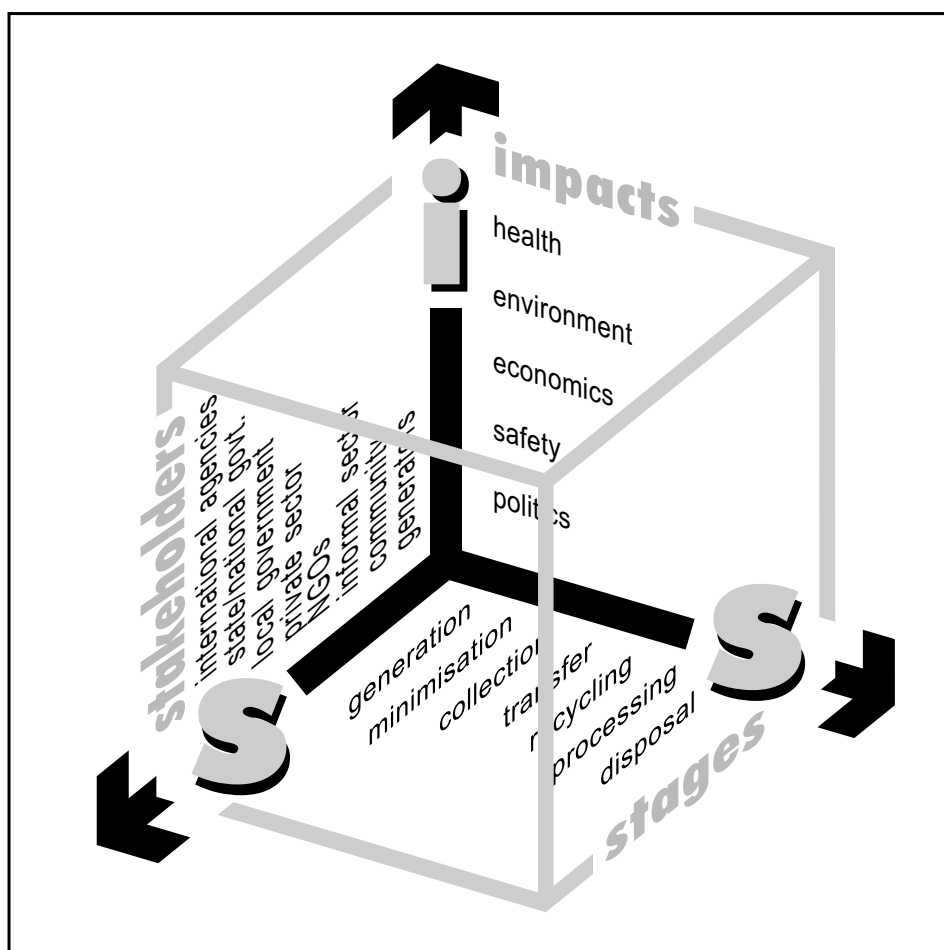


Planning for Sustainable and Integrated Solid Waste Management

18 to 21 September 2000



SKAT



**Collaborative Working Group on Solid Waste Management
in Low- and Middle-income Countries**

Manila, The Philippines

edited by Adrian Coad, SKAT

Workshop Report

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The Background to the Workshop

This workshop was the fifth in the series of workshops on solid waste management that have been organised by the Collaborative Working Group (CWG). (Annex 4 provides more information on the CWG and the previous meetings.)

The topic for this workshop – Planning for sustainable and integrated solid waste management – was decided at the previous meeting of the CWG in Belo Horizonte in 1998. The title was deliberately made slightly different from the term “Integrated sustainable waste management” since this term has been coined by UWEP to denote a particular approach to the planning, implementation and evaluation of waste management projects. The theme of the workshop certainly includes the ISWM methodology (as evidenced by the good number of UWEP papers that are presented) but it is also wider than any one particular approach. The Workshop title emphasises the elements of integration and sustainability rather than focusing on certain particular programmes. The word “planning” was incorporated into the title to emphasise the importance of planning in sustainable waste management and to draw attention to one of the key aspects of the workshop, namely the launching of the new “Strategic Planning Guide” which has become the flagship and umbrella of the CWG publication programme.

An introduction to this report

The organisation of the thematic aspects of the Workshop was divided between several CWG members, representing WASTE/UWEP, the World Bank, GTZ, the ILO, CalRecovery Inc. and SKAT. Papers were selected to give a wide geographical and thematic coverage. Most papers were case studies. Since there were many more papers than could be accommodated into the programme for plenary presentations, an opportunity for poster presentations was created, and a number of good papers were presented in this way. (The idea of splitting into specialist sessions was rejected because the theme emphasises integration. It was therefore decided that all participants should have the possibility of attending all sessions, so that all aspects of the Workshop could be integrated into the experience of all participants.)

The complete versions of all papers can be found on the accompanying CD-ROM. To introduce these papers, summaries are included in printed form in this document. (If any readers are unable to access the papers via the CD-ROM, SKAT will endeavour to provide them with printouts of a few selected papers, on request.) The table of contents that follows this introduction also serves as a guide to the contents of the CD-ROM. The CD-ROM also holds *PowerPoint* presentations of some of the papers. (Directions for using the CD-ROM are provided below.)

The discussion of each plenary paper was recorded by questioners and the presenter, and the information that was provided in this way can also be found on the CD-ROM. Brief summaries of the discussion are also printed in this document. There are also records of plenary and panel discussions.

On the CD-ROM there are also various files that relate to the organisation of the Workshop. These organisational details are included in the hope that they might be of some use in the organising of other events.

Annexes Many organisations and individuals played important roles in making the Workshop a success. Their contributions are acknowledged in Annex 1. Annex 2 is a list of participants. The Workshop programme can be found in Annex 3. Some background information about the CWG is given

in Annex 4. Keywords have been identified for each presentation, and there is a keyword and author index in Annex 6 to assist in finding papers, whether the summary in this report or the original on the CD-ROM. The report concludes with a few photographs.

A logo was developed to illustrate the integration of various aspects of solid waste management. This integration is needed at the planning stage if programmes and initiatives are to be sustainable. The logo focuses on the importance of considering all stakeholders, impacts and stages, and on the need to integrate all three of these “axes” into the overall planning exercise. The development of the logo is described in Annex 5.

Quotations Many wise things were said during the workshop. Some of them have been scattered throughout this report. They do not give a comprehensive coverage of the topic, but they may make some readers think – or smile.

Using the CD-ROM The files have been formatted in *Microsoft Word 97*. The files on the CD-ROM can be accessed in the same way as you would access the files saved on your hard disc. Open the CD using *Explorer* and go to the “WELCOME” folder. Open the file called “BEGIN HERE”. Then find the files of your interest either according to the “List of Contents” or according to the “Keywords”

In most cases there are several files associated with one paper – the paper itself, the record of the discussion, perhaps the *PowerPoint* presentation, or, in the case of the poster presentations, photographs of the posters (which are not good quality, but may be of some use). At the end of the papers you will find links to the associated files.

Feedback on format SKAT would be interested to know the opinions of readers and users of this report regarding the suitability of the format and the use of a CD-ROM to hold most of the information. Please pass on your opinions to Jürg Christen or Adrian Coad at SKAT.

quote ...

*While it is government's responsibility to protect public health and the environment,
it is equally the duty of each and every individual to be responsible for the waste
that he or she generates.*

(Secretary Roberto N. Aventajado, Paper 1.4)

NIMBI = Now I must be involved

Editorial

Personal reflections on the Workshop

The papers and discussions of the Workshop form a valuable resource with a long shelf life. I hope that the information and experience within these contributions will be shared and used.

This Workshop has reminded me of the need to be careful in the way we use words. "Sustainable" and "integrated" are excellent words which remind us of important needs. However, to attach these words to particular projects or approaches does not guarantee that all stakeholders, impacts and stages are actually and effectively integrated in the activities, or that the outputs really are sustainable. Are we right to attach the word "sustainable" to a project that has only been operating for one year, and that is still receiving external support?

What trends can be observed in the Workshop?

- ◆ Certainly there are some interesting trends with respect to information dissemination. Compact disks and the Internet allow us to have more extensive, flexible and attractive packages of information and guidance materials. There remains the question as to whether this information is getting to practitioners in municipal administrations and waste management companies, and whether it is in a form that can be used by them. There is still not a computer on every desk, and Internet connections can be very slow.
- ◆ There is a growing realisation of the importance of indicators and performance measures, whether to chart economic and social development of urban areas, to demonstrate the effectiveness of projects, or measure the operational standards that are being achieved. Perhaps insufficient attention is still being given to ensuring the reliability of the raw data that are used to generate these indicators.
- ◆ The Workshop provides evidence of the growing importance that is being given to networks, professional associations and peer support. For too long we have neglected to meet the real needs of professionals involved in the day-to-day operation of waste management activities, and so the establishment of new support mechanisms is greatly to be welcomed. We need to promote and strengthen the concept of waste management as a challenging and fulfilling profession, and reinforce the professional identity of waste managers. National and international networks (such as Africa WasteNet and the CWG) can be very useful in sharing information and integrating specialist knowledge from a variety of fields, and perhaps establishing personal relationships. Professional associations can take this process further, by lobbying, acting as a formal representative of the profession, and introducing professional qualifications and grades of membership.
- ◆ The Workshop represented fairly well the range of skills and disciplines that are needed for effective solid waste management. In earlier years some conferences (not CWG workshops) tended to be polarised, with the social scientists not acknowledging the existence of municipal managers and engineers, and the engineers and municipal officials speaking as if solid waste management is purely a matter of selecting the right technology. It seems that we now acknowledge the existence of each other and our need for each other. Most papers integrated a range of aspects. We have been right in past years to emphasise the need to consider aspects other than technology, but perhaps there is a need to beware of an increasing tendency to think that technology choices do not matter.
- ◆ Policies and strategic planning continue to receive attention. The growing emphasis on consultation in the preparation of these plans is to be welcomed, especially if practitioners are

involved. It used to be common to hear of big master plans that never left the bookshelf. We must endeavour to ensure that the plans we produce respond to real needs and are practical and realistic, and can be implemented to produce sustainable benefits.

- ◆ The rush for privatisation is being challenged by concerns over corruption and transparency. There is a growing concern for the capacity development needed by municipal administrations if they are to be effective in monitoring and supervising private sector operators. There is also some concern that private sector operators may concentrate their efforts in the more prosperous parts of the cities where they work, leaving the poor without a service.
- ◆ Community initiatives continue to receive considerable attention, and there is a growing awareness of the need to integrate them into the whole system, considering both the physical problems of transferring and transporting the waste and its disposal, and the financial problems of meeting the costs of secondary transportation and disposal.
- ◆ There has been an interesting development in healthcare waste management. The papers not only recognise the importance of measures taken before the final disposal stage, but also suggest that training is often not enough to change behaviour. We have all heard a dose of training being prescribed as the cure for all ills, but in reality a single training course is often not enough to change behaviour and practices. We need to consider the whole context of the work situation, including motivations and concerns, and consider integrating training programmes with incentives, supervision and enforcement.
- ◆ We are familiar with the use of the word “resources” to mean finance, employees and equipment, but in several ways throughout the Workshop the factor of time has been mentioned. Time is also a resource. The time frame of projects and other interventions must be long enough to allow the consultation with all stakeholders that was frequently insisted on during this workshop. Training and the raising of awareness take time. There seems to be a correlation between the time taken to establish a programme and its sustainability. Do we allow a sufficient length of time to integrate all stakeholders and refine inputs so that outputs are sustainable? Another aspect of time is the different perception by different stakeholders – the time frame for a politician is usually determined by the next election; shortage of working capital and high interest rates impose an urgency on small enterprises.
- ◆ One area in which little progress seems to have been made is in the subject of disposal. Many people seem to suggest that recycling and composting can replace the need for disposal to land. Whilst this is obviously desirable, if we are being realistic we must realise that disposal to land is a need that will be with us for some time. In my opinion, too little effort is being put into upgrading of dumps and the siting and operation of landfills. This Workshop featured a small number of interesting experiences with landfilling.

I hope that you find this report readable and useful.

Adrian Coad
SKAT, St Gallen,
February 2001

quote ...

Sustainability is a goal. Integration is a tool.

(Group 2 Session 5)

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List of abbreviations

CBO	community-based organisation
CWG	Collaborative Working Group for the promotion of solid waste management in medium- and lower-income countries (See Annex 4).
DENR	Department of the Environment and Natural Resources of the Government of the Philippines
ISWM	Integrated Sustainable Waste Management (see Sections 3-1 and 6-1)
JSO	junk shop operator
LGU	local government unit
MSE	micro- or small enterprise
MSW	municipal solid waste solid wastes from domestic, commercial and institutional sources, and street wastes, but not including hazardous wastes, and certain industrial wastes
MSWM	municipal solid waste management
NGO	Non-governmental organisation
SME	Small or medium enterprise
SWEEP	Solid Waste Ecological Enhancement Program, co-ordinated by DENR of the Philippines
SWM	solid waste management
ULB	Urban local body (India)
UWEP	Urban Waste Expertise Programme an international programme co-ordinated by WASTE Consultants of the Netherlands with funding from the Netherlands Government
WHO	World Health Organisation

Session 1 Opening session

Chair: Carl Bartone

1-1 Opening remarks from DENR

Mr Roseller Pena, Undersecretary for Legal Affairs of the Department of Environment and Natural Resources of the Government of the Philippines, began by welcoming the participants to Manila and to the Workshop. He emphasised the importance of attitudes to solid waste. He reviewed briefly the situation in Manila where 20% to 50% of the waste was not collected, and the closures of the Payatas and San Mateo disposal sites presented major challenges. Added to this was the opposition of communities with disposal sites to the importation of waste from other communities. Big efforts were being put into source segregation, recycling and composting in order to reduce quantities requiring land disposal. He closed by wishing participants success in the Workshop.

1-2 Keynote speech -- Strategies for improving municipal solid waste management (Full paper on CD-ROM)

Carl R Bartone

The World Bank, Washington D C

The Bank's experience

While solid waste is arguably the most decentralized service worldwide, few municipalities in low- and middle-income countries are doing a good job of service delivery. The paper discusses key issues and problems associated with municipal solid waste management projects, and recommends strategies for addressing the issues. It is based on an analysis of the experience gained through 72 solid waste management projects supported by the World Bank over the past decade, totaling investments of more than US\$1 billion. It also builds on the Bank's experience in partnership with the Collaborative Working Group on Solid Waste Management (CWG). Foremost among the conclusions is that a more comprehensive policy framework is needed at the national and local levels that links public health, environmental and decentralization policies more closely together so that they are mutually supportive. To improve future projects, more attention should be given to strategic service planning, better institutional arrangements, more efficient operational management, more effective financial management, and improved environmental protection. Specific recommendations are provided for each of these priority issues. It is encouraging that most of some 20 proposed solid waste projects in the Bank's current pipeline are being designed to take account of these issues and provide integrated waste management solutions.

The World Bank has a thematic group that focuses on urban waste management. This group has 30 active members, but 150 others also subscribe to the knowledge products and tools of this "Garbologists' Club".

