

**Implementation of Local Agenda 21's Education, Awareness and Training
Component: A Case Study of Gaborone**

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Supervisor

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By

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Declaration

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ABSTRACT

‘What is required is the ‘politics of the rhizome’ in which everyone, every community, every nation and every major region comes to terms with the uniqueness of their situation and acts accordingly – and realises that it is only by vast numbers of people, of groups and organizations acting in accordance with possibilities of their situations, that the environmental crisis will be solved.’

(Gare, 1995:161).

The study investigates the implementation of *Local Agenda 21*'s education, awareness and training component by the Gaborone City Council Environmental Health Department (GCCEHD) to address environmental challenges facing the city of Gaborone, the capital city of Botswana.

The research was conducted as a qualitative case study that made use of semi-structured interviews, focus group interviews and document analysis as instruments of data generation. Samples of respondents were selected from the Gaborone City Council (GCCEHD) employees in management positions, workers, and elected political councillors.

The study is contextualised through establishing environmental issues in the Gaborone City Council, identifying strategies to address environmental issues and the review of the *Waste Management Plan 2003-2009*, which the department uses as a guiding document for waste management.

The study establishes that the council employees are mostly concerned with issues of waste management and need commitment from all Local Government sectors of the work force. The study established the importance of education, awareness and training as a response to environmental issues facing Gaborone.

The study also establishes the need for social education in terms of public education, awareness and training needed for the public to adequately respond to environmental challenges in their context. Models and relevant policy and guiding documents such as

the *Vision for Greater Gaborone*, *DPSEEA Model* and *Botswana Environmental Planning Principles* were identified and recommended for the department to consider. The awareness and training activities should be developed and involve the community in environmental management. This should enable the council to create opportunities for income generation, at the same time changing community negative attitudes towards the environment and improving service delivery by the department.

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To all my classmates, may the love of GOD be with you all the days of your lives.

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LIST OF ACRONYMS

AIDS	Acquired immune deficiency syndrome
BDF	Botswana Defence Force
BEPP	Botswana Environmental Planning Principles
BNWMP	Botswana National Water Master Plan
CBO	Community-Based Organisation
CDC	Conservation for Development Centre
CI	Conservation International
EEASA	Environmental Education Association of Southern Africa
ESD	Education for Sustainable Development
FAO	Food and Agricultural Organization
GCC	Gaborone City Council
GCCEHD	Gaborone City Council Environmental Health Department
HIV	Human Immunodeficiency Virus
IUCN	International Union for the Conservation of Nature
KCS	Kalahari Conservation Society
MDGs	Millennium Development Goals
MEAs	Multilateral Environmental Agreements
NCSA	National Conservation Strategy Agency
NDP	National Development Plan
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organisation
NPNRCD	National Policy on Natural Resources Conservation and Development
POP	Persistent Organic Pollutants
RNPE	Revised National Policy on Education
SADC	Southern African Development Community
SADC-RISDP	SADC-Regional Indicative Strategic Development Plan
SHHA	Self Help Housing Agency
SOER	State of the Environment Report
ST	Somarelang Tikologo
UN	United Nations
UNCBD	United Nations Convention on Biological Diversity
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational Scientific and Cultural Organisations
UNFCCC	United Nations Framework Convention on Climate Change
UNPD	United Nations Populations Division
WCEA	World Conference on Education for All
WCS	World Conservation Strategy
WDC	Ward Development Committee
WHO	World Health Organisation
WSSD	World Summit on Sustainable Development

Chapter 1

Introduction

1.1. Orientation to the chapter

This Chapter provides an overview of the study. It presents the context and background to this research. The chapter also introduces the research question and methodology used to conduct the study. The chapter later provides an overview of how the chapters of this study are structured.

