

## **#3 SOLID WASTE MANAGEMENT TRAINING IN AFRICA**

by Jarrod M Ball<sup>1</sup> and Oumar Cissé<sup>2</sup>

### **Abstract:**

Because poor solid waste management (SWM) practices impact heavily on the environment, and quality of life in Africa, the World Bank Institute has become involved and identified ongoing SWM training as a major need. To address this deficiency, consultants were commissioned to develop an African SWM training programme. To this end, Regional Training Centres were set up in Southern, East and West Africa, with a view to training regional trainers on an ongoing basis.

An initial training needs analysis indicated that there was abundant training material available. However, it was not considered to be Afro-centric and suitable because it was generally based on adapted methodologies from developed countries. Consequently a principle-based SWM training course was developed to specifically address African conditions and requirements. The course targeted technical and political decision makers whose inputs could make a difference to SWM. The training material focused on sustainability amongst other things. It was evaluated by delegates at expert and pilot workshops, and found to be suitable for the intended purpose, i.e. to provide decision makers with relevant principles on which to base sound SWM decision making.

From the workshop responses, it was concluded that the objective of developing an Afro-centric SWM course had been achieved. It was also found that the basic course material could be easily regionalized. The second objective – of training trainers in the different regions – was not, however, achieved. Although potential trainers were identified in the first phase of the project, no trainers were in fact trained. Consequently, to ensure project sustainability, initiatives taken at the time of writing require continuous follow-up and the ongoing training of trainers in future phases.

### **1. Introduction**

The objectives of this paper are first to highlight a significant aspect of capacity development in waste management in the global context, and second to indicate how this situation is being addressed and what needs to be done in the future.

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<sup>1</sup> Principal and Waste Sector Leader for Africa, Golder Associates Africa, Cape Town, South Africa.  
Mobile: +27 082 880 1058. E-Mail: jball@golder.co.za

<sup>2</sup> Directeur, Institut Africain de Gestion Urbaine (IAGU) Liberté VI Extension N°5, BP 7263 Dakar, Sénégal  
Tel Standard: 221 33 869 87 00 Website : www.iagu.org

As in other developing countries, poor SWM policies and practices have had major adverse impacts on the environment, public health, and quality of life in Africa. These impacts are observable in many African cities. Although the downtown areas may often be quite respectable, the impacts of poor SWM standards are abundantly evident in the residential areas and slums. Such areas are often characterised by uncollected waste deposited on sidewalks, street corners and vacant lots. Apart from the aesthetics, these deposits are often burning or decomposing, thus contributing to odour and air pollution. They also attract vermin.

The waste disposal sites are often worse than the residential areas. While these may be euphemistically referred to as landfills, in almost all cases, they are in fact large open burning dumps, which adversely affect the environment, public health, well-being, and quality of life. This occurs on a much larger scale than the dumping of waste in the residential areas. For example in September 2007, the Blacksmith Institute identified Nairobi's Dandora dumpsite as one of the "dirty thirty" most polluted areas in the world. Worse still, such open burning dumpsites are always home to communities of waste reclaimers. These people make their living in this degraded environment and are hence exposed to air, water and other types of pollution on an ongoing basis.

When assessing the reasons for such poor waste management in Africa one invariably finds that there is a lack of priority assigned to SWM issues, a lack of 'know-how', a lack of appropriate systems and a lack of resources. All these can be grouped under a general lack of capacity.

To address the need to build the capacity of people associated with the SWM profession in Africa, the World Bank Institute (WBI) embarked on a SWM training programme in both the Anglophone and Francophone countries of Africa. Consequently, the WBI commissioned a consulting team in October 2006 to expedite a SWM training project in sub-Saharan Africa. This paper provides an overview of the project, specifically the regional approach and the need for ongoing training of trainers to ensure sustainability.

## **2. Geographical coverage**

### **2.1 Regional Approach**

Since it would be virtually impossible to cover all the Anglophone and Francophone countries of sub-Saharan Africa in a project of this nature, this portion of the continent was logically divided into regions at the proposal stage. These comprised Southern, East and West Africa.

