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## SOURCE SEGREGATION, COMPOSTING AND BACK YARD GARDENS TO PROMOTE HOUSEHOLD FOOD SECURITY AND HYGIENE IN MADIMBA

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### Abstract

Effective source segregation, composting and backyard gardens greatly enhance the ability of periurban households to increase food security and improve hygiene. The paper discusses practical experiences of a waste composting and back yard gardens pilot project in Madimba, one of the 44-peri urban communities in Lusaka. It also brings out the findings of the baseline study conducted in April 2004, that focused on solid waste management and health-related issues. The project is being implemented with the intention to develop an Eco-model for the integration of peri urban communities. It points out negative and positive experiences on how integrated solid waste management projects are implemented through community participation.

### 1. Introduction

Eliminating global poverty, disease and hunger is "utterly affordable" but needs concerted action from rich nations, including a massive increase in funding for scientific research that addresses the needs of the world's poor. Nonetheless, meeting the Millennium Development Goals will still require a substantial increase in funding both from developing countries themselves and in overseas aid (M. Shanahan 2005).

Science offers the potential for increased crop yields, improved food security and vaccines and medicines against diseases such as malaria, HIV/AIDS and diarrhoea (which is caused by poor sanitation). The problems of poor sanitation in periurban communities can be prevented when massive sanitation awareness activities are carried out. Inadequate urban sanitation is a common failure worldwide, with regard to both excreta disposal and solid waste management. In the developing world, including Zambia, the situation is more serious. New research capabilities are needed to help solve the tough problems facing developing countries especially in periurban settlements, and particularly in the tropics. The progress towards meeting the MDG sanitation targets is the slowest of all MDGs, with an enormous gap existing between the intended coverage and today's reality. Sanitation, however, receives less priority during planning, policymaking, budgeting, and implementation, while more resources are allocated to water supply. To reach the sanitation MDGs more attention and allocation of resources are needed (Petter et al., 2004).

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If the majority of the developing countries are to attain the Millennium Development Goals it may be necessary to revisit the MDG targets and set local strategies that can speed up or improve the provision of water and sanitation services, especially for periurban and rural communities, whose deprivation is hidden behind national averages. Sanitation coverage in sub-Saharan Africa is a mere 36 per cent the lowest coverage in any region (WHO and UNICEF, 2004).

The existing literature, such as the *Living Conditions Monitoring Survey* of 1998/2002/2003 by the Central Statistical Office (CSO), indicate that Zambia is faced with high levels of poverty, with 72.9 percent of the national population overall being below the poverty line in 1998. Income levels have also drastically declined with low formal employment, especially in Lusaka's urban and periurban poor households. Lusaka City has 44 periurban communities, of which the majority are legalized. Although the local authority does not provide solid waste management services, some community-based NGOs operate solid waste management systems. The poor sanitation conditions which are presently manifesting themselves in most periurban areas are creating formidable public health problems in Madimba leading to disease outbreaks. Endemic cholera has ravaged the City of Lusaka for almost every year from 1990 to 2004/2005 except for 1994, 1998, 2000 and 2002. This regular occurrence of the disease has motivated the NECOS to start sustainable intervention strategies such as the introduction of source segregation, composting and back yard gardens to improve the peri urban environment, which is the source of most infections.

Lusaka's population is estimated at 2 million and the periurban population ranges from 40% in small towns to 80% in cities. Although regarded by the local authorities as "illegal" or "squatter" communities, these settlements continue to grow without planning controls (GRZ-MLGH 2003). Sustainable solid waste management in the periurban poor households can be guaranteed if only unserved households regard waste as a resource for improving livelihoods through effective composting for back yard gardens.