This research takes place in Botswana's capital city Gaborone, which is one of Africa's fastest growing cities. Since Gaborone is continuously developing, environmental issues have been placed on the transformation agenda and a number of policies regarding environment have been introduced to govern and guide environmental management, such as the *National Policy on Natural Resources Conservation and Development of 1990* and the *Botswana's Policy for Waste Water and Sanitation Management of 2001*. The Gaborone City Council Environmental Health Department (GCCEHD) identified a number of environmental issues, such as pollution, sanitation, health care, poverty alleviation, environmental health and waste management as a challenge that it must address.

The *Botswana's Strategy for Waste Management of 1998* was developed as part of the Botswana Government's commitment to implement the aims and objectives of *Agenda 21* in managing waste. Some of the environmental problems perceived and identified with as key factors leading to the formulation of the strategy are associated with the increasing magnitude of waste caused by the high rate of industrialization, changing lifestyles and consumer habits, but most importantly the "throw away" syndrome associated with the adage "out of sight, out of mind".

Consistent therefore, with the *Agenda 21* philosophy, Government formulated this strategy to ensure a sustainable and environmentally sound management of waste which would guarantee to a significant extent the following:

- Preservation, protection and improvement of the quality of the environment,
- The protection of human health,
- Ensuring a prudent and rational utilization of the natural resources.

The strategy has proposed a series of actions and will be monitored and supported by the Department of Sanitation and Waste Management throughout the execution phase. The Government of Botswana is committed to the success of the strategy in order to achieve four key goals of employment creation, resources conservation, regional integration and sustainable economic diversification. The challenge for the council is to respond to the emerging environmental issues that result from rapid industrialisation of Gaborone. It is in this context that the Gaborone City Council Environmental Health Department (GCCEHD) is looking into utilising the proposed and partially adopted *Vision for Greater Gaborone* and the alignment of the development projects in the city to *Environmental Planning Principles*. In short, this study investigates the implementation of *Local Agenda 21*'s education, awareness and training component: The Case Study of Gaborone City Council in Botswana.

1.2. Context of the study

The study focuses specifically on the implementation of the education, awareness and training component of *Local Agenda 21* by the GCCEHD. It was carried out in Gaborone, the capital city of Botswana. Gaborone City Council serves the Greater Gaborone area covering the small villages of Gabane, Tlokweng, Mogoditshane Metsimotlhabe and Mmopane in the matter of waste management.

Gaborone has witnessed the most rapid growth of population in the country. This is not surprising as the pull factors in the migration matrix are increasingly being concentrated in the city (Botswana Government, 1997a). Economic, socio-

educational, political, cultural and recreational activities are contemporary challenges facing Gaborone City than any other settlement in the country. Indeed, Gaborone is Botswana's first order settlement. This scenario has tended to be strengthened by the bright light theory by which migrants troop to the city in search of the good things of life even when they have full knowledge that these may be elusive (Gaborone City Council, 1997).

The 1991 Census revealed that 133 468 people resided within the city limits. With an area of 169 square kilometres, it meant that the population density is 7.89 per person per hectare. In 1997, the population was estimated at 183 487 and given a land area of 190.96 square kilometres (Botswana Government, 1997b). The most densely populated residential neighbourhood in the city displaying population densities of more than 120 persons per hectare are Extension 8 (Bontleng), Extension 13 (Old Naledi), Extension 23, Extensions 32 and 33, north of Lemmenyane Drive in Broadhurst, and Extension 37 in Tsholofelo. These are low income residential neighbourhoods which give credence to the paradigm that low income families exhibit large numbers (Botswana Government, 1997a). The above residential locations contribute to the domestic waste, which is generated by a rapidly increasing population and also industrial waste from a rapidly industrializing city pose a serious challenge of waste management to the GCCEHD.

The Gaborone City Council has a fairly well established GCCEHD. The coverage of the city for services that promote environmental health and management is comprehensive. For the convenience of delivery, the GCCEHD has divided the city into three zones. These are Gaborone North, Gaborone South and Gaborone West. Each of these zones has full complement of staff and equipment. In addition to the services rendered by its personnel, the City Council also engages the services of private entrepreneurs for environmental sanitation.

