

Swaziland Environmental Authority

National Solid Waste Management Strategy for Swaziland
Pilot Project Summary Report

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Background Materials

- Report on Inter-municipal Co-operation with annexures
- Report on Health Care Waste (Mbabane hospital) with annexures
- Report on Recycling –Buy-Back centre with annexures
- Report on Waste Management Systems in peri-urban areas (Kwaluseni) with annexures
- Report on Commercial Waste Management Systems in non-urban areas (Siphofaneni) with annexures
- Five pilot project hand-over reports with specific action plan and way forward

List of Abbreviations

CC	City Council
CD	Capacity Development
CDP	Capacity Development Plan
CSO	Central Statistical Office
CT	Company Town
CTA	Central Transport Agency
DANCED	Danish Co-operation for Environment and Development
DANIDA	Danish International Development Agency
DKK	Currency in Danish Kroner
DPMO	Deputy Prime Minister's Office
E	Currency in Swaziland;
EMA	Environmental Management Act
EIA	Environmental Impact Assessment
EIS	Environmental Information System
HCRW	Health Care Risk Waste
HCW	Health Care Waste
MEE	Ministry of Enterprise and Employment
MOF	Ministry of Finance
MHSW	Ministry of Health and Social Welfare
MHUD	Ministry of Housing and Urban Development
MNRE	Ministry of Natural Resources and Energy
MOAC	Ministry of Agriculture and Co-operatives
MTEC	Ministry of Tourism, Environment and Communication
MPWT	Ministry of Public Works and Transport
NDS	National Development Strategy
NEP	National Environmental Policy
NGO	Non-Governmental Organisation
NSWMS	National Solid Waste Management Strategy
PSC	Project Steering Committee
PMG	Project Management Group
RG	Reference Group
PSMP	Public Sector Management Program
SABS	South African Bureau of Standards
SEA	Swaziland Environmental Authority
SEAP	Swaziland Environmental Action Plan
SEDCO	Small Enterprises Development Company
SME	Small/medium sized Enterprises
TB	Town Board
TC	Town Council
WHO	World Health Organisation
WIS	Waste Information System

1. Introduction

This report is the Pilot Project Summary Report prepared as part of the implementation of 5 pilot projects in relation to the Swaziland National Solid Waste Management Strategy (NSWMS) Project. The reporting period covers the pilot project design and implementation period from June 2001 to March 2003. The report has been drafted by the Project Management Group (PMG) and presented to the Project Steering Committee (PSC) 23th. March 2003.

The NSWMS project is financed by the Government of Swaziland and Danish International Development Agency DANIDA (formerly DANCED). The main purpose of the Pilot Project Summary Report is to present a short description of the purpose, implementation and results of the pilot projects. The Summary Report is based on 5 comprehensive pilot project reports with annexures from where more detailed information can be obtained.

The pilot project reports are as follows:

- Report on Inter-municipal Co-operation
- Report on Health Care Waste (Mbabane hospital)
- Report on Recycling –Buy-Back centre
- Report on Waste Management Systems in peri-urban areas (Kwaliseni)
- Report on Commercial Waste Management Systems in non-urban areas (Siphofaneni)

2. Why Pilot Projects

The Pilot Projects in the NSWMS were designed to serve 2 main purposes:

1. *On implementation level* they were designed to show concrete, practical, visible and viable demonstration projects for replication elsewhere. Furthermore to create understanding, awareness and interest for the waste issues; their causes /possible solutions and promoting the project outputs through frequent consultations and workshops with stakeholders and external partners.
2. *On the strategic level* they were designed to test appropriateness and viability of the general strategic approach as outlined in the draft NSWMS, e.g models and options for waste collection, fee structure, choices of institutional setting, anchoring of responsibilities, capacity development requirements. The results were expected to indicate the general strategic direction for the final formulation of the National Waste Management Strategy.