### **2.2 Consulting Team**

Golder Associates Africa was commissioned as the lead consultant. Golder is involved throughout Africa and specializes in SWM in developing countries, amongst other disciplines. To obtain wide network coverage, one of the sub-consultants was the Pretoria-based Basel Regional Training Centre. Through their existing networks, this organization was able to access government, environmental and academic organisations in Southern, East and West Africa. Finally to address the predominantly Francophone population of Western Africa, the Dakar-based Institut Africain de Gestion Urbaine, (the African Urban Management Institute), in Sénégal was involved as the second sub-consultant

## 2.3 Regional Training Centres

In Africa, as in most other developing countries, *sustainability* represents a major problem. Consequently, the focus of the project was to ensure sustainability. One of the first measures in this regard was to identify and establish suitable “Regional Training Centres” in each of the three regions under consideration and to obtain their enthusiastic involvement in the project.

The criteria used in identifying the Regional Training Centres included: being a recognized institution, having an environmental engineering and/or SWM oriented department, and having sufficient capacity to effectively participate in the project in the long term. Finally, as always in African countries, it was felt that personal contacts were essential to facilitate trust and reliable liaison. Using these criteria, several institutions were considered in each region. This was followed by careful consideration of alternatives, before choosing each centre.

Using this approach, the University of Kwazulu Natal (UKZN), was identified as the Regional Training Centre in Southern Africa. In East Africa, the Ardhi University (ARU) in Dar es Salaam was identified, and in West Africa it was the *Institute Africain de Gestion Urbaine* or African Urban Management Institute (IAGU) in Dakar.

## 3. The training needs analysis

The fundamental step in developing the SWM training programme and requisite training course material was to undertake a training needs analysis (TNA). This purpose of the TNA was first to obtain the input and views from other international SWM specialists who had done training in developing countries on what was being proposed. This was to ensure that the consulting team was in line with international thinking. Responses from African experts were also solicited to confirm that the proposed training course material had a broad-based and realistic perspective. It would also confirm that what was being provided would be truly relevant.

The collection of information for the TNA included ongoing literature research, as well as meetings and discussions with the WBI, representatives from the three Regional Training Centres and others. A database was developed for personal contacts, the literature and the team’s existing databases. Questionnaires were then sent out to some 155 names. Of these, about one third responded which is considered good for such surveys. The responses from the questionnaires formed the input into the TNA and the subsequent recommendations. These then dictated the content of the training course material, as well as its presentation.

The general finding of the TNA was that there was a plethora of training material and literature on developing countries. However, most of this material was what is termed “methodology specific”, i.e. it explained how solid waste should be managed. Since these methodologies were generally based on Northern Hemisphere or industrialised country methodologies, or perceptions of how waste should be managed in developing countries, it was not considered to be Afro centric. It was therefore believed to be inappropriate and hence not sustainable in the context under consideration.

It was consequently decided that a course would be developed from scratch and that relevant literature would be included as reference material. In this regard the ISWA “Solid Waste Management for Economically Developing Countries” the EAWAG “Decentralised Composting for Cities of Low- and Middle-Income Countries” and the South African “Minimum Requirements for Waste Disposal by Landfill” were identified as the most relevant references.

## 4. The training course

### 4.1 Requirements

Based on the TNA and again with a focus on sustainability, it was agreed that:

- a) The proposed Training Course should focus on actual African conditions (environment, culture and status quo). Solutions had to be African solutions as opposed to modified industrialised country solutions. It was realized that to promote sustainability, the course had to be developed in such a manner as to build on the existing systems and by so doing, it would provide African solutions for African problems, for example motorized tricycles in Accra and spontaneous recycling where economically viable.
- b) In practice it is believed that the best way to ensure sustainability is through the use of technology which is appropriate for African conditions. Because of bad experiences in this regard in numerous African contexts, the use of appropriate technology featured strongly in the course. Examples of bad experiences include a sophisticated composting plant which now lies derelict and trucks and plant that cannot be maintained.