An operational Landfill was opened in 1994 and, depending on the efficiency and educational programmes of its management, it is estimated that it will be in use until 2007 (Gaborone City Council 1997).

1.3. Background of the research

Gaborone City Council is increasingly experiencing a rapid population growth, due to migrations from nearby and far villages of Botswana. Construction companies doing work in Gaborone also attract a lot of unskilled labour from the villages, and the influx of illegal Zimbabwean immigrants also puts pressure on the facilities.

In response the Gaborone City Council Environmental Health Department committed itself to *Agenda 21*, the *National Policy on Natural Resources Conservation and Development* (Botswana Government, 1990), *Botswana's Strategy for Waste Management* (Botswana Government, 1998), *Waste Management Act* (Botswana Government, 1998), *Botswana's Policy for Waste Water and Sanitation* (Botswana Government, 2001), the *Waste Management Plan 2003-2009* (Gaborone City Council, 2003) and the *Environmental Vision for Greater Gaborone* (Somarelang Tikologo, 2004). Some of the key deliverables of the *Waste Management Plan 2003-2009* are adequate waste management services and disposal, waste reduction, minimization (reduction), and recycling programmes, which until now are not effectively implemented. The *Environmental Vision for Greater Gaborone* is intended to improve the environmental quality of Greater Gaborone for her users through more environmentally sensitive, sustainable and participatory urban planning and development.

1.4. Research question and objectives

As indicated above, the following factors: economic, socio-cultural, political and recreational activities and migrations (local and regional) leading to domestic and construction waste generation prompted me to come up with the research question:

How does the Gaborone City Council Environmental Health Department implement Local Agenda 21's Education, Awareness and Training Component?

The specific objectives of the research are to:

- Investigate whether what the Environmental Health Department management articulates as *Local Agenda 21(Waste Management Plan 2003-2009)* is practised on the ground,
- Examine the understanding of *Local Agenda 21* by Environmental Health Department workers,
- Establish whether there is any education, awareness and training strategy in place for the Department workers and the public on *Local Agenda 21*.

In order to achieve these objectives, I decided to use the case study approach. The case study context being Gaborone City Council Environmental Health Department in Gaborone (GCCEHD).

1.5. Overview of chapters

In chapter two, I present the contextual factors that shape this study. The contextual factors I present include an overview of the international, regional and national frameworks that influence environmental education development in the world. Attention is given to how international frameworks influence the development of environmental education and how these inform this study.

Given the overall importance of education, I discuss education, awareness and training as important components of *Local Agenda 21*, which the GCCEHD should utilize. I further discuss the national perspectives of Botswana.

I also discuss Botswana's position on *Local Agenda 21* in addressing the pressing national socio-economic and environmental concerns and challenges of the 21st Century.

In chapter three, I present the research methodology and data generation methods used in this study, namely; face to face semi-structured interviews, focus group interviews and document analysis. This chapter describes the process of using these data collection methods and the difficulties encountered in using these methods.

Issues of ethics, validity and trustworthiness are also discussed in this chapter. I finally present how data was analyzed and share the process of establishing the categories and sub-categories used to present the findings of the study in chapter four and five. I describe how this formed a first layer of analysis and how a second layer of analysis enabled a synthesis of the main findings, which are presented in chapter six.

Chapter 4 presents the findings on the environmental education, awareness and training with which the GCCEHD implement *Local Agenda 21 (Waste Management Plan 2003-2009)*. These mainly came from the face to face semi-structured interviews with operational managers and politicians, and from the focus group discussions with the workers. These include: workshops, promotion of the 3Rs, clean-up campaigns, exhibition fairs, the development of educational materials (brochures), in-house trainings of workers and the use of radio programmes for public debates. The GCCEHD identified these strategies as components of the education, awareness and training of *Local Agenda 21*.