## 2. Objectives

The objective of the sanitation project in Madimba is to promote periurban household food security through back yard gardens with the use of compost manure. The project is aimed at enhancing hygiene practices, health and household food security among HIV/AIDS-affected households in Madimba. It is also focused on how implicit experiences and tacit knowledge, translated into shared experiences, and explicit knowledge can result in effective community structures for implementing integrated solid waste management. In accordance with its goals, the Network for Environmental Concerns and Solutions (NECOS), seeks to promote integrated solid waste management through source segregation, composting and backyard gardens at household level. The Madimba integrated sanitation pilot project has the following objectives:

- Improving sanitation in Madimba and increasing collaboration,
- Identifying community problems and possible intervention strategies,
- Integrating sanitation into agriculture and increasing household food security,
- developing local indicators to achieve MDGs
- developing an eco-model to replicate in other periurban communities.

## 3. Description of project activities

The project – Madimba waste source segregation, composting and back yard gardens – started in June 2004, targeting more than 100 households found practising back yard gardening. The households complained of poor vegetable yields as well as the high prices of chemical fertilizers. The periurban poor households, mainly those who could not afford to buy chemical fertilizer, were targeted for

demonstrations of source segregation of waste and composting. Compost has proved effective and efficient in improving vegetable yields and thereby improving household food security. Demonstration plots to carry out source segregation and composting were set up in Madimba and a community structure for collecting non-degradable solid waste for final disposal was put in place. The local authorities were invited by the community through NECOS – a community-based NGO – to come and propose an arrangement for final disposal of residual waste, taking account of the health aspects of waste disposal.



**Photograph 1** Source segregation of non-degradable waste



**Photograph 2** Door-to-door waste collection in Madimba

Existing household waste pits were used for composting. Though the project started on a small scale, more and more households are showing willingness to engage in source segregation of waste, composting and back yard gardening. The sustainability of the project requires concerted efforts from the community itself and local Government support. There is a need to increase on the number of demonstration sites, and to implement a massive awareness and sensitisation campaign on source segregation, composting and final disposal of waste. The economic and health importance of waste management should be emphasised to encourage more periurban households to engage in source segregation, composting and utilization of manure in the back yard gardens. The concept of source segregation is new for the majority of the residents of Madimba and demands community participation to achieve the intended goals. The project will improve the hygiene in the periurban communities where most infectious diseases occurred. Several community demonstrations and dissemination meetings involving local leaders, residents' development committees, non-governmental organisations, government departments, local business houses and politicians have been organised at community level. The number of back yard gardens where compost is applied is steadily increasing and the concept is being appreciated. Some households are able to produce enough vegetables for home consumption as well for generating a small household income. The number of households engaged in source segregation, composting and back yard gardening is increasing, resulting in a healthier environment, household food security and economic empowerment. Some households are able to make their own compost for vegetable gardens. Photographs 3 and 4 show how this is done.

#### 4. Challenges

The Madimba source segregation, composting and backyard gardens project has faced a number of challenges that have required concerted efforts from the community, local government, NGOs and other stakeholders. The challenges can be categorised as follows; socio-economic, environmental and cultural. "People's cultural background is an important influence on several aspects of their lives, including their attitudes towards wealth, well-being and livelihood diversification." (Shinyanga, 1998:

208) Therefore, understanding social networks is one of the most effective tools for the exploitation and utilisation of new concepts at local level. The concepts of source segregation of waste, composting and utilization of manure in vegetable gardens are new, but they are slowly gaining ground among the residents of Madimba periurban community.