Hence the Pilot Projects were designed partly to show practical and visible demonstrations on the ground partly to test the proposed strategy against reality in Swaziland in order to fine tune and finalise the strategy.

2.1 General Elements Tested

The below elements were tested in the pilot projects in order to obtain information and learn lessons that could source into the NSWMS formulation process. The lessons learned considered of general applicance are outlined under each pilot project.

- Clarification of institutional issues and arrangements for waste management in rural and peri-urban areas, as well as at health care waste facilities and recycling facilities.
- Evaluation of different institutional co-operation agreements between local authorities, communities, institutions, private contractors.
- Testing different technical and organisational aspects specific to each project
- Identifying gaps and requirements for capacity development
- Finding viable ways of reducing waste dumping and littering around facilities, in urban, peri-urban and rural areas, promote recycling and improve the health and quality of the environment in these areas.
- Promote cooperation between various line ministries and, where appropriate, facilitating the parties in bringing in services to relevant areas.

3. Process and Timing

Each pilot project was developed based on a Pilot Project Proposal agreed upon by all relevant stakeholders. The individual reports give a comprehensive overview of all the activities related to each of the pilot projects. A short document mapping out the way forward for each of these pilot projects have also been developed and made available to the various Task Teams, the SEA as well as line ministries responsible for the various pilot projects

The progress on the pilot projects was in general terms slower than expected as all the pilot projects need considerable interaction and consultation with the various stakeholders. This is a very time consuming process. As the Swazi Government (according to Government-to-Government agreement) is main responsible for the implementation of pilot projects, the heavy workload within the SEA and other ministries also contributes largely to a limited availability of time for officials to pursue the pilot projects.

As a result the planning, design and implementation of the pilot projects was mainly done by the Consultants whereas this aspect should have been done by the Swaziland counterparts. A result of this was that the Consultancy resources could not be utilised to the extent planned for support and capacity building. The capacity development programme has therefore been affected by this aspect.

Delay in feedback on the availability of funding from the Swazi Government, also contributed to having to hold back on the progress. This also impacted largely on the time frames of the various pilot projects. This means that only a limited number of activities could take place in each of the pilot projects during the pilot project period. The non-availability of Government funds have largely impacted on the value of the projects as certain components of the various pilot projects could not be executed. These include the dumpsite in Siphofaneni , central and intermediate storage areas in the hospital, the roll out of the test sites to the rest of the hospital and the consultancy fees for the Intermunicipal Cooperation Business Plan. The government funds have in the mean time late in the pilot period become available and will be utilised for the various outstanding aspects of the pilot projects.

Specific capacity development activities for each of the pilot project mainly revolved around continuous workshops, meetings and training courses as well as on the job training and coaching. The capacity gaps identified related to both **Structure** (institutional and organisational set-up and financial matters), **Skills and Awareness**, **System Tools** (guidelines, procedures, handbooks, equipment etc.), **Inter-relations** (co-ordination and communication mechanisms) and **Incentives** i.e. the terminology used in the Draft Solid Waste Strategy.

The gaps related both to local level requirements (organisation, awareness, skills development), the national institutionalisation of support mechanisms (guidelines, handbooks, manuals, etc.) and also to national level capacity gaps (coordination mechanisms, needs assessment in relation to support mechanisms etc.)

Taking all of the above into account the expectations around the outcome of these pilot projects had to be scaled down substantially as implementation only started in July and August 2002.

4. Intermunicipal Co-operation Pilot Project

4.1 Objective

The objective of this pilot project was to explore the possibility of Local Authorities to look at ways and means to cooperate on waste management by sharing facilities and costs. This included assessment and establishment of and a possible structure for inter-municipal co-operation in relation to waste management in the Mbabane-Matsapha-Manzini Region as well as exploring and assessing the technical and financial feasibility of viable regional approaches towards minimization, collection, transport, recycling, treatment and disposal of waste on a regional basis. Furthermore it included the drafting of appropriate co-operative agreement for an inter-municipal co-operative system for waste management as well as of a Draft

Business Plan/Implementation Plan for operation of a co-operative structure/body. Capacity development activities has been undertaken during the project.