In chapter 5, I present the findings from document analysis. The main document analyzed is the *Waste Management Plan 2003-2009*, as it is the operational policy document which the GCCEHD used for implementing its programmes. The main findings from this document are that there is no deliberate inclusion of education, awareness and training programme in the *Waste Management Plan 2003-2009*. The GCCEHD operational managers have however, developed their own education, awareness and training components as they perceived education as having a key role in addressing issues of environmental management.

Chapter 6 concludes this research study and explores the implications of different education, awareness and training components that are required in addressing the challenges of environmental issues.

These components are discussed for GCCEHD, other departments within the City Council and politicians to utilize. The Chapter also discusses the need for the GCCEHD to see the importance and need for a deliberate inclusion of education, awareness and training in the *Waste Management Plan 2003-2009* and other *Waste Management Plans* thereof.

It further focuses on the need to consider aligning the GCCEHD *Waste Management Plans* with the newly established *Vision for Greater Gaborone, Environmental Planning Principles* and consider adapting the *DPSSEA Model* to their context. The chapter finally presents recommendations with a summary of education, awareness and training components that the GCCEHD needs. The identified education components provide recommendations for future research, such as the need to include the education, awareness and training components of *Local Agenda 21*. In this chapter, I also present the conclusion of the study. The conclusion includes a summary of the main findings. Finally, I present a reflection on the study as a whole, noting the limitations of the study.

Chapter 2

The International and Regional Context

2.1. Introduction

What is required is the politics of the rhizome in which everyone, every community, every nation and every major region comes to terms with the uniqueness of their situation and acts accordingly – and realises that it is only by vast numbers of people, of groups and organisations acting in accordance with possibilities of their situations, that the environmental crisis will be solved. The actions required... will differ according to their situation within the global economy... it is necessary to identify forces at work affecting individuals... nations ... and regions... a knowledge of the dynamics of the global system... is required

(Gare, 1995:161).

This chapter provides insights into diverse contextual factors that shaped and influenced this study on the education, awareness and training components of *Local Agenda 21* in Gaborone City Council Environmental Health Department (GCCEHD). The discussion is centred on the expression of a politics of rhizome as it looks at various contextual frameworks and settings influencing the development of environmental education globally.

The above expression helps establish a ‘politics of rhizome’ in this chapter in the sense that it allows for a unique shaping of environmental education processes in a developing context like that of Botswana. There may be similarities between contexts, but these cannot be (pre) determined, as the shape is cast in the history, culture and features of differing contexts and how actions (including learning actions) play out in their unique ways (Lotz-Sisitka, 2004).

These include International, Regional and National perspectives in the context of Gaborone City Council Environmental Health Department (GCCEHD). Environmental issues have long histories. But the atmosphere of general environmental crisis first perceived in the 1960s and its associated social movements precipitated an avalanche of environmental writing. From Rachel Carson’s *Silent*

Spring in 1962 to Lois Gibb's *Dying from Dioxin* in 1995, many writers have addressed the ways in which the modern industrial world has encountered environmental crisis, ranging from resource exhaustion to species extinction and endangered human health. I start by discussing the international perspective (international conventions).

2.2. International Perspective

A number of international and regional frameworks have influenced the development of environmental education as a response to contemporary challenges of development. The international, regional and national dialogues and conferences which discussed environmental issues are discussed elsewhere in this chapter.

2.2.1. The Stockholm Conference 1972

The first United Nations conference, which was held in Stockholm, Sweden in June 1972, focused on the close link between humans and the environment and emphasised the need to protect and improve the environment for present and future generations (Lotz-Sisitka, 2004). Sustainable development was codified for the first time in the World Conservation Strategy (WCS), a document prepared over a period of several years in the late 1970s by the International Union for the Conservation of Nature (IUCN).