**Photograph 3** Compost pit for degradable waste



**Photograph 4** Vegetable garden enriched by compost

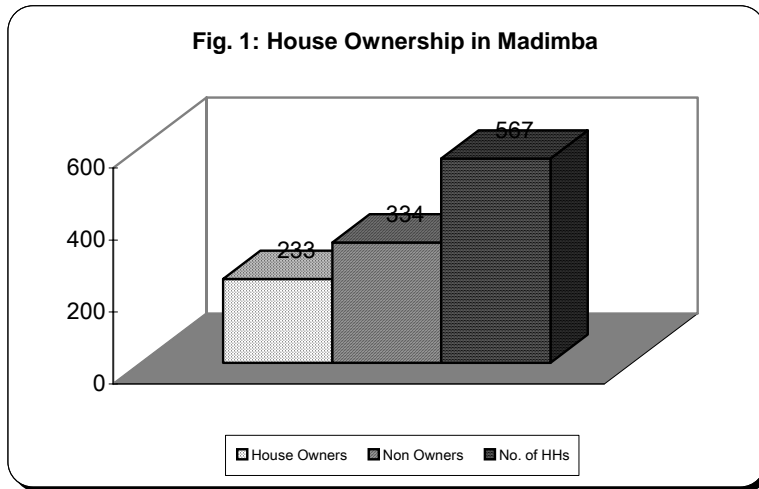
The support from the local council, Government, NGOs and other stakeholders has been low, creating apathy among Madimba residents and resulting in a low level of community participation in community-based demonstration and dissemination meetings. The high poverty level in periurban communities is one of the factors influencing the low or non payment of waste collection fees, in turn affecting the quality of the solid waste collection service in the periurban area. Residents prefer to pay for drinking water rather than paying for waste collection.

It is observed that one of the challenges, which has contributed to the outbreaks of most infectious diseases, is the tendency of some households to deposit waste at the side of the road, creating environmental hazards. Instead of learning and accepting the concept of waste management through source segregation, composting and utilization of compost in the back yard gardens, they dispose of their waste indiscriminately.

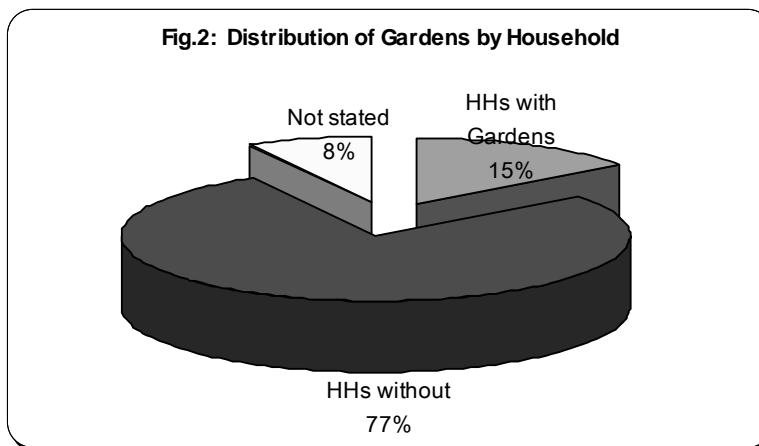
## 5. Lessons learned

Findings revealed that an eco-model development and sanitation pilot project in Madimba requires community participation to achieve the intended goals. Several community concerns that adversely affect the residents have been highlighted and discussed in order to identify intervention strategies that empower the vulnerable groups of poor periurban dwellers with sustainable waste management (composting concept), among other things.

The baseline study recommended interventions appropriate to the local conditions that would directly or indirectly lead to a more healthy periurban human environment with diverse opportunities for income generation among the target groups. Several factors and indicators affecting the alternative livelihood were examined. They included:- Analysis of social demographic factors such as marital status, household size, home ownership, sex, and cultural perspectives. There were few back yard gardens in periurban Madimba and most urban households are faced with a number of problems that result in food insecurity and high poverty levels. 77% of the periurban households in Madimba are not engaged in back yard gardening. 15% were found to have vegetable gardens without practising waste composting. Although the majority of the residents in Madimba are renting their accommodation, house ownership status has no influence on waste composting and household back yard vegetable gardening as indicated in Figures 1 and 2.