Integrated MSWM

An integrated MSWM system starts with the collection and transport operations, and ends with final disposal in a sanitary landfill. These are the essential building blocks of any SWM system. In between are additional operations such as transfer, resource recovery and recycling, and treatment (for example, composting or incineration). Decisions about added operations will depend on both technical and economic/financial feasibility, as well as social acceptability (as household and business participation is essential). These intermediate operations may also require that waste streams not be mixed indiscriminately, which in turn may necessitate household segregation and special storage,

collection and handling of some waste streams – always at increased costs. Whatever recycling or treatment that may take place, there will always be significant residuals/rejects that require landfilling – typical recycling rates reach 25-35% and may take a decade to achieve, while compost rejects are about 40-45% and incineration ash 15-20% of the original waste by weight. Markets for recyclables and compost must also be verified. These considerations point out the need for a comprehensive study of options, selecting the best mix of options based on affordability and cost-effectiveness criteria, and public education and participation as the basis for long-term success.

The CWG has been in operation for five years, begun as an initiative of the SDC, the World Bank, UNDP, UNCHS-UMP, NGOs and experts. (The workshops that have been organised by the CWG are listed in Annex 4, and the list of references for the paper, being recent publications of CWG members, can also be found in the same Annex.) A key document has been the “Conceptual Framework for Municipal Solid Waste Management in Low-Income Countries” which has played an important role in defining the scope of CWG activities.

(The *PowerPoint* presentation of this paper can be found on the CD-ROM, and is most easily accessed via a link at the end of the paper.)

1-3 Welcome from the Organisers

Jürg Christen, on behalf of SKAT, the principle organisers of the Workshop, welcomed the participants. He commented that the participants were drawn from many different disciplines and many different countries, and so he was expecting some very useful discussion and interaction. He also expressed his thanks to the organisations that had sponsored the Workshop and to Dan Lapid and CAPS who had done such good work as local organisers.

1-4 Welcome Address from the Flagship Committee

Since Secretary Aventajado was unable to be present because of negotiations regarding hostages, his welcome address was presented by Johnny Endaya, also of the Presidential Committee on Flagship Programs and Projects. The full text of the address can be found on the CD-ROM.

After extending a warm welcome to participants on behalf of the Government of the Philippines, the address turned to priority issues concerning solid waste management in Greater Metro Manila, based on the writer's experience as Chairman of the Solid Waste Management Committee for this conurbation. The Greater Metro Manila area was facing great pressure to find new disposal options and so a three-pronged strategy had been developed:

- ◆ Intensify programmes on waste reduction, segregation, recycling and composting;
- ◆ Explore alternative processing and disposal technologies;
- ◆ Dispose of the remaining waste in a properly designed and managed sanitary landfill.

The paper then discussed these three options, and concluded by emphasising the responsibility of each person and the need to consider our behaviour as we look for solutions.

Session 2 Philippines presentations

Chair: Luis Diaz

2-1 Government – NGO co-operation for recycling in Manila

by Manuel Gaité and Linda Eggerth

2-1-1 Context

The Philippines has a well-developed sector of non-governmental organisations (NGOs). In almost all sectors of society, there is an NGO organised to champion and advocate a particular cause. In order for a program or project to succeed, it is important to involve NGOs from the outset and to develop a co-operative rather than adversarial relationship. This is clearly the case in waste management.

Metropolitan Manila is the seat of the Philippine government, and the heart of the country's business and international trade. It is comprised of 17 municipalities and cities, with a population of 10.5 million. Approximately one-third of the households are informal dwellers.

This paper presents the collaborative efforts between government and non-governmental organisations in the eco-waste management program in Metro Manila.

2-1-2 Main points

Metro Manila is faced with a grave shortage of satisfactory waste disposal capacity. The situation is described in the first part of the paper. A committee that includes representatives not only of Metro Manila, but also from the eight surrounding provinces, was formed. Three approaches to waste disposal are being developed in parallel. They are

1. eco-waste management, including waste reduction, segregation, recycling and composting
2. alternative technologies, to be demonstrated by proponents who are willing to shoulder all risks,
3. sanitary landfilling, a new landfill to be built and operated under a BOO scheme.

NGOs opposed the proposal of the landfill, claiming that there are viable alternatives. So dialogues have been begun to develop their proposals. The NGOs involved fall into three groups:

- ♦ NGOs with technical expertise in waste management
- ♦ NGOs which are involved in advocacy and organising communities, and
- ♦ NGOs with skills and contacts for communications and outreach.

Recycling goals have been established. A strategy at barangay level (that lowest government administrative unit) has been developed.

A partnership between government and NGOs can be an effective means of solving waste problems in any community, and this is being clearly demonstrated in Metro Manila.

2-1-3 Other information

Length of paper 6 pages

Keywords Philippines, large cities, NGO, recycling

Other files: PowerPoint presentation - 2-1p

2-1d Discussion

In the discussion session, the following issues were raised:

- co-ordination between the 17 local government units
- illegal dumping

- the precise roles of NGOs
- landfilling charges, and
- disposal of hospital wastes when incineration is prohibited.

A record of this discussion can be found on the CD-ROM

2-2 Solid Waste Ecological Enhancement Program (SWEEP)

by Mayor Mary Ortega

2-2-1 Context

San Fernando is a regional capital 270 km north of Manila, with a population of 102 000. The presenter is the Mayor of this city and has taken a special interest in waste management and public education. The city has been a consistent winner in the "Clean and Green" competition and is one of 6 cities to have qualified for the SWEEP programme.

2-2-2 Main points

The SWEEP programme of the World Bank has provided an opportunity for upgrading municipal solid waste management in this city. The new street containers for refuse are made from reinforced traditional baskets set in concrete supports. Waste is segregated at source into biodegradable and non-biodegradable fractions. Waste pickers are organised under a village chief. Over several years steps have been taken to upgrade the disposal operation, including commissioning a feasibility study. Considerable efforts have been made to involve and educate the public. Visits to the landfill are organised for schoolchildren and officials.

2-2-3 Other information

Length of paper 7 pages

Keywords: Philippines, awareness, collection, intermediate cities, landfill,

Other files: PowerPoint presentation in three parts - 2-2p1 to p3

2-2d Discussion

In the discussion session, the following issues were raised:

- Cost recovery and other financial aspects
- Organisation of waste pickers
- Secondary separation of recyclables
- Separation of recyclables causing delays in collection.

A record of this discussion can be found on the CD-ROM

quote ...

I will tell you what I can afford. I don't want a Cadillac

(Mayor Ortega on landfill design; paper 2-2)

Session 3 Stakeholder involvement for sustainable SWM

Chair: Arnold van de Klundert

3-1 Short introduction on ISWM concept

by Arnold van de Klundert

The papers in this session describe components of the international Urban Waste Expertise Programme (UWEP), which is concerned with knowledge generation and enabling micro- and small enterprises (MSEs), community-based organisations (CBOs) and non-governmental organisations (NGOs).

Integrated sustainable waste management (ISWM) seeks to integrate all stakeholders, system elements and aspects so that the resulting arrangements are sustainable. Another crucial element is time – both the time needed to achieve sustainable results and deadlines or fixed points (such as elections) which can have a major impact on programmes.

ISWM is concerned with

equity – reaching all groups in the community in a fair way

effectiveness – collecting all the waste, - and

efficiency – achieving these goals in a cost-effective way.

In order to be sustainable, ISWM must consider all aspects of a situation or problem – socio-cultural, financial and economic, environmental, technical and institutional.

There is more about ISWM in presentation 6-1.

3-2 Empowerment of residents for improved urban waste management

by Modibo Kéita

3-2-1 Context

The paper describes an action research pilot project in Commune IV in Bamako, Mali, in particular concerning the involvement of the community in solid waste management. Previous systems, that were centred on the municipal authorities, had failed. Community groups collect wastes and deliver them to transfer points, from where the municipal authorities remove them (though often wastes are left to accumulate at these points for some time).

3-2-2 Main points

Previous private sector initiatives had failed for financial reasons.

One of the key needs was for improved communication and co-ordination.

The programme followed the *Process Approach* to development. This approach regards the target group as the core tool of its own sustainable development, and considers a long-term commitment (10 to 15 years) as essential for the development to be sustainable.

The local culture (beliefs and language) is very important in informing and motivating the community members. Leaders emerged from “modest” social levels, and one of their roles is to determine the sanitation and hygiene norms which their communities consider to be appropriate.

3-2-3 Other information

Length of paper 14 pages

Keywords Africa, community, decentralisation, ISWM, private sector, social

3-2d Discussion

In the discussion session, the following issues were raised:

- ♦ The fee that the households pay is sufficient to cover only primary collection
- ♦ The pilot tests are having an influence on waste management on a wider scale
- ♦ Local government supports stakeholder platforms and gives MSEs a legal basis.

A record of this discussion can be found on the CD-ROM.

3-3 Empowering MSEs in waste collection

by Victoria Rudin

3-3-1 Context

In Costa Rica and other Central American countries, micro- and small enterprises (MSEs) have been providing solid waste management services, sometimes including disposal, for up to forty years. This paper describes how four groups of MSEs have organised themselves to deal with daily threats to their existence and to improve their working and livelihood conditions. These threats include

- ♦ lack of support and legal recognition by municipalities
- ♦ competition from large private companies
- ♦ dependence on others for disposal facilities
- ♦ difficult access to finance
- ♦ low self-esteem
- ♦ lack of business and technical skills.

One further obstacle is the perception of modernity which regards simple technologies as always unsuitable. In spite of these obstacles, MSEs have shown that they can provide a desired service in an effective, efficient and sustainable way.

3-3-2 Main points

A collective organisation of MSEs can provide internal co-ordination and protection against external threats. The larger size enables an accountant (and, on occasions, a lawyer) to be hired and working conditions to be improved, and increases the bargaining or lobbying power with local government.

Other MSEs have followed their example and formed organisations elsewhere in Costa Rica. In Costa Rica a national association of waste management MSEs has been formed. This experience of forming local organisations has been transferred to Honduras.

3-3-3 Other information

Length of paper 9 pages

Keywords: Latin America, associations, ISWM, MSE

Other files: PowerPoint presentation - 3-3p

3-3d Discussion

In the discussion session, the following issues were raised:

- ◆ Competition between large and small enterprises
- ◆ South-south exchanges and social perceptions
- ◆ Support provided by MSE groups
- ◆ Environmental standards at disposal sites run by MSEs
- ◆ Continuity through political changes

A record of this discussion can be found on the CD-ROM.

3-4 Developing a sustainable healthcare waste management system - issues, strategies and approach

by Anjana Iyer

3-4-1 Context

India has introduced strict new regulations regarding the management of healthcare wastes, but general compliance has been slow. There is opposition to the use of incinerators because of concern about the effects of their emissions.

The Department of Community Medicine of a medical college in Bangalore undertook a study of healthcare waste management, which identified some key deficiencies and proposed solutions. UWEP initiated a pilot programme in one ward of Bangalore and covering 50 healthcare institutions, based on the principles of integrated sustainable waste management (ISWM).

3-4-2 Main points

Waste sharps (needles etc.) are segregated, collected and deposited in a concrete-lined pit.

Much of the plastics waste is shredded for recycling, after "decontamination".

The programme attached considerable importance to collecting feedback from people who are involved in the management of these wastes.

The aim of the project is to achieve full cost recovery. A fee has been introduced. Recyclables are sold. Services are provided to institutions outside the project area on a fee-paying basis.

A training manual has been field tested extensively. The project has also been involved in advocacy and building awareness, using participatory and interactive methods. Doctors are beginning to take an interest in the management of wastes.

3-4-3 Other information

Length of paper: 12 pages

Keywords Asia, awareness, HRD, healthcare, ISWM, recycling

3-4d Discussion

In the discussion session, the following issues were raised:

- Avoiding difficulties in collecting fees from hospitals
- Responsibility for handling waste
- Disposal of body parts
- The role of the municipality
- Income from sale of recyclables
- Identifying the real risks
- The effectiveness of bleach for disinfecting needles
- The pit used for disposing of needles, and
- Replication of the pilot project

A record of this discussion can be found on the CD-ROM.

Session 4 Aspects of integration

Chair: Tanveer Ahsan

4-1 Integrating the community...

Environmental Health Promotion in Gaza City

by Liesbeth Zonneveld

4-1-1 Context

Gaza City, in the densely populated Gaza Strip, has a population of about 350 000. Prior to the agreement that set up the Palestinian Authority, there was only sporadic removal of solid waste, and the situation was worsened by the Intifada, non-co-operation with the Israeli administration and the very high population densities, particularly in the refugee camps.

This paper describes one aspect of an integrated approach to upgrading solid waste management – the development of communication, awareness and understanding that are necessary for promoting environmental health. Other aspects of the integrated programme are referred to briefly. The programme was funded by the European Union.

4-1-2 Main points

- ♦ Thirteen Gazan women were employed by the Municipality as environmental health promoters, to work among the general public, particularly women and children.
- ♦ A key component in the strategy was the reorientation of the municipal cleansing staff, to help them appreciate ways of developing a shared responsibility with the citizens of Gaza.
- ♦ The awareness and education campaign was closely co-ordinated with the cleansing service, as improvements in the waste collection service were introduced. The basic messages were communicated in a variety of situations using a range of methods and media.
- ♦ Some of the impacts of this programme are listed, many in quantitative terms. Among them are changes in behaviour of the citizens and effective fee collection. The citizens learned to feel that they were partners with the Municipality. Perceptions of success of the programme are viewed from the perspectives of different stakeholders.

4-1-3 Other information

Length of paper 10 pages

Keywords Middle East, awareness, communication, health impacts

Other files: PowerPoint presentation - 4-1p

4-1d Discussion

In the discussion session, the following issues were raised:

- Implementation of fines
- Role played by Ministry of Health
- Integration of EHP into broader urban issues
- Indicators of efficiency and satisfaction

A record of this discussion can be found on the CD-ROM.

4-2 Bridging the gap between public and private sectors

by Manfred Scheu and Salah Borno

4-2-1 Context

This paper also refers to developments in the Gaza Strip (see 4-1), but in an area comprising 11 towns and villages south of Gaza City. The region has an area of about 180 square kilometres and the population served is about 270 000.

Before the start of the project each village and town had its own uncontrolled open dump. The project that is described in this paper formed a regional council (the Solid Waste Management Council, hereafter called "the Council") for secondary collection and disposal of the solid waste. The paper describes mainly the institutional arrangements of the Council, which is an autonomous body with its own finances, and governed by a board consisting of the mayors of the communities which are involved. The project was funded by the German Government and managed by GTZ. Other papers (17-4 and 17-10) describe specific technical aspects of the project.

4-2-2 Main points

The constitution of the new council was based on experience of similar bodies (providing water supplies) in Palestine and some waste management organisations in Germany, and it was developed by intensive consultation with community leaders.

Transportation was made the responsibility of the Council to enable economies of scale and to ensure that all the waste was delivered to the central landfill. (A regional landfill entailing longer haul distances would have posed problems for smaller and more distant communities if there had been no transport service included and no cross-subsidy.) Income of the Council is from fees paid by members and other users, based on the weights of waste brought to the landfill site. All open dumps were closed down.