McCormick (1992) argues that in many ways the Stockholm Conference of 1972 simply developed ideas already raised at the Biosphere Conference in Paris in 1968. However, the Stockholm conference is usually identified as the key event and turning point in the emergence of sustainable development. However, many Third World countries remained sceptical, and a common theme in their leaders' speeches was that 'environmental factors should not be allowed to curb economic growth' (McCormick 1992: 99). Most importantly, in the light of the influence of the 'spirit' of Stockholm conference, there were some deliberate attempts to address the problems of the Third World; these include among others, pollution, environmental degradation, poor sanitation and HIV/AIDS. The fundamental point was that development need not be

impaired by environmental protection. The most conspicuous result of the Stockholm Conference was the creation of the United Nations Environment Programme (UNEP) to act as a governing council for environmental programmes, its secretariat focused on environmental action within the whole UN system and an environmental fund was established to finance environmental programmes. UNEP was located in Nairobi in Kenya, the first UN body outside the developed world, a symbolic (and politically astute) decision (Adams, 1995).

2.2.2. The Tbilisi Conference 1977

The United Nations convened another conference in Tbilisi, Georgian SSR, USSR, from 14 to 26 October 1977 with the focus on environmental education. This conference recognised that education made a “crucial contribution” in enabling people to manage the earth and could put forward many approaches for understanding pressing problems, which populations face (UNESCO, 1980:1).

The final report of the Tbilisi Conference further recognises that:

Environmental education should not be just one more subject to add to existing programmes but should be incorporated into programmes intended for all learners, whatever their age... [and should stress] the social role of educational institutions and the establishment of a new relationship... (UNESCO, 1980:3).

An important outcome of the Tbilisi conference was that environmental education should make individuals and communities understand the nature of the natural and built environment (UNESCO, 1980). The report further explains that the understanding of the environment will be achieved through interaction of biological, physical, social, economic and cultural aspects (*ibid*). This understanding applies to this study, where the focus is on Local Authority (Council) employees in the Environmental Health Department to better respond to environmental management issues through public education, awareness and training as well as public social service provision.

2.2.3. The World Conservation Strategy 1980

In the 1960s, thinking within the International Union for the Conservation of Nature (IUCN) began to embrace greater concern for economic development (McCormick, 1986). The idea of a strategic approach to conservation was considered at the IUCN General Assembly New Delhi in 1969, and 'conservation and development' was the theme of the 1972 General Assembly at Banff, Canada. The work on the strategy for nature conservation began in 1975, when IUCN joined UNEP, UNESCO and FAO to form the 'Ecosystem Conservation Group', and gradually the notion of a World Conservation Strategy took shape (Boardman 1981, McCormick 1986, 1992, Holdgate 1999). In 1977 UNEP commissioned IUCN to draft a document to provide a global perspective on the myriad conservation problems that beset the world and a means of identifying the most effective solutions to the priority problems (Munro, 1978).

The World Conservation Strategy was the culmination of more than two decades of thinking by conservationists, particularly those in IUCN, about ways to further nature conservation on a global scale. It was a conservation document that addressed the issues of and problems raised by economic development, rather than a document about development and environment per se. The World Conservation Strategy broke new grounds in that it suggested for the first time, that development should be seen as a major means of achieving conservation, rather than an obstruction to it (Allen, 1980:7). One of the impacts of the World Conservation Strategy is the promotion of sustainable development, which formed one of IUCN's seven programme areas for the period 1985-7. IUCN established the Conservation for Development Centre (CDC) in 1979, marking a move into field programmes with partner organisations (Holdgate, 1999).

2.2.4. The Rio Earth Summit 1992

The Earth Summit held in Rio de Janeiro, Brazil in June 1992 marked an important milestone in awakening the world to the need for a development process that does not jeopardise future generations. The conference brought together 118 world leaders and

environmental non-governmental organisations (NGOs) as well as concerned individuals. The purpose of the conference was to find ways to cope with increasing dangers of permanent environmental damage resulting from the build up of greenhouse gases leading to fears of global warming, loss of bio-diversity and the environmental consequences of rapid population and industrial growth in the developing world.