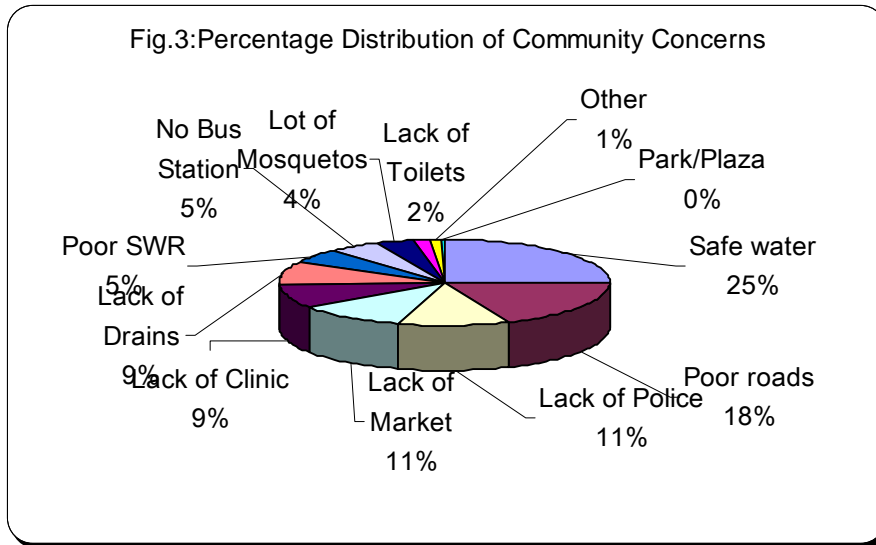
Source: Field baseline survey 2004



Source: Field baseline survey 2004

The majority of the people in Madimba are poor, hence when implementing any integrated sustainable sanitation project we consider even a small incentive to be a success. Payments in kind such as providing labour are accepted instead of cash payments for service. Vulnerable groups like the elderly and orphans are exempted from paying for the service. Targeting and supporting individual households that show interest in the project ideas could benefit the community at large.

Women do most of the community-based voluntary work as compared to men. Typical community work includes the construction of stormwater drains. Foodstuffs are more appreciated than small cash incentives as payment for periurban voluntary community work, especially if the incentive payment is less than \$1. The economic status of a household has a very big influence on community participation in voluntary work. Any integrated community-based environmental sanitation project should consider income-generating activities. The practical experiences of developing and implementing an eco-model and integrated environmental sanitation pilot project in Madimba revealed that the community knows their problems and they can be addressed adequately through community participation. During the baseline survey, residents identified community problems among which poor sanitation; drains, the poor road network and the lack of a supply of wholesome drinking water counted for 50%. After analysis of the baseline data we came up with proposed community projects and presented them back to residents before commencing the pilot projects. The community concerns of the residents were highlighted and discussed to come up with intervention strategies that empower the vulnerable periurban poor. Figure 3 shows the issues that concerned the community.



## 6. Conclusions

The Madimba source segregation, composting and back yard gardens sanitation pilot project has drawn on experiences that need to be understood and improved upon, such as how the people's cultural background influences several aspects of their lives, well-being and livelihood. Sanitation has been given a lower priority than water supply in Africa, including Zambia. The concept of waste management through source segregation, composting and utilization of compost in gardens is new idea which requires support from local councils, Government, NGOs and the communities themselves, as well as from other stakeholders. High poverty levels in periurban communities are one of the influencing factors for effective implementation of community projects. The plentiful supply of wholesome water without considering sanitation will not be effective in controlling most of the infectious diseases related to environmental hazards. Instead of learning and accepting the concept of waste management through source segregation, composting and utilization of compost in back yard gardens, they dispose of wastes indiscriminately.

The progress towards meeting the MDG sanitation targets in the periurban areas of Zambia and other developing countries is far from satisfactory. Therefore an enormous gap exists between the intended coverage and the actual situation on the ground. The closing of this gap requires making sanitation a priority during planning, policymaking, budgeting, and implementation.

To reach the sanitation MDGs, more attention and allocation of resources are needed to speed up or improve the provision of water and sanitation services, especially for periurban and rural communities.