### 4.2 Training

The initial training was undertaken by the consultants, assisted by appropriate Regional Training Centre staff. However; to ensure sustainability, it is believed that regional trainers should be trained at each of the Regional Training Centres. During the TNA, a profile for such trainers was drawn up. The role of the trainers would be to take the basic training material provided by the consultants and to regionalise it by illustrating it with their own local examples, case studies and slides. The trainers would then become affiliated to the Regional Training Centres by means of contracts or other suitable forms of agreement. In addition to this it was recognised that to ensure sustainability, ongoing training and follow-up of both trainers and trainees is essential.

### 4.3 Focus audience

As noted from the TNA, the training courses that were already available were not suitable for the purposes of this project. This was because the courses focussed on the methodology of how to manage waste, instead of on the underlying principles. Furthermore they were generally specialized and not Afro-centric. It is believed that in order to make a difference one must focus on the *people who can make a significant impact on the situation*. Almost by definition, these are the technical and political *decision-makers*. Consequently, the decision-makers whose inputs could make a difference in African towns and cities formed the target audience of the training courses.

In the case of technical decision-makers, they are frequently required to broaden their horizons, especially with regard to environmental factors. The political decision-makers are political appointees, usually with no understanding of SWM. Consequently, they need to understand the basics of SWM. In general the concept is to provide the decision-makers with sufficient background to ask the right questions and make sound decisions. This process requires repetition as politicians are usually replaced after their terms of office expire.

On account of the varied backgrounds and educational levels of the decision-makers participating in the training courses, a common medium had to be sought. This promoted a

course that focused on basic principles and their applications in SWM issues. To reflect this, the Training Course was entitled “*What you need to know about Waste Management in Africa: The Principles and Issues*”. Principles explain the “why” – i.e. the basic understanding – whereas the methodology explains the “how” and often results in people simply following examples, without questioning.

Further reasons for basing the material on principles, as opposed to basing it on commonly-used methods were as follows:

- a) Principle-based material provided the nominal degree of consistency required in the three regions. It also provided the essential flexibility required by trainers, so that they could augment and regionalize the material to make it relevant to their specific regions.
- b) The principle-based approach would also allow sufficient diversity in training courses to suit any given audience. To achieve this, discussion and interaction would be promoted in the training sessions. This would highlight pertinent issues to which the principles could be applied. To promote discussion and interaction, but also maintain control, the trainers would also have to be good facilitators.
- c) Finally, it was felt that the proposed principle-based approach would be effective in achieving the objective of producing a unique solid waste management training course for Africa that would promote sustainability in African conditions.

#### 4.4 Course content

Based on all these considerations, the training course material was developed. The material included only text and photos in PowerPoint and PowerPoint printouts. Deliberately, no other material was provided with the understanding that note taking would be very much encouraged. The reason for this is that it provided the freedom for each delegate to take what he or she wanted from the course, depending on individual perspectives. The course provided an overview of SWM, with a strong emphasis on African conditions. It concentrated on a number of fundamental principles and their application in the different components of SWM. As is seen from the list below, many of these principles are derived from other disciplines, e.g. management and economic principles. Others have been developed, based on extensive experience in SWM. Since many of the principles had applications in the different components of SWM, there was a lot of repetition in the course material. However, this was seen as positive attribute because it helped to instil the requisite information by means of repetition, which is a standard approach.

Some examples of the basic principles are:

- The due consideration of alternatives: This means that one cannot just accept a single solution without questioning whether it is adequate and appropriate. The advantages and disadvantages must be compared with those of other solutions, to ensure that the best solution is identified for implementation.
- The law of diminishing returns, especially with regard to material recovery. This means that it is easy to recover material at first, but then it becomes more and more difficult as the availability reduces. In this case, unit the cost of recovery increases, while the product quality decreases.
- Resource recovery and recycling are governed by economic principles. This means that resource recovery and recycling take place spontaneously when economically

viable, which implies that there is a market that will pay an adequate price for the product. Where this is not the case, the operation needs to be subsidized.