The Rio Summit produced *Agenda 21* as a blueprint to clean the global environment and encourage sustainable development. *Agenda 21* emphasises the following six areas of international activity:

- Allocating development assistance to programmes focusing on poverty alleviation and environmental health such as providing sanitation and clean water, reducing indoor air pollution resulting from the burning of firewood, and meeting basic needs.
- Investing in research and extension services to reduce soil erosion, and permit more environmentally sensitive agricultural practices.
- Allocating more resources to family planning and to expanding educational and job opportunities for women so that population growth can be reduced.
- Supporting Local Development Council governments in their attempts to curtail or modify projects that harm the environment.
- Providing funds to protect natural habitats and bio-diversity.
- Investing in research and development on non-carbon energy alternatives to respond to climate changes and reduce greenhouse gases.

(Earth Summit Report, 1992:9).

2.2.4.1. Agenda 21

Chapter 28 of *Agenda 21* states that:

...because so many problems and solutions addressed by *Agenda 21* have their roots in Local Authorities, participation and co-operation of local authorities will be a determining factor in fulfilling its objectives... [and]...subsequent to *Agenda 21* is *Local Agenda 21* which is participatory, multi-sectoral process to

achieve the goals of *Agenda 21* at local level through the preparation and implementation of a long-term strategic action plan that addresses priority local sustainable development concerns (Butler, 1997:4).

Chapter 36 of *Agenda 21* was dedicated to 'education, public awareness and training'.

Key programme areas include;

- Re-orientation of education towards sustainable development,
- Increasing public awareness,
- Promoting training.

This included endorsing the recommendations of the World Conference on Education for All (WCEA), *which included environmental literacy* (Jomtien, 1990); ensuring environmental education and training in all sectors of society; increasing access to environmental education and training; promoting environment and development concepts in all education programmes (Lotz-Sisitka, 2004).

Governments developing and developed countries (Botswana, South Africa and United Kingdom) were required to update or prepare strategies aimed at integrating environment and development as cross-cutting issues into education at all levels, which involved a thorough review of curriculum. Governments were also advised to set up national education coordinating bodies (Lotz-Sisitka, 2004).

The UNCED, 1992 gave high priority in its *Agenda 21* to the role of education in pursuing the kind of development that would respect and nurture the natural environment. It focused on the process of orienting and reorienting education in order to foster values and attitudes of respect for the environment and envisaged ways and means of doing so.

Lotz-Sisitka (2004:10) observes that, as a result of the Rio summit, many countries have established government and local government agencies that are responsible for the environment and have created institutions and organisations to deal with

environment and development issues. *Agenda 21*, through Chapter 36, emphasises the need for ‘wide scale environmental education programmes in diverse settings and the need to re-orient all education and training towards sustainable development’ (Lotz-Sisitka, 2004:10).

The United Nations Educational Scientific and Cultural Organisation (UNESCO) was appointed as an ‘implementing agent’ for Chapter 36 of *Agenda 21*. Environmental education, training and information in *Agenda 21* are not only confined to Chapter 36, but permeated the thirty nine chapters of UNCED’s programme of action, falling mainly under the notion of ‘*capacity building*’ but also under ‘human resources development’ and similar subsections (Lotz-Sisitka, 2004).

Agenda 21 recognised that people’s participation and responsibility are essential elements of environmental protection and sustainable development. Participation involves education, training and public awareness. Education and training also have a central role in strengthening the role of women, youth, indigenous peoples, farmers, local officials, trade unions, business, industry and the scientific community. *Agenda 21* emphasised the scope of environmental education and training in environmental health education, environmental education and training at local government level, sustainable agriculture and extension work as a process of education and rural development (Lotz-Sisitka, 2004).