4.2 Activities and Results

The local authorities involved are Mbabane, Manzini, Matsapa, Ezulwini and Ngwenya. Malkerns was also invited to participate even though they have not been declared a local authority yet. The pilot project included drawing up an agreement and therefore it involve the five different Local Authorities as well as the Ministry of Housing and Urban Development (MHUD) and the SEA. The pilot project required input from different levels within the same organisation (technical, managerial and political) as well as input from other institutions, e.g. MHUD and SEA. Progress on this project therefore not only relied on internal processes within organisations, but also on the availability of different stakeholders to act collectively. The pilot project also differs from the other pilot projects in the sense that it over time will cover a whole range of waste management activities.

Several meetings and workshops was executed with the Task Team representatives, CEO's and Councillors of the various local authorities. Full support had also come from the Ministry of Housing and Urban Development. A Study Tour to South Africa (Johannesburg, PIKITUP) was also undertaken to expose the stakeholders to the operation of such a utility.

Agreement was reached on the necessity for the local authorities to address waste management in a collaborative way rather than individually. This is in support of the regional approach (establishing waste management catchment areas) proposed in the strategy. The approach that had been agreed upon implies the establishment of a single service providing utility for these local authorities.

A Draft Cooperative Agreement was drafted, scrutinised and discussed by the various local authorities. (refer to relevant pilot project report) Based on the Draft Agreement a Business Plan will be drafted which will serve as a basis to establish such a service providing unit. The Terms of Reference for such a Business Plan was also drafted and agreed upon. The development of a business plan will be contracted out. This will however only be possible if money from the government becomes available. This pilot project also takes into account the recent developments on landfill site development by the Manzini and Matsapa local authorities. It is now the responsibility of the SEA and MHUD to appoint consultants for the development of a Business Plan for such a utility.

Capacity development activities for this project included:

- Establishing a Task Team to manage the process
- Development of discussion documents (various models, financing, waste management activities etc) and detailed discussions on these documents to ensure that participants understands the concepts and implications.

- Development of and detailed discussions and explanations on a Draft Agreement between the participating local authorities.
- Development of and detailed discussions and explanations on a Business Plan for a Waste Management Company.
- Regular meetings and workshops to discuss and clarify all relevant issues.
- A study Tour to South Africa where participants were exposed to similar organisational set-up's.

4.3 General Lessons learned

Institutional

- Inter municipal cooperation (regional approach – sharing of costs, facilities and re-sources) is strongly supported by the local authorities in the Mbabane – Manzini corridor, MHUD and SEA and must go forward.
- MHUD should be implementing ministry for waste management in local authorities
- The roles and responsibilities indicated for MHUD in the strategy are correct and fully supported by MHUD . They will therefore be responsible for pursuing regionalisation proactively on national level.
- The setting up of a single institution that could take full responsibility for waste management in a specific catchment area is applicable and supported broadly by stake-holders and involved authorities.
- Different and flexible models of cooperation within different catchment areas should be developed
- Ownership and liability issues must be addressed from a legal point of view in the case of forming a company.
- Board membership needs to be clarified

Technical

- Full cost recovery and payments are difficult issue to resolve and must be further explored.
- Legislation (Waste Regulations 2000) must be revised in terms of regional cooperation.
- A centralised hazardous waste facility must be taken into account with the development of the Manzini/Matsapha landfill development.
- Waste management companies (new or existing) must be responsible for waste planning and data (WIS). Such a company can also include a regional Health Care Waste facility.

5. Recycling Pilot Project

5.1 Objective

The objective of this pilot project was to establish, maintain and evaluate recycling systems in Mbabane. The waste included all post consumer packaging and commercial waste streams, as well as waste paper from government offices. This in-

cluded awareness campaign, market and facility assessments, areas of coverage, roles of government and local authorities, awareness campaigns, licensing and establishment of the buy-back centre, facilitate and support collection and recycling of recyclable waste from government offices, commercial centres etc.

