, colour, etc.
MSE	Micro- and small enterprise. micro-enterprise, junk shops, materials recovery facility	The smallest businesses, smaller than smes, usually with less than 10 workers
Municipality	local government authority, mayor's house, mayoralty, city, town, village	A unit of local government with its own level of governance, responsibility and representation
Non-ferrous metals	coloured metals semi-precious metals aluminium, copper, bronze, lead	Metals that do not contain iron and are not magnetic such as copper, aluminium, brass, bronze, silver and nickel.
O&M cost	operating and maintenance cost, operating cost	Costs associated with ongoing operations, such as energy, supplies, labour and rent.
Organic waste	bio-waste, green waste, wet waste, organics, gft, putrescibles, compostables, food waste	The decomposable fraction of domestic and commercial wastes, includes kitchen and garden wastes, sometimes includes animal products.
Organized re-use	repair, re-use, product recycling	A commercial or livelihood activity focused on extraction, repair and sale of specific items in the waste stream. An example is the recovery of up to 20 different types of glass bottles in the Philippines.

PPP	Public-private partnership	A range of relationships between the public sector (including municipalities, public agencies such as the military or a public university, and parastatal organizations) and private sector businesses. The private sector element in a ppp can range from informal recyclers and micro-enterprises to multinational enterprises.
Pre-processing	sorting, screening, sieving, compaction, densification, size reduction, washing, drying	Preparing waste materials for subsequent processing without adding significant value to them
Primary collection	pre-collection, house-to-house collection	Preparing waste materials for subsequent processing without adding significant value to them
Process flow diagram	pdf, materials flow, chain analysis	A visual schematic representation of the movement of materials through the entire waste system, which does NOT indicate the weight of each fraction at each stage
Processing	beneficiation, upgrading	Manual or mechanical operations to preserve or re-introduce value-added into materials. Usually involves densification, size reduction, sorting, and then packaging or transport.
Provider	service organization, waste collection firm, public works department, hauler	The entity providing the removal service, either public or private, formal or informal, micro-, small, medium, or large.
Recovery rate	capture rate	The percentage relationship between the amount of recoverable materials that reach recycling, composting or energy recovery and the total amount generated.
Recyclables	recoverables	For the purposes of the document, 14 types of materials which have a value to the users and may also have a price.
Recyclers	scavengers, waste pickers, mrfs, junk shops	Entrepreneurs involved in recycling.
Recycling		Processing and transformation of waste materials to be used in products that may or may not be similar to the original.
Recycling or composting market	end-user industry, buyer, dealer, broker	A business, individual, organization or enterprise that is prepared to accept and pay for materials recovered from the waste stream on a regular or structural basis, even when there is no payment made.
Recovery	resource recovery, energy recovery, reuse, materials recovery, recycling, or a combination of these	Process of extracting economically usable materials or energy from wastes. May involve recycling.

Residual waste	rest-waste, rest-fraction, residue, rejected	The discarded materials remaining in the waste stream or on the sorting line because they are not recyclable or compostable or because they are perceived to have little or no monetary value.
Re-use	second hand use	Use of waste materials or discarded products in the same form without significant transformation.
Sanitary landfill	landfill, state-of-the-art landfill, controlled landfill	An engineered method of disposing of solid wastes on land in a manner that protects human health and the environment. The waste is compacted and covered every day. The landfill is sealed from the ground below, and leachate is collected. There is gate control and a weighbridge.
Sanitation	solid waste, urban cleansing	In the 'French sense' used to refer to urban environmental activities including solid waste management.
Secondary collection	transfer, small transfer station	The movement of wastes collected from households from their first dumping point to processing facilities, larger-scale transfer points or final disposal.
Separate collection	segregated collection, collection of recyclables, organics collection, selective collection	Collection of different types of materials at different times, or in different containers or vehicles, or in another way so as to maintain the separation and maximize the recovery.
Separation at source	segregation at source	Actions taken by a household to keep certain materials separate from others.
SME	small and medium-sized business, small business	Businesses usually having between 11 and 50 employees or workers.
Solid waste	garbage, trash, waste, rubbish	Materials that are discarded or rejected when their owner considers them to be spent, useless, worthless or in excess of the requirements.
Sorting	classification, high-grading, selection	Separating mixed materials into single-material components, mechanically or manually. In some cases classifying a mixed single-material stream into specific grades or types of that material.
Source	generator, origin	The point at which a material is defined as waste and discarded. Usually either a house or a business.
Source separation	separation at source, segregation at source	Actions taken to keep and store certain materials separately from commingled (mixed) waste at the point of generation.
Street picker	street scavenger, waste picker	Woman, man, child or family who removes recyclable materials from dumpsters, streets and public places.
Swine feed	pig slops, swill, organic waste	Food wastes collected from the household and commercial sectors which are either sold or used to feed pigs.