The paper discusses important issues, including employment and transfer of staff, balancing the concerns of communities of very different sizes, cost recovery and affordability, and the outlook for the future.

4-2-3 Other information

Length of paper: 11 pages

Keywords: Middle East, regional

4-2d Discussion

In the discussion session, the following issues were raised:

- The experience and costs of using asphalt liners
- Costs and timing of landfill mining
- The attractiveness of the collection operation to the private sector, and
- Staff training.

A record of this discussion can be found on the CD-ROM.

4-3 Integration of private informal activities

by Mansoor Ali

4-3-1 Context

Private informal activities are an integral part of the existing solid waste management arrangements in low-income countries. In South Asia, the most common informal activities are recycling and primary collection of municipal wastes. Such activities provide an important service and employment

for large numbers of unskilled workers. Some initiatives and interventions which are designed to upgrade waste management or reduce pollution may have a significant negative impact on the livelihoods of informal sector workers.

4-3-2 Main points

Changes should be made in conventional approaches to the planning and implementing of projects that have an interface with recycling and primary collection, because current municipal approaches are often more suitable for large scale programmes based around relatively sophisticated technology. Municipal officials and consultants may not be aware of the systems that unofficially regulate existing recycling and primary collection practices and so their proposals may be frustrated by the opposition of the workforce. Examples are given which identify the areas where integration of the informal sector into municipal planning is possible and could add to the effectiveness of the system. Constraints which hinder the integration of the private informal activities are also discussed.

Planners who ignore the large private informal waste management sectors in many cities run the risk of making proposals which will not be sustainable.

4-3-3 Other information

Length of paper 10 pages

Keywords: Asia, employment, informal sector, planning

4-3d Discussion

In the discussion session, the following issues were raised:

- Gender aspects of waste picking
- Conflicts between the informal sector and municipal authorities
- Benefits of informal sector recycling for transport and disposal costs
- Exploitation or empowerment of informal sector workers
- Incomes from informal sector activities

A record of this discussion can be found on the CD-ROM.

quote ...

the stereotype of modernisation...

The threat of "modernisation" persists, in spite of the fact that experience has shown that the equipment used by the MSEs has proven to be more durable and to have better access to difficult zones.

(Victoria Rudin; Paper 3-3)

Session 5 First working groups session:

Integration and sustainability

Facilitator: Nathaniel von Einsiedel

5-1 Assignment

The aim of this session was to explore perceptions of the terms “sustainable” and “integrated” as they apply to different aspects of solid waste management. The session was divided into three parts: -

1. presenting the concepts of integrated and sustainable solid waste management in a graphical form,
2. discussing in groups how integration and sustainability can be promoted within different aspects of solid waste management, and
3. presentation and discussion of the findings of the groups.

The aspects that were considered by the groups are shown in the list below.

- group 1 Involvement of the community
- group 2 Involvement of the informal sector
- group 3 Involvement of the formal private sector
- group 4 Pollution prevention, resource conservation, legislation, monitoring and enforcement
- group 5 Effective use of labour, equipment and facilities
- group 6 Management of healthcare waste and hazardous waste

The description of the assignment, in the form in which it was distributed to the participants, can be found on the CD-ROM.

5-2 Outputs of the groups

A wide variety of graphical representations was developed, as can be seen from the file (“Diagrammatic representations of SISWM”) on the CD-ROM. Some readers may wish to take some of the ideas that were presented and develop them further. Each representation has a slightly different emphasis, but all show that the idea of integration has moved beyond simply considering all the stages of waste management from generation to disposal, and they all emphasise in different ways the importance of involving stakeholders in the planning process.

An interesting point concerned the difference between the terms “integrated” and “sustainable”. “Integrated” refers to the approach or method that is used in planning, whereas “sustainable” is an objective and a result. An integrated approach may help in the achieving of a sustainable outcome.

Some of the main points mentioned by the groups are listed below:

- ♦ *Integrating communities* Four stages to involving communities are (i) understand the community, (ii) raise awareness, (iii) organise the community, and (iv) clarify roles.
- ♦ *Integrating the informal sector* Waste pickers particularly need to be integrated and recognised because of (i) their importance, (ii) their low status, (iii) their lack of self-esteem, and (iv) the risks that they face.

- ◆ *Integrating the private sector* This requires a clear policy and legal framework, contracts that include unambiguous incentives and penalties, capacity strengthening for both client and service provider, and community involvement. This must all exist in an atmosphere of partnership.
- ◆ *Pollution prevention, resource conservation, legislation, monitoring and enforcement*
 - Effective and sustainable pollution prevention depends on the development of realistic, effective and affordable means to prevent pollution.
 - Business interests, the desire to maximise profits, and the influence of international companies are all factors that have prevented waste management from being integrated and sustainable.
 - Integrated and sustainable solid waste management involves respecting the ethics of local cultures.
 - Legislation should be developed to suit national conditions, and not copied from the legislation of more industrialised nations.
 - Enforcement programmes should have the acceptance of a broad base of stakeholders and produce clear benefits for society.
- ◆ *Effective use of labour, equipment and facilities* Integration and sustainability are favoured by an indigenous manufacturing capacity and by regular monitoring of productivity and performance measures for labour and equipment, managers being accountable for the performance. All stakeholders should be involved in the major planning decisions, such as the siting of landfills.
- ◆ *Management of healthcare waste and hazardous waste* Integration into the overall scheme of urban services is critical for sustainability. Healthcare and hazardous wastes cannot be viewed as separate to municipal waste, but must be seen as part of the integrated system of urban services and management. Whilst there are similarities between healthcare waste and hazardous waste, there is a perception that healthcare waste is a greater priority. Whilst mixing of healthcare waste with municipal waste does cause serious health hazards, the environmental and health risk of uncontrolled hazardous waste disposal should not be ignored.

Brief notes of the ensuing plenary discussion can be found in the same CD file as the record of the feedback from each group.

quote ...

Today's environmental problems are tomorrow's economic problems

(Christian Nels; paper 13-2)

Session 6 Informal case study presentations

Chair: Christine Werner

6-1 Assessing the sustainability of alliances between stakeholders in waste management using the concept of Integrated Sustainable Waste Management (ISWM)

by **Arnold van de Klundert** and Justine Anschutz

6-1-1 Context

The concept of ISWM has been developed by WASTE (Advisers on Urban Environment and Development), and was first presented in 1995 during the UMP/CWG Workshop on Municipal Solid Waste Management in Ittingen, Switzerland. The concept presented is not a final product; it builds continuously on new insights and experiences. The papers in Session 3 are all concerned with the ISWM concept.

This paper uses the concept of ISWM as an assessment/analysis tool for one particular dimension of the waste cycle: the contribution to sustainability of the alliances between stakeholders. The paper demonstrates this assessment process and concludes that it is not easy, but can provide valuable information about alliances and their contribution to sustainability.

6-1-2 Main points

The paper starts by reviewing the principles of ISWM considering the six aspects of solid waste management. [See also Section 3-1.] ISWM can be used as a conceptual model for planning, as a guide to decision-makers, and in analysis or assessment. It is used for this last purpose in this paper.

A step-by-step description of the method of using ISWM as an assessment tool then follows. A major substantive step is the selection of sustainability goals and related indicators for each of the aspects against which the sustainability of the MSWM system is assessed. In the final step, the indicators are then applied at four levels: political/regulatory, organisational, operational and performance level. This is illustrated by an example from India with a matrix showing an evaluation of results.

Finally the approach is discussed and evaluated. This method can produce an enormous volume of information on sustainability, for which a computer may be needed.

6-1-3 Other information

Length of paper 14 pages

Keywords: alliances, ISWM, indicators, planning

6-1d Discussion

In the discussion session, the following issues were raised:

- The impact of shortages of data on decision-making processes
- Wider applications of assessment tools
- Methods of validating indicators
- Indicators on the depletion of natural resources
- The subjectivity of indicators and the importance of perceptions
- The UNCHS GUO programme

A record of this discussion can be found on the CD-ROM.

6-2 Integrated Sustainable Waste Management in Tingloy, Batangas

by Melchior S Palmares

6-2-1 Context

Tingloy is an island about 100 km south of Manila. Its population is almost 20 000. In this pilot project setting, the Urban Waste Expertise Programme (UWEP) has linked up with the activities of the Global Environment Facility, the International Maritime Organisation and the United Nations Development Programme (GEF/IMO/UNDP) in their Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas (MPP-EAS) and the Environment and Natural Resource Office of the Province of Batangas (PG-ENRO). This pilot project is primarily being implemented through community mobilisation efforts by a local non-government organisation named Batangas Social Development Foundation, Inc.

6-2-2 Main points

UWEP's pilot project activities in Tingloy started in June 1998 and continued until June 2000. The aim of the project was to improve the hygienic and environmental conditions within three urban *barangays*. The activities implemented were: organisation of stakeholders, co-operation and collective decision-making; financial contributions from each stakeholder through a waste management financing mechanism; adapting the appropriate and most economical technology for an integrated waste management system; social awareness for hygienic attitudes and waste-related behaviour, and capacity building for effective and efficient management and optimisation of the potential for resource recovery.

The involvement of the different sectors in the community, with proper handling of the development process, can bring about collective analysis of a situation, concerted effort and sharing of available resources to achieve an integrated sustainable waste management system.

The paper discusses the many small operational problems that were encountered, and the efforts that were made to resolve them. It therefore can provide many useful insights for readers who are planning or implementing waste management projects in small communities.

6-2-3 Other information

Length of paper 12 pages

Keywords: Philippines, ISWM, small communities

Other files: PowerPoint presentation – 6-2p

6-2d Discussion

Discussion focused on the financing of the initiatives that were described in the paper.

A record of this discussion can be found on the CD-ROM.

6-3 Integrating waste pickers for sustainable recycling

by Sonia Maria Dias

6-3-1 Context

This paper describes the process that has taken place in Belo Horizonte in Brazil, whereby the working conditions and practices of informal sector waste recycling workers have been improved.

Until recently, waste pickers in the streets of Belo Horizonte were regarded by the municipal authorities as simply a nuisance and a problem, but now many of them have formed an association and work in harmony with the municipal waste collection service. The City introduced source

segregation and separate collection, and the waste pickers now sort and sell the components of the waste that can be recycled. This scheme has resulted in social and environmental benefits.

6-3-2 Main points

The paper reviews the development of this new arrangement, both from the standpoint of the waste pickers, who were assisted by a religious organisation and other NGOs, and from the standpoint of the general public and the municipal cleansing agency. It describes the association that was set up (ASMARE) and the support that it now provides. The achievements are evaluated and the costs and challenges discussed.

This paper describes a bold and important initiative which deserves serious consideration as a model for many other cities.

6-3-3 Other information

Length of paper 8 pages

Keywords: Latin America, associations, large cities, informal sector, recycling

6-3d Discussion

In the discussion session, the following issues were raised:

- The time taken for the system to become established
- The degree of involvement of the city's waste pickers
- The applicability of the system to India, and
- The involvement of the waste pickers in initial public education.

A record of this discussion can be found on the CD-ROM.

6-4 Healthcare waste management in Khulna City: - an integrated approach for sustainability

by Noor M Kazi

6-4-1 Context

Khulna is the third largest city of Bangladesh, with a population of 1.2 million. There are about 60 healthcare establishments of various sizes in the City. Before the pilot project described in this paper, all healthcare wastes were mixed with municipal wastes, posing a severe risk to waste collection workers and others. In addition, some items were recycled by waste pickers, putting themselves and future patients at risk.

6-4-2 Main points

The paper describes a pilot project managed by an NGO which introduced a comprehensive healthcare waste management pilot project, stretching from source segregation to disposal. It describes the inputs from the municipal authorities, the integration of stakeholders, the method of cost recovery, staff training, technical sustainability and environmental impacts.

At the time of writing, further training and an improved disposal technique were identified as on-going needs.

6-4-3 Other information

Length of paper 7 pages

Keywords: Asia, healthcare, NGO

6-4d Discussion

In the discussion session, the following issues were raised:

- The effectiveness of training alone to modify behaviour
- The size and estimated life of the pit used for waste disposal, and
- The financial sustainability of the project.

A record of this discussion can be found on the CD-ROM.

quote ...

The need (of the public) is not just for information. It is necessary to reach their hearts, using methods such as dance, music and theatre.

Educational programmes were conducted for (municipal) employees, so that they would stop seeing the waste pickers as people who dirtied the city, but rather as partners.

There has been a constant search for a balance between the "political time" (the pressure on local governments to produce results) with the waste pickers' "learning time" (given the waste pickers background of social exclusion, they needed more time to process changes). Finding a balance between being neither hasty nor sluggish has been essential.

(Sonia Dias; Paper 6-3)

Session 7 Planning (1)

7-1 Chairman's introduction

Chair: -Carl Bartone

Too often the approach to SWM problems has been like fire-fighting – responding to crises – rather than planning. In many countries there is a need for a national strategy, which encompasses policy, legislation, technical assistance and access to finance.

Agenda 21 of the Rio Conference in 1992 identified four principles for MSWM – (1) universal collection, (2) safe disposal, (3) waste minimisation and diversion, and (4) waste recycling. The priorities for these four principles differ according to specific conditions. For many cities the priority target is currently universal collection, though, as the initial goals are achieved, the focus of attention should move towards recycling. A key factor is the behaviour of consumers.

As recommended by the CWG, some strategic planning tools have been prepared:

- ♦ The *Strategic Planning Guide*, for large metropolitan areas, to be introduced during the session,
- ♦ The Methodological Guide for national solid waste sector assessment, and
- ♦ The cost analysis tool for solid waste services.

One of the wider issues that must be considered is how to make the *Planning Guide* and other tools more accessible.

7-2 Strategic solid waste planning for large cities

by David C Wilson

7-2-1 Context

Planning for municipal solid waste management (MSWM) has been recognised for many years as necessary if the effectiveness of service provision is to be improved. However, in common with the general approach to MSWM, recently, planning for MSWM has been viewed as primarily a technical problem. It is relatively recently that it has been recognised that both MSWM, and planning for MSWM, requires an integrated approach, combining the political, institutional/organisational, financial/economic and social aspects with the purely technical. Recent international initiatives have developed comprehensive guidance material both for the development of national policies/sector strategies in MSWM, and for strategic planning at the regional and city level. The strategic plan should comprise both a long term *strategy*, the vision of how MSWM services in city will be developed in the future, and an *action plan*, how the city is going to get there. These two outputs have distinct roles to play, and their conceptual separation is useful in providing a decision-making milestone in the strategic planning process.

7-2-2 Main points

This paper summarises recent developments in strategic planning for MSWM and introduces the *Strategic Planning Guide for Municipal Solid Waste Management*. Since work started on preparing this tool in 1997 it has been widely circulated in draft form and field-tested in Peru (paper 7-3) and Vietnam (paper 7-4).

The *Planning Guide* is structured around a seven-step planning methodology, which is summarised in the paper. These steps include the preparation of an action plan when the strategy has been developed. The key components of both strategy and action plan are listed.