5.2 Activities and results

Strong support from the City Council of Mbabane and the relevant stakeholders was received for the pilot project. Weekly meetings of the Task Team were conducted. Agreement was reached that the most appropriate way for Mbabane to start off on recycling was Buy Back Centres. This would not only contribute to the cleanliness of the city but would also enable low income and unemployed citizens to earn money through recycling.

Site drawings were drafted and submitted to the City Council for approval. Sites for two Buy Back Centres were also allocated by the City Council in the Industrial Area and Sidwashini. A request for proposals to manage the Buy Back Centres was launched through the media and four proposals were received. These included Swazi Paper Mills, Enviro Swazi Scrap Metals, Swazi Waste Collectors and Recovery and The Reclamation Group. An evaluation committee was established by the City Council which considered the proposals received. Based on predetermined criteria the two Buy back centres were allocated to the Swazi Paper Mills and Enviro Swazi Scrap Metals respectively. The initiative was approved by the City Council on 31 July 2002. A set of guidelines for the operation of the Buy Back Centre was developed.

The building of the first Buy Back centre in the industrial area of Mbabane has since been completed. Swazi Paper mills initiated the operation of this Buy Back centre. The centre is operating successfully and provide income to low income residents of Mbabane. Problems are however also encountered with materials being stolen and brought to the centre. The building of the second Buy Back Centre (Sidwashini) is still ongoing and will be operated by Swazi Enviro Scrap.

Capacity development activities with the Task Team included:

- establishing a Task Team to manage the process,
- continuous and regular meetings and workshops with the Task Team to discuss and agree on the relevant issues which covered.
 - establishing the City Council requirements,
 - requesting of proposals,
 - drafting of the plan for the facilities,
 - appointing a builder,
 - monitoring the building activities,
 - drafting guidelines for the centre,
 - evaluating the proposals and appointing a management company.
 - Launching of an education and awareness programme which included radio programmes, posters and pamphlets.

Waterford school also took the lead in starting up a recycling and sorting system at the school and is currently busy with initiating similar systems in the other schools in Mbabane. These systems have been linked up with the Buy Back Centre and can be used for generating income for the schools. No on site training was offered on managing the Buy back Centre as the company appointed (Swazi Paper Mills) indicated that they have good knowledge experience in the recycling business.

5.3 General Lessons Learned

Institutional

- The positioning of the Buy-Back centre must be under the supervision of the Local Authority.
- As MHUD is the line ministry responsible for local authorities, MHUD will as line ministry be responsible for promoting recycling with local authorities on a national level.
- A recycling forum for Swaziland would be of tremendous support to the recycling in-dustry and should be strongly pursued by the SEA.

Technical

- The Buy Back Centre can operate under the waste management licence of the particular local authority.
- The viability and sustainability of the Buy Back Centre seems to be very high based on local support providing that it is operated correctly.
- Operators must be trained correctly to ensure the sustainability of the system. Such a training package should be developed by MHUD.
- A very strong awareness programme is needed to ensure full support from the public.
- Involvement of public institutions like schools and churches should continuously be encouraged.
- The Basel Convention must be signed as soon as possible to make provision for the transport of hazardous materials e.g. oil, batteries etc to SA.
- Economic incentives (e.g deposit return systems, reduced rates for less waste etc) need to be developed by SEA to promote the recycling industry.