Tariff	fee, price of collection or other service	What a user pays for a service, generally refers to what is paid for the combination of primary (from the house to the storage place) and secondary collection, transfer and disposal.
Tipping fee	dump fee, tip fee	Payment to discharge waste at a transfer station, composting facility, incinerator or landfill for the service of disposing of waste. Is usually assessed per tonne, per cubic metre, or per vehicle-load or 'trip'.
Transfer	transit, collection point, depot	The movement of wastes from their first point of dumping to final disposal; it usually includes some very basic processing: compaction, pre-sorting or size reduction.
Transfer station	transit point	A place where waste from collection vehicles is assembled before being transported to disposal sites or treatment stations.
Treatment	decontamination, processing, composting, beneficiation, sorting, baling	Manual or mechanical operations to make discarded or disposed materials or mixed waste less dangerous or to improve its physical characteristics so that it is easier to incinerate or landfill. In some locations also used to mean conserving value-added.
Valorization	recycling, recovery, conserving value-added	The entire process of extracting, storing, collecting, or processing materials from the waste stream in order to extract the economic value-added.
User	client, household, business, waste generator, waste disposer	The entity that benefits from the service of removal or cleaning. In this document, usually a household but can also be a business.
Waste audit	waste assessment, walk-through	A visit to a factory, office or institution for the purpose of inventorying and analysing the ways in which waste is generated, handled, managed and removed.
Waste dealer	junk shop owner, scrap trader, consolidator, waste buyer	Individual or business purchasing materials for recycling or composting, storing them, upgrading or processing them, and then reselling them, or someone who trades in recyclables and uses a dedicated storage place.
Waste picker	scavenger, rag picker	Person who salvages recyclable materials from streets, public places or disposal sites.
Weighbridge	scale, wheel scale, truck balance	A facility for weighing trucks, which produces a written record of the weight on the basis of which an invoice can be sent for the service of dumping
Wet waste	organic waste, green waste, organics	Used both for the physically wet part of the waste stream and to describe compostable waste separated at source from dry or recyclable waste.
Willingness to pay	price elasticity for solid waste service	The level and rate at which users (or their proxies) are willing to pay providers (or their agents).

VNG International
International Co-operation Agency of the Association of Netherlands Municipalities

Committed to strengthening democratic local government worldwide

VNG International supports decentralization processes and facilitates decentralised co-operation. The organisation strengthens local governments, their associations, training institutes and decentralization task forces both in the developing countries as in countries in transition. In addition, our Service Bureau Europe assists municipalities from the Netherlands and other EU countries in accessing European subsidies. We have a large network of internationally experienced experts, most of whom are municipal practitioners. Our home office counts 45 dedicated staff. Ten more work for our project offices. We have two daughter companies: MEPCO and CMRA. MEPCO is a joint venture of VNG International and the Union of Towns and Municipalities in the Czech Republic; CMRA is a joint venture of VNG International and the South African Local Government Association.

Waste
WASTE advisers on urban environment and development facilitates the dissemination of knowledge and supports activities on urban waste management and sanitation of southern partners. With our partners we work towards sustainable improvement of the urban environment while contributing to the living conditions of the low-income population.

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