The revised *Strategic Planning Guide for Municipal Solid Waste Management* is published as an interactive CD-ROM, which can be read using the ACROBAT reader (which can be downloaded free of charge from the Internet). Care has been taken to make the product user-friendly. It is intended that the Guide will be updated regularly and made available on the Internet.

7-2-3 Other information

Length of paper 12 pages

Keywords: large cities, planning, toolkit

Other files: PowerPoint presentation – 7-2p

7-2d Discussion

In the discussion session, the following issues were raised:

- Relationships with other urban priorities and other donor approaches and programmes,
- The time needed to implement the recommended approach
- Donor support and relevance to donor programmes,
- Methods of promotion to senior executives and methods of publication,
- Incorporation of site-specific data
- Relevance to small cities, and
- Applicability outside the context of projects.

A record of this discussion can be found on the CD-ROM.

7-3 Planning and administration of the integrated management of municipal solid waste in the North Cone of Metropolitan Lima

by Oswaldo Cacaes

7-3-1 Context

The North Cone of metropolitan Lima is one of the fastest growing parts of Lima. It has a population of about 2 million and comprises nine districts in two provinces. Considerable work has been done to develop a comprehensive vision of the management of solid wastes in the area.

7-3-2 Main points

The paper describes the many programmes and initiatives that have been active in Lima to understand the situation and identify solutions. A master plan has been developed for the metropolitan area, aided by a system of consultation involving all the districts.

The paper presents waste composition data for Lima and describes the existing system. It then discusses how officials at different levels and the public can be integrated into the planning process, and the role that an NGO can play in this procedure. There are useful lists defining functions and scope.

7-3-3 Other information

Length of paper 15 pages

Keywords: Latin America, large cities, NGO, planning, regional

Other files: PowerPoint presentation – 7-3p

7-3d Discussion

In the discussion session, the following issues were raised:

- Willingness to pay and cross-subsidisation
- The roles of MSEs and CBOs
- Procedures and responsibilities in decision-making, and
- Involvement of mayors in decision-making.

A record of this discussion can be found on the CD-ROM.

7-4 Case study: Halong-Cam Pha solid waste management strategy, Vietnam

by Nguyen Cong Thanh

7-4-1 Context

Halong City and Cam Pha town are two adjacent urban areas with a combined population of about 360 000. Located in the Northeast of Vietnam, the area is important for coal production and listed as a World Natural Heritage Site because of the striking limestone formations in Halong Bay. A national solid waste management strategy was approved in 1999, and a waste management strategy for the area under consideration has been developed with assistance from the World Bank and Danida. The Strategic Planning Guide was used in the preparation of the local waste management strategy.

7-4-2 Main points

The strategy was prepared in a participatory manner, starting with a series of workshops and specialist workgroups for senior decision-makers. The principles on which the strategy was based include

- ◆ involving the private sector and communities,
- ◆ waste minimisation, cleaner technology and source segregation,
- ◆ environmental conservation,
- ◆ clear definition of roles and responsibilities at all levels,
- ◆ collection targets,
- ◆ separate management of healthcare wastes,
- ◆ special measures for industrial and ship waste, and
- ◆ sanitary landfilling and pilot projects in composting.

Capital requirements, cost recovery and affordability were considered, and the importance of public awareness campaigns was recognised.

7-4-3 Other information

Keywords: Asia, intermediate cities, planning

No paper was prepared but a PowerPoint presentation is available on the CD-ROM

7-4d Discussion

In the discussion session, the following issues were raised:

- ◆ The reasons for selecting this area for the pilot testing
- ◆ Extension of this approach to other cities
- ◆ The funding for the testing programme
- ◆ Follow-up and implementation of the strategies that have been developed
- ◆ Local approach to participatory planning
- ◆ Management of industrial wastes
- ◆ Strengthening local capacity in SWM
- ◆ Reducing dependency on external funding for applying this approach
- ◆ Impact of pilot testing on the development of the Planning Guide, and
- ◆ Plans for pilot testing in Africa.

A record of this discussion can be found on the CD-ROM.

Session 8 Planning (2)

Chair: Carl Bartone

8-1 COSEPRE - Toolkit for solid waste planning in intermediate cities

by Alvaro Cantanhede, **Leandro Sandoval** and Marta Gutiérrez

8-1-1 Context

Most municipalities and public or private cleaning utilities have problems to determine their costs. To help overcome that situation, CEPIS has developed software called "COSEPRE" to calculate the costs for each component of the cleaning service. Furthermore, it simulates scenarios to analyse the most economical and efficient alternatives for service provision. A case study to show the application of the software was developed for Pucallpa, Peru, a city with a population of 240 000 and where the coverage of the collection service is 70%.

8-1-2 Main points

The collection of data for the software constitutes in itself a contribution towards the organisation of the information, since the necessary data are usually scattered, or it may not be known how the data can be used. This data collection helps improve the cleaning service. The software provides unit costs for sweeping, collection, and final disposal services, as well as global costs.

For the development of the case study three alternatives were compared:

- ◆ conventional methods of collection with compactor trucks being compared with labour-intensive methods
- ◆ the costs of sanitary landfilling (including a transfer station) were compared with the costs of using the current open dump
- ◆ the costs of the current system were compared with the costs that would be incurred if the staffing ratios were in accordance with the PAHO/IDB norms.

This case study clearly demonstrates the benefits of COSEPRE software. The software can be obtained on the Internet from <ftp://ftp.cepis.org.pe/pub/cosepre/> or from the CD (via a link at the end of the paper).

8-1-3 Other information

Length of paper 9 pages

Keywords: Latin America, intermediate cities, financial, planning, toolkit

Other files: The manuals for COSEPRE in English (in .pdf format) and the software can be found on the CD together with the files for Session 8. A PowerPoint presentation (8-1p) is also available.

8-1d Discussion

There was some discussion about linkages between the software and social and environmental issues. The software is available from the World Bank.

A record of this discussion can be found on the CD-ROM

8-2 Case Study: National Sector Assessment in the Philippines

by Bebet Gozun

8-2-1 Context

The Solid Waste Ecological Enhancement Project (SWEEP) aims to assist pilot projects and establish support mechanisms. (See also paper 2-2.) It follows the *Integrated National Solid Waste Framework Plan*, which was approved in 1993, but which was not comprehensive and set unrealistic targets. The *National Sector Assessment* includes three broad areas (i) Institutional and legal, (ii) Financial and economic and (iii) Integrated approach to SWM operations.

8-2-2 Main points

The National Sector Assessment developed and updated the National Framework and Action Plan. The Action Plan is in three phases, and focuses on highly urbanised and first class cities, encouraging adjacent local government units to form clusters that benefit from economies of scale. The plan includes the institutional structures necessary for its implementation, and the training and support needed to strengthen these institutions. Technical guidelines are to be developed, and information about success stories disseminated. Other aspects include the rehabilitation of waste pickers, increasing collection coverage (with involvement of communities, MSEs and the informal sector). Siting of disposal facilities is a particular problem and there is a need to reassess the siting criteria since some are unduly strict. Political aspects are critical. Careful attention is also paid to cost recovery and the development of financial instruments. The ultimate objective is to improve the quality of life.

8-2-3 Other information

A paper is not available, but a well-illustrated PowerPoint presentation can be found on the CD-ROM, in two parts.

Keywords: Philippines, large cities, planning

8-2d Discussion

In the discussion session, the following issues were raised:

- The budget of the programme
- Co-ordination and clustering of Local Government Units
- The need for involvement of all communities, not just the poor
- Ensuring sustainability in spite of changes of political leadership, and
- Progress in implementing sanitary landfilling.

A record of this discussion can be found on the CD-ROM

8-3 The management of MSW in the City of Guayaquil, Ecuador – a case study

by **Luis F Diaz** and G M Savage

8-3-1 Context

The history of solid waste management in Guayaquil is traced from 1978, when about 40% of the city had a waste collection service, which included a time when a state of emergency was declared because of solid waste problems.

8-3-2 Main points

Revenue was generated by a surcharge on the electricity bill, and the income administered by the Central Bank, which passed it on to the contractors.

The city was divided into two similar zones for waste collection, to allow for competition between two contractors, but one consortium won both. Careful arrangements were made for supervision of the contractor and a system of penalties was set up to enforce contract conditions. Indicators show very impressive improvements over the period covered.

The landfill, also operated by a contractor, has a surface area of 86 Ha, and is divided into three zones. The contractor has a site staff of 82 and the client 30 employees who work on the site. A daily cover of 60 cm of soil is specified. Gas is flared and regular checks on gas levels are made. Leachate is recirculated to the oldest cell for evaporation and infiltration.

Annexes list the responsibilities of inspectors and contractors, and the schedule of penalties.

8-3-3 Other information

Length of paper: There are two papers: Part I on the history and the collection system (10 pages), and Part II on the sanitary landfill (15 pages).

Keywords: Latin America, collection, indicators, landfill

Other files: PowerPoint presentation – 8-3p.

8-3d Discussion

In the discussion session, the following issues were raised:

- Community involvement and enforcement of regulations, and
- Difficulties in ensuring competition between private sector service providers.

A record of this discussion can be found on the CD-ROM

quote ...

The role of the Facilitator is to walk counterparts through the Guide . . . The Strategic Planning Guide is a living document

(David Wilson; paper 7-2)

Session 9 Panel discussion on private sector participation

Chair: Adrian Coad

Written questions had been collected from participants to form the basis of a panel discussion on the subject of private sector participation in solid waste management. The panel consisted of Sandra Cointreau, Carl Bartone, Manus Coffey and Clifford Matsoga. The session started with an introduction by Sandra Cointreau, during which she showed some slides and mentioned some key points regarding the involvement of the private sector. (These points, and others, are discussed in more detail in her latest publication ("Guidance Pack on private sector participation in municipal solid waste management"). The time was insufficient for all the questions to be answered; questions that were not answered can be found on the CD in the file named < 9-2 PSP questions.doc >

9-1 Introduction by Sandra Cointreau

There have been some good, even brilliant, examples of solid waste management in the Philippines over the last 20 years. New approaches have been pioneered in the Philippines. Around 1981 Luis Diaz managed a World Bank project for the preparation of a master plan, which included extensive data collection and analysis of technical options. The situation of recycling workers was also investigated, and there was an excellent study on their health. Landfills and transfer stations were recommended, to be privatised after some time. There was a major initiative to involve the private sector in the incineration of hazardous healthcare waste, and two years ago as many as half of the hospitals were participating in this arrangement. There were also livelihood projects. Emphasis was placed on cost recovery and public awareness.

The private sector should not be involved unless it brings some benefits and offers some advantages over the public sector. Some of the benefits that are often associated with the private sector are:

- ♦ Private sector service providers can be made accountable to their customers
- ♦ It is possible to arrange service provision so that there is competition between private sector providers, and perhaps also with the public sector. Competition can be arranged by dividing a city into several service zones, provided that there is no collusion between the various providers.
- ♦ If clear performance measures are identified, it is possible to ensure a certain standard of service.
- ♦ Private sector operators often have more flexibility than local government agencies, for example in procuring spares or leasing vehicles to cope with shortages and emergencies.
- ♦ It is possible to write contracts so that private sector companies are not obliged to do favours for politicians, whereas public sector agencies may be required to comply with the whims of politicians.

When estimating the cost of service provision by local government agencies, it is important to uncover and include costs that may be otherwise hidden. Government records often do not show depreciation, debt servicing costs and staff overheads. Furthermore, the private sector is often obliged to pay extra costs that are not paid by government agencies, such as "marketing" costs (payments to or entertainment for politicians and inspectors, which in some cases have been up to 30% of the contract value), higher interest charges or repayments in shorter periods, customs duties and taxes (which in some countries must be negotiated).

Points that should be kept in mind include:

- ◆ Arrangements should be made in a way that acknowledges that people matter – the workforce should not be exploited by low pay, job insecurity or inadequate safety standards and working conditions.
- ◆ Planning is essential; proposals should be based on preferences of stakeholders regarding methods of payment, service levels and many other factors.
- ◆ There can be advantages in the formation of national associations of waste management contractors, as in Egypt and Ghana, provided that this does not encourage collusion on contract prices.
- ◆ It is essential to base contracts on reliable data regarding the waste and the areas to be served.
- ◆ Collection operations should be divided to allow competition, provided that there is a large enough span of management for supervision and maintenance. On the other hand, there are economic advantages in bundling transfer and disposal operations into big units.
- ◆ There are many possible methods of collecting revenue and paying for collection services.
- ◆ Successive contracts may be written to require increasing operational standards so that improvements can be implemented over a period of years.
- ◆ Government officials may be taking a risk in engaging the private sector. In such cases they may wish to protect themselves by setting up extensive checking systems involving several independent consultants to ensure reliable monitoring.
- ◆ The durations of many contracts are too short, so that the private sector cannot hope to repay loans on specialised vehicles and machinery during the life of one contract. As a result, unsatisfactory equipment is often used. Agreements of long duration should include clauses that allow for inflation.
- ◆ Three key factors that lead to successful private sector involvement are
Competition, Accountability and Transparency
- ◆ Political will and leadership are often the key to successful waste management. If the mayor has vision and leadership, improvements can be expected. Good political leadership is
Diligent, Dynamic and Decent

9-2 Panel discussion of private sector participation

Many interesting questions were proposed by the participants. The following points were made in the discussion of some of them:

Making arrangements for private sector involvement includes

- ◆ Getting a thorough understanding of the local situation;
- ◆ Identifying potential service providers – companies that have experience in managing vehicle fleets and semi-skilled workforces (such as trucking and construction companies) can be considered for waste collection work;
- ◆ Eligibility criteria, draft contracts and performance measures must be developed. It is very helpful to organise a 2 to 3 day workshop and involve potential private sector providers in the development of these tools.

The payment for services provided by the private sector is a major issue. In Botswana, contractors are paid from government funds. In other situations the municipal authorities do not have sufficient funds or are regarded as unreliable. In many cities residents are unwilling to pay directly for such services. In franchise arrangements (where the service provider's collects fees directly from beneficiaries) it may be necessary to specify in the agreement increasing targets for the number of

properties to be served. Brazil has many good experiences of private sector involvement over the last 15 years. Most of the contractors are paid with revenue collected as a property tax.

It is important to have a national policy concerning the involvement of the private sector. However, this policy should not put a ceiling on waste management taxes, as has happened in one country where the ceiling is too low for private sector operation to be viable. It is more difficult to collect waste management fees than to collect charges for water and electricity, since cutting off the service has less direct impact on people who do not pay.

Some components of a waste collection service are much more attractive to private companies than others. Collections of industrial and construction wastes can be more lucrative and easy to organise – contracts for such work should not be given away easily without taking the opportunity to tie in less attractive service components.

Designs for collection systems must deliberately consider the provision of basic services to the poor – such as a weekly collection. Primary collection can be provided by micro- and small enterprises (MSEs), which also provide employment within the community, or by other arrangements made by community leaders, as in Botswana. Less waste is generated per person in low-income areas, and the waste is usually denser, so it makes sense to use different methods (preferably labour-intensive) in such areas.