6. Health Care Waste Pilot Project

6.1 Objective

The objective of this pilot project was to plan, develop and implement a technical and financially feasible Health Care Risk Waste Management System in Mbabane Hospital in line with requirements for developing countries taking cognisance of the geographical, institutional and financial context of Swaziland. This included the clarification of institutional arrangements for facilities in urban and rural areas, the facilitation and evaluation of institutional cooperation between levels of gov-

ernment and health care institutions, and testing of various technical, organisational and capacity development aspects. The system implemented covered all aspects of waste management from cradle to grave including appropriate treatment of HCRW

6.2 Activities and Results

This pilot project progressed well, but needs considerable resources to deal with all the requirements. Not only equipment inside the hospital was needed, but also facilities outside needed attention e.g. waste holding areas, incinerator and road pathways. Part of this pilot project was also the treatment of the Health Care Risk Waste (incineration) as well as construction of a dedicated holding area for the waste. This needed inputs from both the MHSW as well as MPW&T. A technician from the manufacturing company (SA Incineration) was brought to Mbabane to assess the current condition of the incinerator at the hospital. A report was issued. Repairs were agreed to with MHSW and the hospital administration. These repairs have affected the efficiency of the incinerator but it has been substantially improved. Three staff members were also trained to operate the incinerator correctly.

Meetings were held with the hospital staff and Task Teams on a continuous basis and significant progress was made with the implementation of a waste management system in the hospital. Implementation of the system started in July 2002. All the necessary equipment was procured and installed. Six test site areas were identified. The implementation of the system was monitored on a daily basis to determine whether the system is appropriate and effective. A six week training period was also completed for the nurses, doctors and orderlies as well as the charge sisters.

A budget was developed and discussed with the hospital administrator and other relevant parties, e.g. SEA and MHSW. A critical aspect for the continuation of this project was the availability of government funding. The following aspects needed to be funded from the government funding:

- Procurement of equipment for continuation of the pilot areas until the budget for the next financial year becomes available. Thereafter the costs have to be internalised into the hospital budget.
- Implementation of the system in the rest of the hospital.
- Construction of the central holding area.
- Construction of the intermediate holding areas.
- Paving of incinerator path.

The availability of a full time MHSW official in the hospital proved to be a critical success factor in this project. This also resulted in a very high learning curve for the official.

Capacity Development activities for this pilot project included:

- Establishing the necessary management and Task Teams
- Regular and continuous meetings and workshops to discuss, explain and agree on the various issues and concepts
- Procuring and installing all the necessary equipment
- Conducted an capacity assessment
- Developed a Capacity development programme for the hospital
- Conducted training courses for doctors, nurses and orderlys in the use of the equipment and the implementation of the system
- Implementing the system in dedicated areas
- Continuous on site coaching and monitoring of the implementation
- Developing the necessary policies and procedures to address the crucial gaps.
- Development of posters and pamphlets for the hospital, nurses and orderlys.
- Involving the MHSW continuously to ensure that capacity and understanding is built on National level
- Involvement of a National government official full time in the development and implementation process
- Providing guidance regarding budgets and financial requirements for future implementation and expansion.

6.3 General Lessons Learned

Institutional

- Health Care Waste Management systems must be introduced nationwide. The concept is fully supported by MHSW who also is fully capable and willing to take institutional responsibility
- The roles and responsibilities in the strategy indicated for MHUD are correct and fully supported by the MHUD
- The management system in hospitals and other health care facilities must be revised to ensure proper authority and supervision.
- Proper job descriptions and protocols (policies and guidelines) must to be developed to ensure that staff is well acquainted with their responsibilities.

Technical

- Providing the equipment is available, a source separation system in hospitals should be established. Close supervision and training is necessary.
- Financial means (a realistic budget) to sustain such a system is not likely to be made available from the central fiscus.
- A centralised Health Care Risk Waste Treatment Plant should be seriously considered. In rural areas other sustainable solutions (upgrading of existing facilities or alternative solutions) must be given high priority.
- Capacity development will need serious attention if the system is pursued throughout the country to other health care institutions.

- Legislation pertaining to Health Care Risk waste needs to be revised and amended where necessary to accommodate the proposed system.
- Outsourced contracts must be managed more effectively by the Health Care institutions.