This is further affirmed by the World Summit on Sustainable Development’s Implementation Plan, which advocates support for local authorities in elaborating slum upgrading programmes within the framework of urban development plans and facilitates access, particularly for the poor, to information on housing legislation (UN, 2002a).

2.2.4.2. Agenda 21 and Education and Training

The Stockholm conference focused on the close link between humans and the environment, and emphasised the need to protect and improve the environment for

the present and future generations (Lotz-Sisitka, 2004). Education, including formal education, public awareness and training should be recognised as a process by which human beings and societies can reach their utmost potential. Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues.

While basic education provides the underpinning for environmental and development education, the latter needs to be incorporated as an essential part of learning. Both formal and non-formal education is indispensable to changing people's attitudes so that they have the capacity to assess and address their sustainable development concerns. It is also critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development education for effective public participation in decision-making.

To be effective in environment and development, education should deal with the dynamics of both the physical/biological and socio-economic environment as well as human (which may include spiritual) development, and should be integrated in all disciplines and employ formal and non-formal methods as effective means of communication. (www.unep.localagenda21chapter36.org): accessed 2nd May 2005.

2.2.4.3. Role of National NGOs in Local Agenda 21

Within Civil Society, a large number of Non-Governmental Organisations (NGOs) and Community Based Organisations (CBOs) are working in various areas of sustainable development, including such areas as urban environment, community-based natural resources management, permaculture, forestry, agriculture and wildlife conservation. Several NGOs focus on development, with both rural and urban programmes (Botswana Civil Society, 2002).

NGOs therefore, have an important role in providing programmes to complement government effort. In Gaborone, Kalahari Conservation Society (KCS), and Somarelang Tikologo (ST) have undertaken environmental education related projects.

ST for example, initiated and worked on an enviro-school project. In this project, a model-school (Tlhabologo Primary School) has been adopted and assisted with resource conservation facilities. These include a bio-park, within a school, and implementation of an environmental policy, including water and energy-saving technology. Various initiatives have led to the development of education centres such as one at Gaborone Game Reserve (supported by KCS), Linchwe Education Centre (supported by Conservation International (CI), who have an Environmental Education (EE) programme in Maun, and private EE initiatives such as at Mokolodi Wildlife Foundation and Mawana Nature Reserve (Botswana Civil Society, 2002)

2.2.5. United Nations Millennium Development Goals 2000

The Millennium Development Goals (MDGs) have been broken down into a list of targets that are specific, practical and realistic. They are technically feasible and financially affordable. But without social mobilisation we will not progress from concept to achievement. A movement is needed to create awareness, trigger policy reforms, mobilise resources, and motivate actions to meet the goals, both globally and locally. (From an address by the UNDP Administrator on the International Day for the Eradication of Poverty, 17/10/2003).

The UN Millennium Development Goals (MDGs) established in September 2000 developed an eight point agenda, backed by quantifiable targets, for addressing: poverty and hunger, illiteracy, discrimination, mother and child mortality, disease, environmental degradation and inequitable global relations (Rosenberg 2005). In general the MDGs address issues of poverty alleviation and development (Lotz-Sisitka, 2004). One of the goals emphasises the integration of ‘principles of sustainable development into country policies and programmes at local level (Council) to reverse the loss of environmental resources’ (Lotz-Sisitka, 2004:24). This goal supports Chapter 28 of *Agenda 21* for better service provision by the local authority. While all the 191 United Nations members have pledged to meet the above goals significant challenges remain.

In 2003 the United Nations Development Programme, in reviewing the progress with regards to the Millennium Development Goals, noted that “regionally, at the current

pace Sub-Saharan Africa would not reach the Goals for poverty until 2147 and for child mortality until 2165. And for HIV/AIDS and hunger the trends in the region are heading up –not down...” (UNDP, 2003).