There was some discussion about recycling and disposal. Informal recycling workers (pickers) can obstruct operations at disposal sites. If a full truckload of waste is weighed as it is brought into a disposal site, and then some of the waste is separated and removed from the site, the weight of waste that is actually landfilled is less than that shown by the weight records. If a company that runs a disposal site also has a waste collection contract, it has an unfair advantage over other collection companies, so it is recommended that collection and disposal operations are kept separate.

quote ...

Three key factors that lead to successful private sector involvement are competition, accountability and transparency.

Political will and leadership are often the key to successful waste management.

(Sandra Cointreau; Introduction to Session 9)

Session 10 Second working groups session: Planning

Facilitators: Carl Bartone and Andy Whiteman

10-1 Assignment

The activity of this session took the form of a role play, in which the Workshop participants acted as stakeholders and officials involved in the preparation of a comprehensive waste management strategy for a large city and the surrounding metropolitan area. The purpose was to define, through participatory discussions, key strategic issues for a Strategic MSWM plan for an urban region in a developing country.

Participants were divided into six groups, each looking at one aspect of the whole. Individuals within the groups took on the roles and perspectives of different interests and stakeholders so that issues and conflicts were brought to light. Towards the end of the session the groups returned to share their findings. Whilst it was agreed that it is difficult to discuss certain elements in isolation, with the time available and the large number of participants, this was seen as the most effective way of experiencing some of the issues involved in preparing a strategic plan.

The *Strategic Planning Guide* recommends that groups prepare paragraph proposals based on a consensus among all stakeholders. The activity in this working group session gave participants examples of how this process might work.

The six topics for the six groups were

- ◆ Institutional framework
- ◆ Waste collection and recycling
- ◆ Waste treatment and disposal
- ◆ Financial sustainability
- ◆ Public awareness and participation
- ◆ Private sector participation.

The full instructions for this session, and summaries of reports that were made in the feedback session, can be found on the CD-ROM. Linked to the summaries is the text of a short drama that was written by members of the *Public awareness and participation* working group.

Reviewing the feedback from the working groups, the following general comments can be made:

- ◆ As expected, there was considerable overlap between the groups, even though the subject for each group was clearly defined.
- ◆ The approach of the groups differed. They either -
 - identified issues that would need to be considered or addressed,
 - proposed plans of action that could lead to decisions, or
 - made “final” decisions about steps that should be taken.

These responses are reminders of the time that is needed for planning. The first two approaches clearly indicate that more time is needed, and the third also requires time so that group members can be encouraged to rethink decisions that may have been made too quickly and with insufficient information and co-ordination.

Session 11 Papers from GTZ and from the Philippines

Chair: Mansoor Ali

11-1 Cleaning the Environment – a community approach in Botswana

by Clifford Matsoga

11-1-1 Context

Botswana is a country where consultation of the community is taken seriously, and the “community” means all social groups. As a first step it is important to understand what binds the people of a community together, then it is possible to work together with the community. Indiscriminate littering and dumping is seen as a serious problem in Botswana. This paper describes action that has been taken to counter this problem.

11-1-2 Main points

- ◆ Village Health Committees play an important part in primary health care, and they have been heavily involved in providing local waste management facilities, advocacy and raising public awareness.
- ◆ Two environmental days have been designated for cleaning and improving the environment and reminding citizens of environmental issues. There are competitions for the cleanest village and for songs with an environmental theme. The First Lady and the President have added their support.
- ◆ The Waste Management Project, with GTZ support, has produced resources, information, strategies, draft laws and guidelines, and taken other steps to improve waste management and protect the environment.

11-1-3 Other information

Length of paper 5 pages

Keywords: Africa, community, litter, pula pula

Other documents: A photograph of a poster entitled “Botswana’s Strategy for Waste Management” can be found on the CD-ROM.

11-1d Discussion

In the discussion session, the following issues were raised:

- Health committees in the capital
- The extent of waste picking in Botswana, and
- The changes that had taken place since the filming of a video.

A record of this discussion can be found on the CD-ROM

11-2 Mechanical / biological waste treatment

by Christine Werner

11-2-1 Context

Many problems in sanitary landfills can be avoided if the waste is allowed to compost or become stable before it is placed in the ground. This paper describes a three-year international GTZ project that has been evaluating a system of pretreating solid waste prior to landfilling. The process involves

mechanical separation of recyclable and hazardous materials, size reduction and homogenisation, and then a simple system of composting.

11-2-2 Main points

Mechanical and biological waste treatment (MBWT) can confer the following advantages

- ♦ reduced waste volume and better compaction
- ♦ longer life for landfills
- ♦ less risk of fire
- ♦ better structural stability
- ♦ less methane generation
- ♦ less leachate and water pollution, and
- ♦ additional recovery of recyclables.

At the time of the presentation no trials had taken place in low- or middle-income countries, but feasibility studies had been undertaken for cities in Thailand and Brazil and social impacts on waste pickers had been investigated. A video presentation had been shown to participants, a decision-makers' guide was being finalised, and a spreadsheet program for calculating costs was available. Pilot studies were being prepared. Further information in English and German can be obtained on the Internet at www.gtz.de/mba.

11-2-3 Other information

No paper was provided to participants, but printouts of the PowerPoint presentation were distributed to participants: This presentation is available on the CD – 11-2p. A poster is also available on the CD-ROM.

Keywords: landfill, treatment

11-2d Discussion

In the discussion session, the following issues were raised:

- A comparison with landfill mining
- The value and use of the product of the treatment, and
- Capital and operational costs (for which only a rough guide is available so far).

A record of this discussion can be found on the CD-ROM

11-3 Linis-Ganda – Once more with feeling

by Leonarda N Camacho

11-3-1 Context

Linis-Ganda (which means "clean is beautiful") is a programme which buys recyclable materials and items from households and sells them to dealers for recycling. A price list comprising 57 different recyclables is used. Linis-Ganda was introduced in Manila in 1983 and launched nation-wide in April, 2000. The problems and closures of Manila disposal sites emphasise the importance of this method of waste reduction.

11-3-2 Main points

Secretary Aventajado, the Chairman of the Greater Metro Manila Solid Waste Management Council, has been vigorously promoting the Linis-Ganda programme in Metro Manila, persuading mayors, informing the public, and liaising with industries that can reprocess recyclables. Methods for processing organic waste, hazardous materials and rubber tyres are being investigated. An

anticipated bill would require source segregation and initiate research on packaging materials. The Habitat II meeting in Istanbul in 1996 endorsed Linis-Ganda as a "best practice".

11-3-3 Other information

Length of paper 4 pages

Keywords: Philippines, co-operatives, recycling

11-3d Discussion

The discussion concentrated on the financial aspects of the scheme, mainly the payment for recyclables.

A record of this discussion can be found on the CD-ROM

11-4 Stretching the impact of local budgets and resources for SWM

by Paul Lundberg and **Eduardo Queblatin**

11-4-1 Context

Local governments in the Philippines have been struggling to find solutions to their solid waste management problems. The involvement of citizens is a key issue. Innovative approaches have been tried. This paper describes the ways in which the *Governance and Local Democracy (GOLD)* Project has been able to assist local governments in this field. The Project had been operating for four years and was in its final stages.

11-4-2 Main points

The paper starts with a comprehensive review of local government initiatives in waste management. The GOLD project provided limited technical assistance to local governments that requested it. Facilitators for consensus-building workshops, resource persons and reference materials were provided. Experience gained with 20 local government units (LGUs) was later disseminated to over 100 other LGUs. Priority was given to clusters of LGUs rather than to individual towns, and recipients were required to bear many of the costs of the training and consensus-building events. A programme of seminars was offered.

Other means of informal sharing experience were supported, including the Solid Waste Association of Practitioners in the Philippines.

The lessons learned from the project included that there is a high level of interest in practical tools and guidelines, and that many LGUs are ready to pay for such help. Scheduling of programmes should take budget cycles into account. Support and affirmation from peers is powerful encouragement.

11-4-3 Other information

Length of paper 6 pages

Keywords: Philippines, associations, HRD, local government

Web site: www.localgovernance.net.ph

11-4d Discussion

There was a brief discussion about municipalities making better use of their existing resources.

A record of this discussion can be found on the CD-ROM.

Session 12 Site visits to Carmona and Silang

12-1 Carmona

Workshop participants were taken to see two waste management schemes south of Manila. The first was Carmona, an industrialised community where a large sanitary landfill had been used for disposal of much of Manila's waste from 1993 to 1998. Strong public opposition had forced the closure of the landfill.

The municipal authorities were seeking to demonstrate alternatives to sanitary landfilling, and so had set up a small redemption and composting centre, which also aimed to promote environmental awareness among the public. The centre had been operating for about 7 months and was employing ten people. It was clearly only a beginning.

12-2 Silang

In contrast, this was a non-governmental operation that had been set up four years previously to promote sustainable agriculture. It was also recycling and producing compost. Previously a simple manual method of composting had been used, but the participants saw a new mechanical plant that had been installed with financial assistance from Japan. Swiss funding had been used to support the institutional development of the operation.

12-3 Further information

More details about these operations can be found in the CD-ROM.

quote ...

Waste management CBOs and NGOs need to be able to operate on a commercial basis to be sustainable. What are the options for improving NGO / CBO business management skills?

Corruption is a major barrier to sustainable private sector participation in MSW (and sustainability in general) that is often understated or ignored for "diplomatic" reasons.

Participatory planning takes time – up to 1.5 years. Are funding agencies ready to allow (time-wise and money-wise) for this time period, and not demanding "the job to be done" in six months?

(From bulletin board There are more comments on the CD, Section 18)

Session 13a In-depth case study presentation

Chair: Kees van der Ree

13-1 Both sides of the bridge:

public-private partnership for sustainable employment creation in waste management, Dar es Salaam

by Saskia Bakker, Jasper Kirango and Kees van der Ree

13-1-1 Abstract

In Dar es Salaam, Tanzania, recent privatisation efforts have helped to create more than 1,500 jobs. Solid waste collection and street sweeping has been contracted out, since early 1999, to small-scale enterprises and community-based organisations. Coverage of waste collection increased from a mere 5% to more than 40%. And these services now also reach the poor. The key recipe to “better services and more jobs” is a comprehensive planning process involving relevant local actors. It is anchored in the recognition that self-help and community-based initiatives can contribute to public service delivery in a sustainable manner. The paper tries to show that the inclusion of the local employment perspective in urban planning may motivate the Dar es Salaam and other municipal authorities to use the small-scale private sector to deliver other public services in a cost-effective way.

The paper tries to give a realistic account of what happened with the Dar es Salaam solid waste management strategy from 1997 to mid-2000. It is mainly based on the operations of the ILO - Dar es Salaam City Commission project “*Support to the delivery of environmental services by the small-scale private sector*”, a component of the wider UNDP/UNCHS programme to enhance environmental sustainable city development in Dar es Salaam. The project is supported by the ILO InFocus Programme SEED under an interregional Public-Private Partnership (PPP) Programme.

13-1-2 The context

Poverty and social exclusion are a direct result of unemployment. In developing countries, the need for job creation is overwhelming. Many people take up self-employment in the absence of other job opportunities. In most cities of Latin America and Africa, nine out of every ten jobs to be created over the next decade will be in the informal and small-scale enterprise sector. Still, the problem remains how to make these jobs sustainable, and generate yet more employment through enterprise growth. The issue is most acute in urban centres.

The provision of common services is a major opportunity for local governments to create employment directly. Services such as waste collection, water distribution, and street- and market maintenance can be delivered effectively by small-scale initiatives, provided they are remunerated.

Dar es Salaam has a population of about 2.5 million people, many of whom live in high density, unplanned areas which lack even basic infrastructure. Industrial and government employment are decreasing.

In the early 1990s only a small fraction of the City was receiving a waste collection service. In an effort to improve this situation the private sector was brought in, but after some early successes, the coverage rate again dropped. As the situation became worse and worse, community groups started to organise their own waste collection services.

Solid waste management in Dar es Salaam has been a very political issue, local leaders promising a cleaner city and free services.

13-1-3 Recent developments and the support of ILO

In 1997 the City Commission determined to develop and implement a new integrated strategy, which included the following components:

- ◆ direct user charges, collected by service providers
- ◆ involving all possible local service providers, including CBOs and MSEs in unplanned areas that are inaccessible to conventional vehicles,
- ◆ qualification and competitive bidding to select service providers. Initially only 15 applicants were considered suitable, but finally a total of 70 were given licences.
- ◆ a new department was set up to plan, control and monitor the operations of the private sector operators (or franchisees),
- ◆ promotion of recycling, and
- ◆ involving an external change agent to support a facilitating environment, as an integral part of the waste management department. (This is the role fulfilled by the ILO project through its local partners.)

Capacity development was provided for the municipal officers. Training in solid waste management and business management was given to the franchisees, and assistance was given to the formation of an association of service providers. Support was given to a sensitisation campaign for local leaders.

As a result, the quantities of waste collected increased to around 40% of the total generated, and it is estimated that over 1500 jobs were created. Women are just over half of the workforce, though they are underrepresented at management levels. Women are preferred for fee collection. None of the employees is under 18 and all are paid at least the minimum daily wage.

The ceiling fee rates for the high-income areas are four times the rates for the unplanned areas, but plans for cross-subsidisation have not been realised. Secondary transport of waste to the disposal site is sometimes provided at no charge to the primary collection operators by the City Council. Actual fees are often negotiated on the basis of willingness to pay, rather than actual costs (which may not be known), and fee collectors can be up to one quarter of a franchisee's workforce. The sale of recyclables and street sweeping bring in valuable extra income.

The experience in Dar es Salaam shows that this form of private sector involvement can be successful – in terms both of a cleaner environment and of job creation - if the municipal authorities and community leaders play their parts, and some training and guidance is available. The role of the City Authorities has changed to include monitoring and enforcement, and raising public awareness.

13-1-3 Other information

Length of paper 15 pages

Keywords: Africa, large cities, collection, employment

Other files: PowerPoint presentation - 13-1p

13-1d Discussion

In the discussion session, the following issues were raised:

- Using community pressure to minimise corruption
- Measures that are needed to improve the working conditions of private sector workers

- Links with other donors which are working in Tanzania
- Disseminating the lessons learned from this project
- Ensuring that the market situation that has been created works for the benefit of all
- The condition of the waste disposal site
- The choice of arrangement for involving the private sector – franchising – and the services
- Management of healthcare wastes
- Institutional arrangements
- Measures for dealing with defaulters and ineffective service providers
- The interface between primary and secondary collection, and
- The need of MSEs for microcredit.

A record of this discussion can be found on the CD-ROM

Session 13b Paper on Regional Programme in Africa

13-2 Regional waste management programme for Southern African (SADC) countries

by Christian Nels

13-2-1 Background

As a result of the experience gained from a technical co-operation project between the Republic of Botswana and the Federal Republic of Germany in waste management, the idea was developed to offer other countries in the region similar co-operation projects. Experience has shown that the first and most important step would be to help the countries to develop their own national waste management policy. Based on such a policy the necessary strategies and action plans could be derived, which could lead to the establishment of the appropriate legal framework and institutional set-up.