7. General Waste Management Systems Pilot Project

7.1 General WM Systems in Peri-Urban Areas- Kwaluseni

7.1.1 Objective

The Kwaluseni Chiefdom is characterised by the presence of residential houses (families of landlords and tenants), schools, formal and informal businesses. Many people resettle in peri-urban areas as they are not required to pay rates for services provided. However, in Kwaluseni the cost of water and electricity is being recovered from consumers through the landowners by the relevant national supply agencies. The lack of space has contributed to a severe litter problem in Kwaluseni as many residents dump domestic refuse in open places such as road verges, the local cemetery, cross roads and areas adjacent to shops. Attempts are made to burn these heaps of refuse and they smoulder for days at a time thereafter. These problems have, for a long time, been a matter of concern to the residents of the area. The high willingness to actually pay for waste services also indicates this

The objective of this pilot project, which were carried out in Kwaluseni and Siphofaneni was to plan, develop and implement a technical and financial feasible Waste Management System in the areas. The systems should address the waste management needs and comply with the Waste Regulations 2000 and the draft National Solid Waste Management Strategy. Within these frames the pilot projects developed, tested and evaluated a Waste Management Plan, an operational waste management system for waste collection and disposal, a capable structure, organisation and staff to manage the system, a cost-recovery system/financing schedule and plan based on the polluter pays principle that will assure the operation and maintenance of the waste system and a project related community awareness campaign. Lessons learned includes:

7.1.2 Activities and Results

The planning and design of this pilot project was completed in collaboration with the Kwaluseni Waste Society and all the necessary equipment was purchased. A constitution was finalised for the Waste Society and the Society was officially applied for registration with the Ministry of Agriculture and Cooperatives. Guidelines for waste management in non-urban areas related to the Waste Regulations 2000 have also been drafted by the SEA. Two bunkers were built and bins were made and installed. Trolleys were also purchased for collection of waste from the

bins. Pamphlets, posters and radio programmes were developed and distributed to sensitise and inform residents about the system.

The system was launched on 27 July 2002 by the Minister of Tourism, Communications and Environment. The system aimed at solving the domestic waste problem in peri-urban areas. The system only officially started operating in November 2002 as the Waste Society had difficulties in appointing waste collectors to collect the waste from the bins. The system is now fully operational but runs a high risk of not being continued as a result of low payments from the residents. The community survey showed a high interest in receiving waste services and also a very high willingness to pay for the service delivered. The designed system operates on a full cost recovery basis. The non payment by residents is therefore the most urgent problem that needs to be solved as the system can not operate without this income. The system was subsidised for the first four months from the DANCED funding to provide the Society the opportunity to establish their payment system with the residents.

A capacity development programme for Kwaluseni was also developed. Various workshops with the relevant stakeholders were held to develop capacity and understanding of the issues at hand e.g. legislation, roles and responsibilities, communication etc. A formal training programme was also implemented during February 2003 with external training institutions that covered all aspects of managing such a system including financial and other resources.

Capacity development activities on this pilot project included the following:

- Establishing a Task Team to manage the process
- Developing the necessary institutional capacity eg a waste society and constitution
- Continuous and regular meetings and workshops to discuss explain and agree on all relevant issues
- Development of guidelines to manage waste in the area
- Developed and workshopped a proposed institutional framework with all levels (national and local) to discuss and agree on the roles and responsibilities of each roleplayer
- Procured and installed all the necessary equipment.
- Ensured that the labourers are acquainted with the equipment and how to use it.
- Conducted a capacity assessment for the pilot project
- Conducted training courses on waste, resource and business management.
- On site coaching and monitoring of the pilot project.
- Provided financial support for the first four months of implementation to provide opportunity for the society to establish their fee collection system.