- The solution widely considered to be the best may often be inferior and unsatisfactory. An example is where politicians demand the sophisticated top-of-the-line technology, which they consider to be the best solution, without realizing that it is actually unsustainable. This often precludes the implementation of sustainable appropriate technology which, although not considered to be the “best” solution, is actually a good solution, because it works and achieves the required purpose.
- Local knowledge is essential for promoting sustainability. Without local insight, one cannot understand the problems that one is trying to solve.
- Appropriate technology goes a long way to promoting sustainability. Because it can be maintained under local conditions, appropriate technology works in the long term.
- Knowledge of sound environmental principles. Since waste impacts on the environment, it is essential to understand the nature, causes and effects of pollution, amongst other things.
- The need to consult people in matters that affect their daily lives or quality of life. This is a basic principle of democracy.
- The optimum level of pollution and Best Practicable Environmental Option (BPEO). This is basically a compromise, aiming for a level of pollution which does not cost too much to maintain, but is acceptable and sustainable.

In addition to these principles, comprehensive literature and case study references were provided for those who wished to learn more and needed to know where to look. Finally, after each training session there was an evaluation session when delegates filled in forms. This feedback was used to amend the course material and its presentation for future courses.

## 5. The programme

Although some input was obtained from East and West Africa during preparation, the course material was developed primarily in Southern Africa and translated into French in Dakar. It was then verified for content, relevance and style by means of “Expert Workshops” held in Dar es Salaam and Dakar in June and July 2007, respectively.

At the Expert Workshops, the consultants presented the course material to the delegates who comprised experts and knowledgeable people from the regions. The workshop participants then discussed and critiqued the course material and provided written comments about it. This feedback indicated that, apart from some minor changes, the course was considered to be very appropriate for the purposes intended.

The amended course was then presented at fee-based Pilot Workshops in Southern Africa and Dakar, Sénégal in November 2007. The objectives of these Pilot Workshops were threefold. First, to test the course material out on the focus audience, second to see whether, based on fees being paid by the delegates, the workshops could be self sustaining, and finally, as with the Expert Workshops, to identify potential trainers.

### 5.1 Findings

The findings were based on impressions obtained during the Expert and Pilot Workshops, from the feedback in the evaluation forms and from feedback from staff of the Regional Training Institutions and from independent observers. The findings were as follows:

- a) At both the East and West African Expert Workshops in June / July 2007, the course material was found to be highly appropriate in terms of relevance, style and content. The same applied to the Pilot Workshops in Southern and West Africa in November 2007.
- b) In all three regions the principle-based course was easy to regionalize, using local case studies and experiences (often narrated by the delegates).
- c) The feedback at all the Workshops indicated that the training course material was appropriate, and generally the lecturers rated from “good” to “excellent”.
- d) Potential trainers were identified in East, West and Southern Africa at both the Expert Workshops and the Pilot Workshops.
- e) Both the IAGU in West Africa and the UKZN in Southern Africa were able to run their fee-based courses without a loss. In all cases, further courses were requested.

## **6. Summary and conclusions**

The following points summarise this paper:

- a) Because of the poor status of SWM in much of Africa and its adverse impact on the environment and quality of life, the WBI’s training initiative is well timed and highly appropriate.
- b) Since existing training material was generally based on industrialised country methodology, it was not considered Afro-centric or suitable for this training course. Therefore, the development of a totally new training course was justified.
- c) This training course is principle-based and aims to promote sustainable SWM in Africa. To do this, it promotes appropriate technology and targeted technical and political decision-makers whose inputs could make a difference. The course is sufficiently flexible to be suitable for trainees with different levels of education and from different disciplines, coming from different regions.
- d) Workshop feedback indicated that the training course content and presentation were successful.
- e) In the interests of sustainability, Regional Training Centres were established, and a training course was designed. It was also the intention to train trainers. However, although numerous potential trainers were identified, the time and budget allocated to the first phase was sufficient only to lay the project foundation, but did not make provision for this training. Consequently, trainers will be trained in the second phase.
- f) If the WBI SWM project is to be sustainable, the initiatives taken in the first phase must be built upon; and the training of trainers and follow-up workshops must take place in subsequent phases.
- g) The actual cost of the first phase of the project amounted to some US\$ 220 000.

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