The development of the individual national waste management policies should be co-ordinated in such a way that the drafting exercise would be accompanied by an extensive exchange of information. Co-ordination would allow each nation to tap into the experience of the others, as well as to promote the idea in all SADC countries and avoid duplication of efforts.

13-2-2 Main points

Initially, the proposed programme would concentrate on assisting SADC nations to develop and implement waste management strategies, and setting up a centre of excellence in waste management.

There are several reasons why it is important to have a general common regional approach to waste management within SADC member states:

- ◆ Wastes, especially hazardous wastes, may spill over national frontiers.
- ◆ Disparities between national measures and regulations could distort international competition or contribute to undesirable diversions of investments to countries with lower environmental standards.
- ◆ Co-ordination of national efforts would create a substantial saving in overall terms - by the achievement of economies of scale.
- ◆ Uniform waste management legislation within SADC would improve the functioning of the internal market and allow economic operators to act within SADC. Such legislation would also create a level playing field for waste by establishing common rules yet respecting the legitimate

wishes of Member States to define and implement waste policies and waste management measures at national level.

- ◆ Uncoordinated transboundary transport of wastes might effect the planning basis for waste management facilities (mostly SMI's) in Member States, e.g. in the case of shipment of wastes for recycling/recovery.

Many reasons are given to explain why it would be desirable to set up a centre of excellence that specialises in waste management. This would not be duplicating the work of the Pretoria Centre of the Basel Commission.

Preliminary discussions had already been held at a high level in many SADC countries and with UNEP. Considerable work has been done in some SADC countries to develop environmental or waste management policies, and there was considerable interest in the establishment of a centre of excellence. The paper concludes with some issues that need to be addressed if this proposal is to move forward

13-2-3 Other information

Length of paper 8 pages

Keywords: Africa, policy, regional

13-2d Discussion

There was a brief discussion about the importance of high level involvement and the shortcomings of some policies.

A record of this discussion can be found on the CD-ROM.

quote ...

Women are more honest, and more able to convince people to pay the fees.

(Saskia Bakker; Paper 13-1)

The key issue for MSEs is access to credit.

(Carl Bartone Discussion of Paper 13-1)

Session 14 General panel discussion

Chair: Manus Coffey

Panel members: Cecilia Castro, Liesbeth Zonneveld, Mansoor Ali and Luis Diaz

The time allowed for this discussion was less than planned because of the high level of interest in the ILO case study of Dar es Salaam. Basically only two questions were discussed, but the discussion was fruitful.

What are the critical requirements of ISWM regarding involving the private sector, both formal and informal?

A number of important issues were raised, including

- ◆ Financial arrangements especially promptness in payments, and the need for longer contracts to allow repayment of capital equipment;
- ◆ The importance of legislation, firstly to allow private sector participation, but also to protect private investors;
- ◆ Capacity building for the public sector in its role as supervisor and enforcer;
- ◆ The importance of the attitudes and beliefs of public officials and politicians.

How can we raise the profile of solid waste management in international development? Can we use International Development Targets (IDTs)?

- ◆ Raising the profile was not seen as the whole story. Several contributors emphasised the importance of pressure from below, from the public, in addition to the need of a high profile with national and international bodies.
- ◆ The status of solid waste management was suggested as an indicator for the level of more general municipal management in a city.
- ◆ Solid waste management in a city is a very complex affair, and it would be difficult to find an indicator that gives a reliable assessment of the status of waste management in a big city.
- ◆ The possible benefits of a UN decade for solid waste, similar to the UN Decade for Drinking Water and Sanitation, were discussed.

A more detailed record of the discussion can be found on the CD.

quote ...

Bottom-up is good – but we need a flag at high level

(Clifford Matsoga; Plenary discussion of Paper 13-1)

Session 15 Third working groups session:

Outputs and conclusions of the Workshop

Facilitator: Liesbeth Zonneveld

15-1 Objective

The main focus of this session was to consider how to use both the information that had been shared during the Workshop, and the information available in publications and toolkits that had been prepared as part of the CWG programme.

15-2 Issues and Outputs

Participants were first asked to consider what they personally had learned from the Workshop, and then share it with others in the groups. This was part of the foundation for the remaining discussions.

Two groups considered how to provide support and guidance to decision-makers. Key points included the value of peer networks, long-term backing, and information sources at the right technical level. In presenting information to decision-makers we should remember the importance of financial information and the power of success.

One group considered strategies for disseminating information. The importance of a regional approach was stressed – materials should be available in major languages, but should also reflect cultural factors and the prevailing stage of development. Important information based on experience and in grey literature should be made available.

Networking was discussed by another group. A principal goal is the sharing of information, including “Who is doing what”. The need to screen out low-quality information was mentioned. Networks need financial support. Networks (as professional associations) can also develop the identity of waste management as a career.

Finally, a group considered what theme should be covered by the next CWG Workshop. Proposals included:

- ◆ Corruption, transparency and working with political leaders
- ◆ Successful practices in cost recovery
- ◆ Employment generation through solid waste management
- ◆ Experience in the application of the *Strategic Planning Guide*, including the aspect of capacity building
- ◆ A comparison of the sustainability of large, internationally-funded projects with small local projects.

15-3 Further information

Further information about the assignments and the feedback is available on the CD-ROM.

Session 16 Concluding plenary discussions

Facilitator David Wilson

The purpose of this final session was to build on what had already been achieved during the workshop and to bring together ideas that had been discussed to develop clear conclusions.

Some of the issues that needed consideration were

- ◆ How to make the best use of the new Strategic Planning Guide and the Guidance Pack on Private Sector Participation.
- ◆ How to improve the sharing of information and experience
- ◆ Developing a work programme for the Collaborative Working Group for the coming years, which would probably include some new activities, but also consolidation and dissemination of what had already been achieved.
- ◆ Key issues that have been identified for further work include
 - Participatory planning
 - Cost recovery, and
 - Sustainability of private sector participation. A key aspect of sustainability is the financial aspect, and there is a need for more documented cases of sustainable contractual relationships.
- ◆ There were differing opinions about how well the workshop had covered its theme. Some felt that insufficient attention had been given to planning, and others that planning had been in the background of many presentations. The theme of integration required a diverse set of topics because integration brings together a wide range of aspects and actors.
- ◆ There were repeated calls during the workshop for the sharing of case study experience. The Strategic Planning Guide does not have sufficient case study information, and so participants were urged to contribute relevant case studies to make up this deficiency. It was suggested that a standard format for case studies be agreed, so that additional information could be structured and more easily compared.
- ◆ The importance of quantifying results and achievements was stressed. Performance data enable an accurate understanding of what progress has been made, and in this way progress in solid waste management can be used as an indicator for more general progress in urban management and development.

The Workshop concluded with expressions of thanks to the sponsors, the organisers and the Moderator, and appreciation for the opportunity of learning from each other.

17 Poster presentations

These papers should not be regarded as second class because they were presented as posters. There is much useful information within them. Many were presented as posters because there was no more space in the plenary session. The original papers are all on the CD.

There are also photographs of some of the posters on the CD. The quality of the photographs is not good, but they give some idea of the poster presentations.

17-1 African Network of Professional Waste Managers

by Félix Adégnika

17-1-1 Context

This "African WasteNet" was set up at the end of the Abidjan Seminar in 1996, to encourage implementation of the decisions taken at the Seminar and to stimulate the development of sustainable waste management systems in West Africa.

17-1-2 Main points

African WasteNet is based on three principles:

- ♦ African actors will be responsible for initiatives and exchanges
- ♦ The network will facilitate "permanent dialogue" - on-going, at any time
- ♦ A flexible structure and voluntary participation.

Activities of African WasteNet will include:

- ♦ "Cross missions" – visiting other cities and discussing with colleagues in the Sub-region.
- ♦ Databases of systems, individuals and information resources in the sub-region
- ♦ Involvement in research and dissemination of findings.

Each country in the Sub-region has a co-ordinator or focal point, and the names and addresses of these people are provided.

The paper concludes with the Abidjan Declaration, with its proposals for action at local, national and regional level.

17-1-3 Other information

Length of paper 6 pages

Keywords: Africa, associations, HRD, regional

17-2 Integration of Community-based Primary Collection with City Waste Management:

Experiences of a Pilot Project in Khulna, Bangladesh

by Tanveer Ahsan and Rahmatullah Habib

17-2-1 Context

Khulna is the third largest city of Bangladesh, with a population of 1.2 million people. (See also paper 6-4). The Khulna City Corporation collects waste from roadside enclosures or dumping points, but only about 40% of the City's waste is removed in this way.

A pilot project was started in 1997, based on experience from Dhaka, in six wards of the City. It was led by a local NGO which worked closely with the communities, with a concern to integrate community activities into the municipal transport and disposal service.

17-2-2 Main points

- ◆ Residents pay a fee for primary collection to the NGO and a tax to the Municipal Authorities to cover transport and disposal, and other services. At the time of writing, the fee covered 70% of the costs of primary collection, and it was intended that the fee should be increased.
- ◆ Improved methods of transferring the waste to the City trucks were developed in consultation.
- ◆ Waste Management Committees and Apex committees (at ward level) were set up, not only to oversee primary collection, but also to serve as a channel of communication to elected political representatives.
- ◆ The operation of the community-based primary collection system has remarkably improved the local environment: the dirty roadside bins are no longer used, the localities are significantly cleaner and drains are not blocked with waste.

17-2-3 Other information

Length of paper 6 pages

Keywords: Asia, collection, community

17-3 Enhancement of the Resource Recovery and Recycling Sector in the Batangas Bay Project Area

by Revelina Ardeza Rivera-Bayona

17-3-1 Context

There are at least 22 junk shop operators (JSOs) in the Batangas Bay project area. JSOs are registered as businesses. They sell their secondary materials to middlemen outside the project area. (See also paper 6-2, which describes another project in the same area.) The objective of this project was to improve resource recovery operations.

17-3-2 Main points

- ◆ Buyers have more power than sellers because of their knowledge regarding quality and prices, because they deal with many sellers and because they have more capital.
- ◆ The problems that JSOs complained about are listed.
- ◆ The first step was to collect information, based on interviews and observations. Then project proposals were developed and agreed. High priority was given to integrating the stakeholders into the project. A co-operative of JSOs was formed, after visits to Manila to see Linis-Ganda (paper 11-3) and a seminar. The first project of the co-operative was to introduce paper recycling.
- ◆ The paper discusses some of the early problems faced by the co-operative, and the measures that were taken to remedy these problems. This information should be very useful to anyone involved in the setting-up or development of a co-operative in similar circumstances.

17-3-3 Other information

Length of paper 15 pages

Keywords: Philippines, co-operatives, recycling

17-4 New Solid Waste Collection System Concept for Developing Countries

by Salah Borno

17-4-1 Context

In many low- and middle-income countries, compactor trucks are unsuitable because of the high density of the waste, and other factors. Some alternatives are also unsuitable – tractors with trailers are slow and carry a small volume, and open trucks that carry a reasonable volume of waste are too high for manual loading, and manual loading is slow and unhygienic.

A type of truck that has been in use in the Gaza Strip for some time has proved to be very efficient and reliable, collecting wastes that have a high content of biodegradable organics, moisture and sand. This truck is known as the “Tipper-Crane” (TC) truck, and it features an open tipping body that can largely be closed by rotating flaps, and a hydraulic crane mounted just behind the cab that picks up and empties compatible waste containers that are left along the roadside or carried behind tractors for primary collection. The trucks have been operating in the central region of the Gaza Strip since 1995. (See also papers 4-2 and 17-10)

17-4-2 Main points

Some of the advantages of the tipper-crane truck are:

- ♦ Containers can be picked up where they are – there is no need to push containers into position – an important feature where the ground is soft or rough,
- ♦ The bodies are relatively simple, and so are fabricated locally
- ♦ The body can be sized to suit the local waste density, in order to ensure a cost-effective load.

The paper provides the outline specification of the trucks, and gives performance figures. The average load (on a two axle chassis) is 7.70 tonnes, according to weighbridge records. Two trips are made in a six hour shift. This type of truck has proved itself economical and successful.

17-4-3 Other information

Length of paper 3 pages

Keywords: Middle East, collection

17-5 Who cares about words?

What can we do to avoid miscommunication?

by Adrian Coad

17-5-1 Context

There are at least two glossaries of solid waste management terminology, but neither seems to be widely recognised as an authoritative source of definitions. Several recent publications have included glossaries among the appendices, but the definitions vary. Some of the differences in the way words are understood can lead to risks or misinterpretation of data.

17-5-2 Main points

- ♦ Misunderstanding of the words “segregate” and “separate” in the context of healthcare waste management can lead to serious risks of injury and infection.

- ◆ The word “landfill” is carelessly applied to any sort of disposal to land, resulting in unnecessary opposition to well-managed sanitary landfills and confusion when collecting data on disposal facilities.
- ◆ The words “contract” and “contractor” are used in different ways by different writers, and the term “public private partnerships” also means different things to different people.
- ◆ “Organic” waste is often taken to mean biodegradable waste, but there are organic materials in waste which are not biodegradable, such as plastics.

Three courses of action are suggested:

1. Ignore the problem
2. Develop the habit of explaining our terminology in every document,
3. Set up a group to define international usage

17-5-3 Other information

Length of paper 3 pages

Keyword: communication

17-6 Sustainable Waste Collection Systems

by Manus Coffey

17-6-1 Context

All systems for collecting waste in middle- and lower-income countries should be appropriate, affordable and sustainable. Unfortunately, collection systems that meet these three requirements are rare, and it seems that the same mistakes are made again and again.

17-6-2 Main points

- ◆ Collection systems should be designed on the basis of an in-depth understanding of the wastes being collected and the city to be serviced. Particular attention should be paid to waste densities. It is fundamental that compaction trucks are not required where waste densities are high, and there are many advantages in not using compacting bodies if there is an economical alternative.
- ◆ It is common to find systems that are not affordable and financing arrangements that perpetuate this problem.
- ◆ Where insufficient thought is given to the supply of spare parts, trucks may be out of action for long periods, or even indefinitely, starting in their first year.
- ◆ Proposals are made for clauses to be included in terms of reference for studies connected with solid waste collection systems.
- ◆ There are examples of vehicles and systems that have been designed to avoid the common problems and suit the particular situation in which they will be working.
- ◆ Future policies should attach great importance to the designing of vehicle bodies and containers for fast and easy loading, and for long life under corrosive and abrasive conditions. There is a need for all of us to learn from the mistakes of the past.

17-6-3 Other information

Length of paper 8 pages

Keywords: collection, planning

17-7 Decentralisation and Cost Recovery in Yemen

by Mohammed al-Eryani

17-7-1 Context

The development of solid waste management services in Yemen has taken place only in recent decades. Initial arrangements, made with bilateral assistance, were top-down, highly centralised and confined to the public sector. After quite successful starts in these projects, new problems developed which were difficult to counter with the existing project strategies. The problems were financial, institutional and technical. As a result a new approach has been developed.

17-7-2 Main points

The key elements of the new approach are

- ◆ Systematic decentralisation of the administrative responsibilities and authorities.
- ◆ Invitation of the private sector to take over suitable tasks in the waste management sector.
- ◆ Introduction of service fees.