General Lessons Learned are combined with Siphofaneni pilot project lessons below

7.2 Commercial WM Systems in Non-Urban Areas –Siphofaneni

7.2.1 Objective

Most of the informal businesses in the Siphofanini area dispose of and burn their waste in backyard pits. At the eastern informal kitchens, for example, waste is either disposed of indiscriminately around the business area or thrown into a nearby seasonal stream. When the rains come, it washes away some of the waste. Other waste generators dispose of their solid waste into the Usuthu River. Sometimes plastic and paper is burnt in backyard pits. The main constraint was the lack of both technical and financial capacity to manage waste. Cooperation between the different business groups is not very good and it is difficult for them to organise themselves in order to discuss issues of mutual concern. The community survey that was carried out earlier in the year indicated that willingness to pay for waste management was relatively poor, while the willingness to have an organised waste management system was good. Facilities for waste handling, transportation and disposal are generally lacking. Most of the formal business owners use their own transport for taking waste to far away disposal areas. There is no designated area for waste disposal in Siphofaneni.

The objective of this pilot projects was to plan, develop and implement a technical and financial feasible Commercial Waste Management System in the area. The systems should as the Kwaluseni address the waste management needs and comply with the Waste Regulations 2000 and the draft National Solid Waste Management Strategy. Within these frames the pilot projects developed, tested and evaluated a Waste Management Plan, an operational waste management system for waste collection and disposal, a capable structure, organisation and staff to manage the system, a cost-recovery system/financing schedule and plan based on the polluter pays principle that will assure the operation and maintenance of the waste system and a project related community awareness campaign. Lessons learned includes:

7.2.2 Activities and Results

The planning and design of this pilot project was as for Kwaluseni completed in collaboration with the Siphofaneni commercial community and all the necessary equipment was purchased. The system aimed at solving the waste problem at commercial nodes in non-urban areas. A constitution has been finalised for the Waste Society. Guidelines related to the Waste Regulations 2000 have also been drafted by the SEA. Three bunkers had been built and bins has been made and installed. Trolleys have been purchased for collection of waste from the bins. Pamphlets, posters and radio programmes were developed and distributed to sensitise and inform residents about the system.

The system was launched on 14 September 2002 by the Minister of Tourism, Communications and Environment. The implementation of the system started in November 2002. The system is now fully operational but runs a high risk of not

being continued as a result of low payments from the shop owners. The system operates on a full cost recovery basis. The non-payment by shop owners is therefore the most urgent problem that needs to be solved as the system can not operate without this income. The system was subsidised for the first four months from the DANCED funding to provide the Society the opportunity to establish their payment system with the shop owners.

A capacity development programme for Kwaluseni also applies fully to the Siphofaneni system as the system selected by the communities are basically the same. They also participated fully in the formal training programme on the management of a waste management system.

Capacity development activities on this pilot project included the following:

- Establishing a Task Team to manage the process
- Developing the necessary institutional capacity eg a waste society and constitution
- Continuous and regular meetings and workshops to discuss explain and agree on all relevant issues
- Development of guidelines to manage waste in the area
- Developed and workshopped a proposed institutional framework with all levels (national and local) to discuss and agree on the roles and responsibilities of each roleplayer
- Procured and installed all the necessary equipment.
- Ensured that the labourers are acquainted with the equipment and how to use it.
- Conducted a capacity assessment for the pilot project
- Conducted training courses on waste, resource and business management.
- On site coaching and monitoring of the pilot project.

7.3 General Lessons Learned Kwaluseni & Siphofaneni

Institutional Lessons

- The DPMO should be responsible ministry and taking institutional responsibility for non-urban areas. The ministry will proactively pursue and provide support to the establishment of such systems in non-urban areas including the development of appropriate disposal sites.
- The DPMO do not have and will not develop technical expertise on waste management. A Memorandum of Understanding can be signed with MHUD to provide technical support in these areas.
- A community structure (Society/Cooperative) to implement the system is needed. This should be supported and guided by the DPMO.
- The newly appointed and trained Inkhundla officers can and should take responsibility for monitoring and enforcement on the implementation of the systems.