The legal framework that will promote these changes is specified.

The allocation of responsibilities from central government to the individual resident is specified in a chart

17-7-3 Other information

Length of paper 5 pages

Keywords: Middle East, decentralisation, legislation, planning

Other files PowerPoint presentation 17-7p

17-8 Compost Bins as an Alternative Solution for the Household Solid Waste Problem in Urban Areas

by D G J Prema Kumara

17-8-1 Context

This paper describes an initiative that has taken place in an urban area close to Colombo, Sri Lanka. The population of the municipality is about 220 000, and the area includes beaches, wetlands and major industries. Some of the wetlands are threatened by haphazard dumping of solid waste. As part of the "Sustainable Colombo Core Area Project", household compost bins have been introduced to reduce the quantities of biodegradable waste that require collection and disposal.

17-8-2 Main points

Compost bins are made from 200 litre drums, supported on a concrete ring. The cost of each unit is about US\$ 10, of which less than a third is paid by the purchaser from the community. The drums were introduced, as a pilot trial, in a low-income resettlement area and in a middle-income residential area.

The communities were informed about the technique and its benefits by the NGO (SEVANATHA) which is the local partner organisation; a variety of awareness-raising methods was used. Then the barrels were distributed and installed. It is planned that householders will have the opportunity to sell the compost that they make in this way.

The paper ends with a list of lessons that have been learned from this initiative. They include:

- ◆ Urban solid waste management is primarily about behaviour change rather than technical and financial issues. Therefore, capacity building at every level (household, community, municipal and national) is necessary to facilitate behavioural changes of interest groups.
- ◆ It was not easy to promote a new solid waste management system in isolation. It is very important to integrate it with other environmental issues in the area such as drainage and sanitation.
- ◆ The project shows that the Municipality is willing to change certain regulations and attitudes when the community is organised and demands municipal services in an organised manner.

17-8-3 Other information

Length of paper 5 pages

Keywords: Asia, composting, household level

17-9 The Implementation of Waste Management Legislation in Zambia

by Kenneth W Mulemwa

17-9-1 Context

In Zambia, the National Environment Action Plan process has identified environmental issues and analysed possible solutions.

The Environmental Council of Zambia (ECZ) is the body responsible for protecting the environment and controlling pollution. This responsibility includes formulating guidelines and regulations, co-ordinating other government departments in environmental issues, monitoring and regulating the management of municipal and hazardous wastes, advising on disposal, and identifying projects that are to be required to submit environmental impact assessments.

17-9-2 Main points

Amongst the many features of recent legislation, the following points are noted:

- ◆ All persons transporting waste or operating waste disposal sites, including local authorities, are required to be licensed and to adhere to the conditions and standards set by the ECZ.
- ◆ Service charges for waste management have been set for low-density and medium-density residential areas.
- ◆ Nine inspectors in ECZ were appointed public prosecutors. This was done because environment-related offences did not attract the same kind of police attention as other mainstream offences.

The paper also provides a list of legislation relating to environmental issues, some of the powers granted to inspectors, and information about the progress made in implementing the licensing requirements. At the time of writing, work was about to be initiated on the development of a national solid waste management strategy. A sample enforcement notice form is appended.

17-9-3 Other information

Length of paper 10 pages

Keywords: Africa, legislation, policy

17-10 Upgrading of Disposal Standards in Gaza

by Manfred Scheu

17-10-1 Context

There are very few documented examples of sanitary landfills in middle- and lower-income countries and semi-arid climates. This paper describes a landfill that was built and operated as part of a Palestinian-German project in the central area of the Gaza Strip. (The organisational structure under which the landfill is operated is described in paper 4-2.) Operation of the landfill revealed several surprises.

17-10-2 Main points

- ♦ The base of the landfill is lined with asphalt and bitumen. Leachate is recirculated.
- ♦ The quantities of leachate generated were much more than the experts expected.
- ♦ The density of the landfilled waste is much higher than was anticipated, and, as a result, the expected lifetime of the site is much more than was initially predicted.
- ♦ The landfilled waste has a very low permeability, which has a significant impact on the design of the final cover. Decomposed waste is excavated and screened, and then placed on completed sections to serve as a soil layer for plant growth.
- ♦ Detailed cost data are provided.

17-10-3 Other information

Length of paper 10 pages

Keywords: Middle East, landfill

17-11 Planning Model for Solid Waste Management - an Indicators-based Approach

by D. Ajay Suri

17-11-1 Context

Solid waste management has been a neglected service in many cities of the Asia-Pacific Region. The poorest communities in these cities receive the worst service. One of the main requisites for making improvements is better information.

17-11-2 Main points

- ♦ Indicators are new professional tools for management of urban programmes. They can be used to indicate which approach (among a number of possibilities) can be the most effective.
- ♦ The UNCHS Urban Indicators Programme (UIP) has developed a toolkit of indicators for use by cities. Since the introduction of UIP the number of indicators has been reduced. The UNCHS Habitat Indicators include three relating to solid waste.
- ♦ The purpose of developing indicators for solid waste management is to facilitate the preparation of plans. A UNCHS Regional Institution is developing a module of SWM indicators, which identifies five aspects of SWM, and for each aspect there are several indicators. Examples are given of how these indicators could be used to improve the management of wastes.
- ♦ An Annex provides indicators for 20 towns and cities in South India.

17-11-3 Other information

Length of paper 10 pages

Keywords: Asia, indicators, planning

**17-12 A Program of Technical Assistance to
Improve Waste Management in Selected Hospitals in India**

by Terrence Thompson, M M Datta, and Geeta Mehta

17-12-1 Context

There is a growing concern in India about the hazards associated with poor management of healthcare wastes. Since 1999 the WHO has been working with the Government of India to develop a national framework for hospital waste management and to demonstrate good practice in pilot projects.

17-12-2 Main points

- ◆ Draft national guidelines were based on existing official regulations and background information gained from visits to hospitals and clinics. The draft was revised in a national workshop.
- ◆ Baseline investigations revealed widespread deficiencies in practices and knowledge. Quantities of waste were measured, some equipment was supplied, action plans were developed and their implementation was begun.
- ◆ Conventional approaches to training were found to be ineffective, but innovative approaches and small incentives had positive effects. One of the key challenges is to stop the recycling of some contaminated items. Training needs to be more widely targeted, to include directors, administrators, purchasing officers and others.
- ◆ There is a serious lack of financial resources for upgrading management standards. In particular, the incinerators of large hospitals, if functioning at all, were causing serious pollution because of their low operating temperatures.

17-12-3 Other information

Length of paper 6 pages

Keywords: Asia, healthcare, HRD

17-13 GO – NGO Partnership – A Sustainable Solution for Community Waste Management

by Tariq bin Yousuf

17-13-1 Context

The Dhaka City Corporation is responsible for managing the waste of 7 million people; it has been struggling to provide a satisfactory collection and disposal service for the whole city. As a result more than 100 communities have set up their own primary collection services, creating about 400 jobs and increasing the collection coverage by 20%. Some community-based schemes have suffered

as a result of a reducing willingness to pay the local fee. There is a great need to link up the community-based primary collection operations with secondary transport and disposal so that waste does not accumulate in urban areas, but the disposal sites themselves are not environmentally sound. This paper describes a shared initiative involving a local NGO which has helped to set up a decentralised composting operation, taking waste that is segregated at source.

17-13-2 Main points

- ◆ This community composting project has involved four parties: the City Corporation, the NGO, UNDP and the local community. The contributions of each party are described.
- ◆ The scheme has brought many advantages to the community, including environmental improvements and employment. Difficulties have included persuading the municipal authorities that such a scheme can actually make a significant impact on the City's waste management problems, and finding markets for the compost that is produced.
- ◆ Municipal ordinances should be modified to include waste recycling as a disposal option and recognise the participation of NGOs and CBOs.

17-13-3 Other information

Length of paper 6 pages

Keywords: Asia, community, composting, NGO

quote ...

It has also been seen through the GOI-WHO program that discrete training activities do not necessarily achieve the behavioural changes necessary to ensure safe hospital waste management.

(Terrence Thompson et al; Paper 17-12)

A community is people bound by one common factor. Before we can do anything in a community we must first find out what binds the community together.

(Clifford Matsoga; Paper 11-1)

Annexes

List of annexes

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Annex 1 Acknowledgements

Organising a workshop is always a team effort, but in this case there was a unusually high level of shared responsibility and participation in the preparation and running of the event. The people who played the main roles are listed below, but the list is not exhaustive, so those who should have been mentioned but are not listed below are asked to forgive SKAT for this oversight.

The success of a workshop depends on all the participants – all who present papers, who chair sessions, who ask questions, who take part in working groups, who contribute to the positive and congenial atmosphere. So in a very real sense it is appropriate to thank all who took part in the workshop for the role that they played.

Main Sponsors	Danida (Denmark), GTZ (Germany), Netherlands Agency for International Cooperation, <i>We are grateful not only for the financial support, but also for their vision in recognising the value of such a workshop</i>
Other Sponsors	DFID (UK), World Bank, ILO, SDC (Switzerland), CalRecovery Inc. (USA), Ireland Aid <i>Each of these sponsors enabled key players to take part.</i>
Principal organisers	SKAT, Switzerland <i>Jürg and Adrian found it an enjoyable experience, working together with such pleasant people.</i>
Organising committee	Carl Bartone (World Bank), Arnold van de Klundert (WASTE/UWEP), Lars Mikkelsen (Danida), Luis Diaz (CalRecovery Inc.), Dan Lapid (CAPS) <i>From beginning to end, providing ideas, guidance, support and encouragement</i>
Local organiser	Dan Lapid (CAPS, Manila) <i>Dan was always available, calm, efficient and friendly</i>
International secretary	Gisela Giorgi (SKAT) <i>Gisela handled a huge amount of work with efficiency and friendliness</i>
Moderator	Bebet Gozun <i>She did a fantastic job, ensuring that the programme ran smoothly and to time, and keeping us all informed and cheerful.</i>
Local workshop secretariat	Babes Ancheta, Revie Bayona, Sherly Fermino, Mining Manguiat, Petronilo Mendoza, Mel Palmares, Ronessa Paner, Robert Serrano (CAPS) <i>What a team! Working long hours, overcoming obstacles, reliable and friendly</i>
Rapporteur	Joyce Munsayac (CAPS) <i>First class in every way, tremendous support</i>
Site Visits	Carmona: Atty. Rod Loyola, Mayor of Carmona Silang: Eileen Sison and Celia Marquez, of IDEAS <i>Interesting initiatives, plenty of enthusiasm, kind hospitality</i>
Participants' feedback group	Felix Adegnika, Salah Borno, Sonia Dias, Noor M Kazi <i>Working late to provide valuable backup and guidance to the organisers</i>
Venue hosts	Holiday Inn, Manila <i>Providing an excellent service, always ready to help</i>
Local sponsorship	Unilever Philippines Inc. for sponsoring a lunch Coca Cola Bottlers, Philippines, for soft drinks during the site visits

Annex 2 List of participants

[Family names (surnames) are generally shown first.]

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There were 70 participants and five observers.

Annex 3 Workshop Programme

Day and time	Event	Presenter/responsible
Sunday 17 September		
16.00–20.00	Registration	CAPS
17.00	Meeting of Monday's chairpersons and facilitators	Bebet and SKAT
18.30	Welcome cocktail and dinner	
19.45	Meeting of feedback team	SKAT
Monday 18 September		
8.30 – 9.30	1. Introductory session	Chair: Carl Bartone
8.30-8.35	Welcome from Moderator	Bebet Gozun
	Flag ceremony and prayers	
8.35 – 8.45	Opening remarks	Roseller Della Pena, DENR*
8.45 – 9.00	Keynote speech and chairman's remarks	Carl Bartone
9.00 – 9.05	Welcome from organisers	Jürg Christen
9.05 – 9.20	Welcome address	Johnny Endaya
	Pause for VIPs to leave	
9.20 – 9.25	Priority announcements from Moderator	Bebet Gozun
9.25 – 9.40	Participants' introductions	Adrian Coad
9.40 - 10.30	2. Philippines presentations	Chair: Luis Diaz
9.40 - 9.45	Brief introduction	Luis Diaz
9.45 – 10.05	Government-NGO co-operation for recycling in Manila	Manuel Gaite & Linda Eggerth
10.05–10.30	Solid Waste Ecological Enhancement Program	Mayor Mary Ortega
11.00 – 12.30	3. Presentations Stakeholder involvement for sustainable SWM (UWEP)	Chair: Arnold van de Klundert
	Short introduction on ISWM concept	Arnold van de Klundert
	Empowerment of residents in Bamako	Modibo Keita
	Empowering MSEs in urban waste collection	Victoria Rudin
	Sustainable healthcare waste management	Anjana Iyer
14.00 – 14.10	Announcements	Bebet Gozun
14.10 – 15.30	4. Presentations	Chair: Tanveer Ahsan
	Integrating the community – EHP in Gaza	Elisabeth Zonneveld
	Bridging the gap between public and private sectors	Salah Borno & Manfred Scheu
	Integration of private informal activities	Mansoor Ali
16.00 – 18.00	5. Working groups I	Facilitator: Nathaniel von Einsiedel...
20.00 – 22.00	6. Informal case study presentations	Chair: Christine Werner
	ISWM and sustainability of alliances between stakeholders	Arnold van de Klundert
	Batangas Bay recycling co-operatives	Mel Palmares
	Integrating waste pickers for sustainable recycling	Sonia Dias
	Healthcare waste management – an integrated approach	Noor M Kazi

* Department of Environment and Natural Resources, responsible for SWM in Philippines

Tuesday 19 September

8.30 – 10.30	7. Presentations on Planning (Session 1)	Chair: Carl Bartone
	Introductory remarks	Carl Bartone
	Strategic Solid Waste Planning for Large Cities	David Wilson
	Case study: Integrated waste management in the Cono Norte of Lima (Peru)	Oswaldo Caceres
	Case Study: Halong solid waste management strategy (Vietnam)	Cong Thanh Nguyen
11.00 – 12.30	8. Presentations on Planning (Session 2)	Chair: Carl Bartone
	Toolkit for solid waste planning in intermediate cities	Alvaro Cantanhede
	Case Study: National Sector Assessment in Philipines	Bebet Gozun
	Improvement of MSW Management in Guayaquil, Ecuador	Luis Diaz
14.00 – 15.30	9. Panel discussion on private sector participation with introduction by Sandra Cointreau	Chair: Adrian Coad
16.00 – 18.00	10. Working groups (topic related to planning)	Facilitator: Carl Bartone
20.00 – 22.00	Poster session	

Wednesday 20 September

8.30 – 10.30	11. Presentations (GTZ/Philippines)	Chair: Dr Mansoor Ali
	Cleaning the Environment – A community approach in Botswana	Clifford Matsoga
	Project on mechanical/biological waste treatment	Christine Werner
	Linis Ganda	Leonarda Camacho
	Stretching the impact of meager local budgets	Ed Queblatin
10.45 – 18.00	12. Site visits to Carmona and Silang	CAPS

Thursday 21 September

8.30 – 10.30	13a. Presentations	Chair: Kees van der Ree
	<i>Building on both sides of the bridge: partnership for job creation in solid waste management.</i>	Kees van der Ree, Jasper Kirango & Saskia Bakker
11.00 – 11.30	13b. Regional Waste Management Programme for Southern African (SADC) Countries	Christian Nels
11.30 – 12.30	14. Panel discussion (Participants are invited to submit questions on any issue related to SWM)	Chair: Manus Coffey
14.00 – 15.30	15. Working Groups - Output from Workshop	Facilitator: Liesbeth Zonneveld
16.00 – 18.00	16. Conclusions, summaries, feedback and output	Facilitator: David Wilson

Annex 4 Information about the CWG

The CWG – or the Collaborative Working Group for the promotion of solid waste management in medium- and lower-income countries – is an informal association of organisations and individuals who are concerned to improve standards of solid waste management in the developing world.

The CWG was created in 1995 by the initiative of the Swiss Agency for Development and Co-operation (SDC), the Urban Management Programme (UMP), and the World Bank. The CWG programme also involves other multi- and bilateral partners and a network of developing country experts and specialised NGOs.

The objectives of the CWG have been formulated as follows:

- to maximise synergies between actors, and to allow groups to learn from one another and replicate positive experiences
- to facilitate regional and global co-ordination, networking and information exchange among an increasing number of partners
- to promote mutual learning through exchange of information and experiences
- to maintain and further expand the network of professional regional and international bodies and institutions active in municipal solid waste management
- to identify needs and co-ordinate and prioritise activities in a demand-responsive way

The joint work programme of the CWG has included the preparation and publication of several publications by various partners. The CWG has also organised a series of workshops which are listed below.

At the time of writing the CWG has no formal membership requirement and no funds of its own. Funding for particular activities and projects has been provided by the World Bank and by a number of bilateral donor agencies.

The CWG has a web-site which is operated by Melissa. The site is <http://www.melissa.org/cwg/>. More information about the CWG, its publications and the recent CWG meeting in Manila can be found at this site.

Previous CWG workshops

This workshop is the fifth in a series. Details of the previous workshops are as follows:

Year	Venue	Title
1995	Ittingen, Switzerland	Ittingen International Workshop on Municipal Solid Waste Management
1996	Washington DC, USA	Promotion of Public/Private Partnerships in Municipal Solid Waste Management in Low-income Countries
1996	Cairo, Egypt	Micro and Small Enterprises: Involvement in Municipal Solid Waste Management in Developing Countries
1998	Belo Horizonte, Brazil	Waste Disposal Workshop ,98 Upgrading Options of Lower- and Middle-income Countries

Some copies of the reports of these workshops are available from SKAT (gisela.giorgi@skat.ch). In addition, summaries of two of the workshops can be found on SKAT's website (under Urban development; Solid waste management, and publications) as Infopage No.1 (Cairo Workshop) and Infopage No.4 (Belo Horizonte).

Recent publications of CWG members - taken from the paper 1-2 by Carl Bartone

Most of these publications can be obtained by e-mailing urbanhelp@worldbank.org, and can be downloaded from the World Bank web site < <http://www.worldbank.org/html/fpd/urban/publicat/publicat.htm> >.

- Arroyo-Moreno, J., Rivas-Rios, F. and Lardinois, I. (1999). *Solid waste management in Latin America: The role of micro- and small enterprises and cooperatives*. IPES-ACEPESA-WASTE Urban Waste Series No. 5, Lima, Peru.
- Bartone, C.R., Bernstein, J. and Wright, F. (1989). *Investments in solid waste management: opportunities for environmental improvement*. Policy, Research and External Affairs Working Paper No. 405, World Bank, Washington, DC.
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- Bernstein, J. (2000). *A toolkit for social assessment and public participation in municipal solid waste management*. Draft working paper prepared for the Urban Waste Management Thematic Group, The World Bank, Washington, DC.
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- Cointreau, S., Gopalan, P. and Coad, A. (2000). *Private sector participation in municipal solid waste management: Guidance Pack* (5 Volumes). SKAT, St. Gallen, Switzerland.
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- Hoornweg, D., Thomas, L. and Otten, L. (2000). *Composting and its applicability in developing countries*. Urban and Local Government Working Paper Series No. 7, The World Bank, Washington, DC.
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- Johannessen, L.M. (1999c). *Guidance note on leachate management for municipal solid waste landfills*. Urban and Local Government Working Paper Series No. 5, The World Bank, Washington, DC.
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- Johannessen, L.M., Dijkman, M., Bartone, C., Hanrahan, D., Boyer, G., and Chandra, C. (2000). *Health Care Waste Management Guidance Note*. Health, Nutrition, and Population Working Paper Series, The World Bank, Washington, DC.

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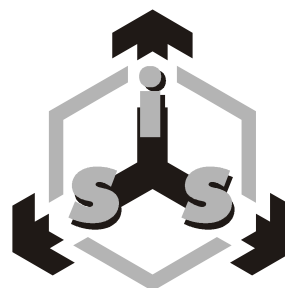
Annex 5

THE LOGIC BEHIND THE LOGO

by Adrian Coad,

This paper seeks to explain the meaning of the workshop logo.

The logo represents three mutually perpendicular axes – a convention well known to mathematicians. Here, the three axes are named “s”, “i” and “s”. The grey lines between the axes represent a solid body. What is the connection with solid waste management? Why is this logo used for the Workshop?



The key lies in the word “integrated”.

When distances in two dimensions (for example north and east) are integrated, the result is an area.

When distances in three dimensions (such as north, east and vertically up) are integrated, the result is a solid body.

Since we are concerned with *solid* waste management, we need three dimensions.

The three dimensions in the logo are:

s for **stakeholders**

i for **impacts**, and

s for **stages**

The same pattern of letters appears in the title of the Workshop

Planning for Sustainable and Integrated Solid Waste Management

Figure 1 overleaf gives illustrations of the meanings of the three axes.

Sis

STAKEHOLDERS all those with a stake or interest in solid waste management. This includes almost everyone, but the key message is to integrate all stakeholders into solid waste management planning, and if possible into monitoring and maintenance. Figure 1 suggests that the main stakeholders are

- **generators** – anyone who ever decides that an item has no value for them. Special attention should be paid to the needs of low-income generators;
- **communities** – groups of people with a common interest because of their proximity, and community-based organisations;
- **the informal sector** – people who earn or supplement their incomes by any activity related to solid waste, but are not formally employed to do this work;
- **NGOs** non-governmental organisations;
- **the private sector** – registered companies and organisations that provide a service for financial gain;
- **local government** – responsible for managing villages, towns and cities, and including staff at all levels who are involved in waste management, the public sector;
- **state/national government**, and
- **international agencies** – lending and donor agencies, international associations and networks.

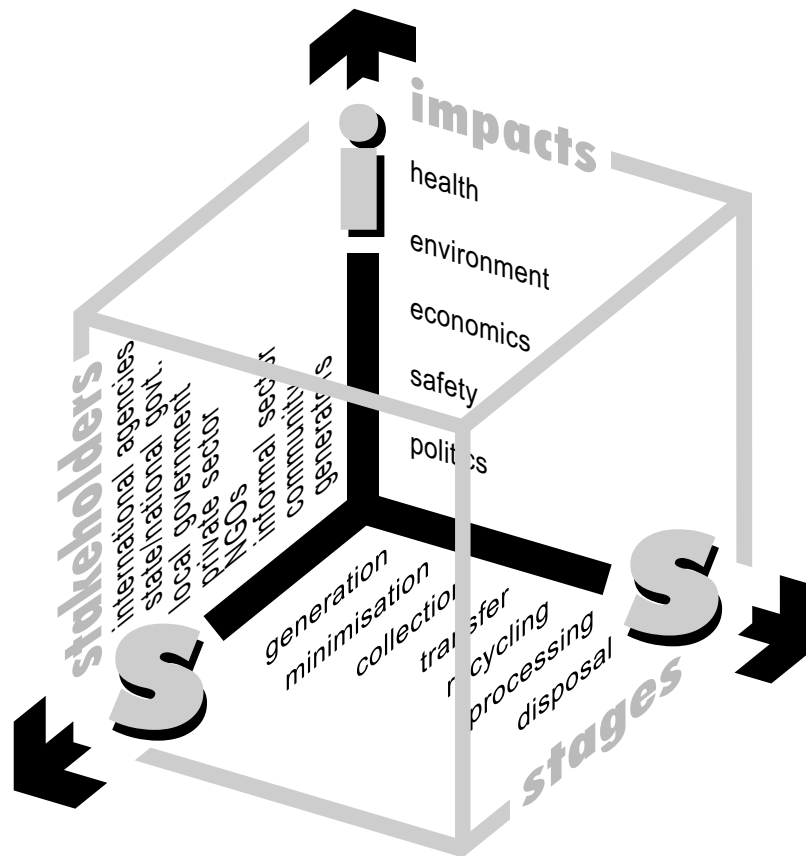


Figure 1 Diagram showing the basis of the logo

sis

IMPACTS – the categories of results or effects that are influenced by decisions relating to solid waste management functions, or the performance (or lack of performance) of solid waste management functions. Some impacts are

- **health** – because vectors that spread disease breed in waste; skin, eye and lung diseases can be transmitted by dust, smoke and other means;
- **environment** – pollution of water, air or soil, wasteful use of resources;
- **economics** – capital and operational costs of providing services, foreign exchange, employment generation for large numbers of recycling workers, employment generation in formal sector if labour-intensive methods are preferred, willingness and ability of service beneficiaries to pay for services, impacts on land values;
- **safety** – fires, road accidents, lifting injuries, accidents at waste disposal sites (gas, lack of stability, dangerous items or materials), and labourers responsible for waste, recycling workers, and children may be injured by sharp, inflammable or explosive items;
- **politics** – negative effects on politicians' popularity from failures to keep areas clean, positive impacts from successful community schemes, impacts of SWM initiatives on large groups of waste-related workers who have some voting power. Solid waste management initiatives can succeed or fail purely because of political impacts;
- **other** impacts could include less measurable phenomena such as the feeling of well being, or pride in one's community, and secondary effects such as blocked drains and obstructed roads and pathways.

sis

STAGES The different activities that are required to manage the waste from the point of generation to final disposal, generally considered to include:

- **generation** – the decision that the item no longer has value;
- **minimisation** – which may take place in a shop when a customer decides not to buy or accept an item or bag in order to reduce the amount or impacts of waste, or it may take place near the point of generation if material is reused or converted into something of value, or processed in some way to reduce its weight or bulk;
- **storage**, near the point of generation and perhaps later at an intermediate or transfer stage;
- **collection**, which may take place in one, two or more stages;
- **transfer** – between different stages of collection;
- **recycling** and resource recovery, including separation or segregation, which may take place at any point between storage and disposal;
- **processing** – with a range of objectives, such as to make transport more economical, to make the material more attractive or valuable for recycling or further processing, or to reduce the demands on the final disposal stage;
- **disposal** – the final stage, almost always involving depositing the waste or residues on land.

This is all very general and basic information. What is new?

The information is not new. The concept is not new. It is perhaps a slightly new way of presenting integration or integrated waste management. Integration means considering all the points along each axis, and considering all three axes. Some examples will show the importance of integration. There are of course many other examples that could be quoted. These are some that I have come across recently.

1 INTEGRATING ALONG ONE AXIS

1.1 Stages I have recently heard of several cases where source segregation of waste has been vigorously promoted in some communities, but no consideration was given to the separate collection and transportation, and there were no arrangements for utilising the separate components. When householders discovered that the wastes they were carefully segregating were being mixed together for collection, they quickly stopped making the effort, and the so-called pilot projects collapsed. Because of these exercises in futility, it will be very difficult to persuade these householders to segregate their wastes at a later date when there may be a much more integrated programme for separate collection and recycling of the separated wastes, so these initiatives have had only negative effects.

1.2 Impacts Some initiatives to promote resource recovery may focus so strongly on environmental benefits that they ignore health impacts. Perhaps the most obvious examples are concerning healthcare wastes, in particular needles from syringes, infusion kits and blood bags. Because of their ability to harbour viruses and penetrate the skin, these needles are a very serious health risk, yet there are schemes that promote recycling for environmental reasons that fail to integrate the health impacts. As a result they probably make the health risks more serious than if nothing been done. The procedures that the nurses and other staff are required to follow expose them to serious risks.

Another example, for which I am sure many of us could quote particular case, are the large composting schemes driven purely by the environmental motive, but failing to see the crippling economic and financial impacts.

1.3 Stakeholders In Mansoor Ali's excellent paper he reminds us to consider sweepers and waste pickers in our planning, and gives an example of a failure that was caused by the lack of integration of these stakeholders.

2 INTEGRATING BETWEEN AXES

It is important not only to consider all the items along one axis, but also to consider all three axes together.

2.1 Ignoring stakeholders There are large numbers of examples of solid waste management initiatives that have failed to consider important groups of stakeholders. Typical is the case where a communal system of waste collection (which may integrate all the stages from storage to disposal) has been imposed on a community without consultation, and where objections to the location of the communal containers have become a major obstacle. Technical consultants may design a co-ordinated technical solution, but fail to consider the communities and the training and motivation of the staff. On the positive side, Liesbeth Zonneveld's paper gives a very good example of integrating community and workforce.

2.2 Ignoring stages The previous examples – ignoring stakeholders – resulted perhaps from a concentration on technology and systems, at the expense of the social aspects. However, the coin has another side, and if an initiative is prepared without consideration of the coherence and appropriateness of the storage, collection and disposal systems, and the links between them the initiative is likely to fail. Engineering, economics and sociology need to be integrated into the planning team

2.3 Ignoring impacts Sometimes one gets the impression that schemes and programmes are being designed without consideration of impacts, and without really considering what the actual benefits of the project will be. I can think of an example where equipment was donated to a low-income country, and this equipment forced the construction of a large facility, and considerable cost to the recipient country. At the time of writing it seems that the project will have no environmental or health benefits, and negative economic and political consequences, except perhaps for the company that supplied the machinery. It seemed that the project was driven by an unthinking, almost religious, approach that any action related to composting must be good, without a realistic assessment of the expected benefits and impacts.

Conclusions

But the workshop is also about planning and sustainability? How do these come in?

Very often the failure to think in an integrated way is at the planning stage, so all of the above comments refer particularly to the planning stage.

Whilst there are some aspects of sustainability that are not directly related to the points made here, in general there are close links, and if a system or approach is designed in an integrated way, it is more likely to be sustainable. To sustainability we can add **sist**ainability.

The concept represented in the logo is not a magic formula, but perhaps it can serve as a reminder of what the term "integrated" means in the context of solid waste management. Perhaps it could be used as a checklist – a simple test of the adequacy of the planning of a solid waste management initiative.

Annex 6 Index of keywords and authors

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Annex 7 Photographs

These photographs were provided by CAPS and Jürg Christen



← The opening session

↓ A working group in action



↓ Demonstrating the new Strategic Planning Guide



↓ Some of the participants during the site visit



Examples of some of the posters