Technical Lessons

- Establishment of waste collection systems is supported by the local communities.
- The mechanism to declare WCA's is there via waste regulations and a process must take this forward. It was not possible during the time constrained pilot project to establish this before termination
- The declaration of Waste Control Areas should be dovetailed with the controlled areas declared by MHUD.
- There are great wish in communities for receiving waste service and also great will-ingness to pay. However residents are not interested in the system mainly because of the payment.
- The system must be based on full cost recovery and fee collection and almost full willingness is a critical success factor. The pilot project result was promising but more time is needed to create the necessary mind shift among all residents. Non of the systems tested will be sustainable if the collection of fees fail.
- The system must be low key technology and therefore cheap to install and easy to op-erate.
- A very strong awareness and education programme needs to be implemented to en-sure full participation by all citizens.
- A training programs on waste management as well as Business- and Resource man-agement (package) need to be developed and made available by the SEA. These packages need to be amended for each area to suit the specific circum-stances.
- Waste recycling is definitely an option once a system has been established and should be promoted.
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7.4 Way Forward for Kwaluseni and Siphofaneni

The successful continuation of the **Kwaluseni** pilot project will be highly dependant on the following:

- The system is implemented as a full cost recovery system compulsory for all residents (currently only for zone G and H).
- Residents pay their fees monthly (a minimum of 75% fee collection rate is maintained).
- The fees collected are solely used for the management, maintenance and further development of the system.
- The area to be declared as a waste control area.
- The monitoring and enforcement of the system by the Inkhundla and DPMO.
- Administrative and technical support provided and facilitated by the DPM's Office and MHUD where and when necessary.

The successful implementation of the **Siphofoneni** pilot project will be highly dependant on the following:

- Government money becomes available for the construction of the disposal site and the road leading to the site.
- The system be implemented as a full cost recovery system compulsory for all shop owners.
- Shop owners pay their fees monthly (a minimum of 75% fee collection rate is maintained).
- The fees collected are solely used for the management, maintenance and further development of the system.
- The area to be declared as a waste control area.
- The monitoring and enforcement of the system by the Inkhundla and DPMO.

Administrative and technical support provided and facilitated by the DPM's Office where and when necessary.

In January 2003 hand-over report has been prepared for both Waste Management Societies, the DPM's office and the Swaziland Environmental Authority. containing an action plan The plan specifies proposed actions, the responsible party for action and a time schedule.

The monitoring of the pilot projects were take place continuously through to the year end 2002 which implied an operating period of at least 9 months for monitoring purposes since the commencement of the project. However, the many delays experienced in the implementation of the 2 pilot projects have severely constrained the monitoring period and it has not been possible to extract all the learning lessons possible at the time of writing this report. There is a need for follow up.

8. Choice of Technology for the Project.

The equipment for the pilot projects were primarily obtained through DANCED funding. In four of the five pilot projects equipment were purchased as part of the implementation. In all cases the technology selected for the pilot projects were very basic and easy to use. It can easily be managed and used by people with varying levels of education. It is also easy and cheap to maintain and replace. The lifespan of the equipment varies from 5 years to indefinite. The technology therefore contributes very well to the sustainability of the project.

9. Way Forward

At project termination five hand-over reports has been prepared, one for each pilot project. The hand-over reports contain an action plan and way forward for sustaining and further improving the results obtained. To sustain the momentum it is of utmost importance that

In January 2003 specific hand-report has been prepared for all pilot projects and handed over to the relevant local and government authorities as well as the participating and responsible Waste Societies; Recycling Company or hospital. Each plan wraps up the project point at weaknesses and problems and sets up specifies future necessary actions, the responsible party for action and a time schedule.

The monitoring of the pilot projects were generally to take place continuously through to the year end 2002 which implied an operating period of at least 9 months for monitoring purposes since the commencement of the project. However, the many delays experienced especially for the Kwaluseni and Siphofaneni projects have severely constrained the monitoring period and it has not been possible to extract all the learning lessons possible at the time of writing this report. There is a need for follow up.