While much of the work that is done through the SADC Regional Environmental Education Programme responds to Goal 7 namely “ensure environmental sustainability” it is done with the recognition that it is the relationship between this goal and the other goals which is crucial. Thus the relationships between educational processes, access to natural resources, poverty and hunger has been an important focus of the programme. So too has been the relationships between environmental quality and a wide variety of health issues including HIV/AIDS and child mortality (SADC-REEP, 2005).

2.2.6. World Summit on Sustainable Development 2002

Poverty eradication, changing unsustainable patterns of production, and consumption, and protection and managing the natural resource base of economic and social development are over-arching objectives of, and essential requirements for, sustainable development. (WSSD Implementation Plan, 2002).

Education for Sustainable Development is an investment in our future... each respective country should ensure that appropriate resources are made available for its development – (*ibid*, 2002).

The 2002 World Summit on Sustainable Development (WSSD) convened by the United Nations General Assembly in Johannesburg, South Africa, developed an implementation plan (UNEP, 2002a). The Plan recognises that education should promote sustainable development at all levels and promote education as a key agent of change (UNEP, 2002b).

The WSSD Implementation Plan reaffirms international commitment to *Agenda 21*, Education for All and the United Nations Millennium Declaration. The Plan of implementation recognises that “Education is critical for promoting sustainable development” (para 109, 2002) and motivates mobilising resources to support

education. Embedded throughout the document are references to education in the contexts of rural communities and the agro-industry, production and consumption patterns among the general public, cleaner production in public and private institutions and work-place-based education in industry (among others). The Gaborone City Council Environmental Health Department (GCCEHD) has worked with environmental education practitioners from the formal education, community based natural resources management, industry, agriculture and civil society.

2.3. Regional Perspective

The Southern African Development Community (SADC) includes fourteen member states. Through the SADC Treaty, governments in the SADC region have identified environmental education as a key process of enabling sustainable development. The 1996 SADC *Policy and Strategy for Environment and Sustainable Development: Towards Equity-led Growth and Sustainable Development* provides the basis for implementing *Agenda 21* in the Southern African context. Within the over-arching concepts of equity, environment and development, the document identified environmental education as a strategic activity for the region's environment and sustainable development programme (SADC REEP, 2002).

Environmental education has however, been an active contributor to processes of sustainable development in the region for a considerable number of years. The Environmental Education Association of Southern Africa (EEASA) was established 24years ago, and has always had an active membership of practitioners who have made numerous professional and practical contributions to the growing social field of environmental education.

Southern Africa is endowed with enormous environmental, social and cultural assets. The wealth of natural resources and the diversity of cultures create many opportunities for enabling sustainable living in healthy environments (SADC, 2002). Southern Africa however, is also prey to a number of serious socio-ecological issues and risks that threaten to destroy many social and biophysical facets of the

environment, and dramatically reduce the sustainable livelihood options available to Southern African communities (*ibid*).

Poverty is a cross cutting issue which according to SADC (SADC, 2003) is ‘covered in all the other priority intervention areas.’ HIV/AIDS is also viewed as another threat. It is regarded as being ‘the greatest public health and developmental challenge in the region’ (SADC, 2003:89).

Environment and sustainable development is also regarded as an important ‘cross cutting’ issue, and the intention is for SADC member states to “... ensure equitable and sustainable use of the environment and natural resources for the benefit of present and future generations” (SADC, 2003:xi).

In the context of GCCEHD it is important to identify and work on projects that will bring direct public benefits at different levels.

2.3.1. State of the Environment in SADC

Southern Africa is home to 291 million people, of which about 25% live in urban areas and have access to more food resources, while 75% live in rural areas (Lotz-Sisitka, 2004:6). As the majority live in rural areas, they depend on natural resources for their livelihood. This puts pressure on the biophysical life support system, due to increase population levels coupled with poverty (SADC, 2003).

Fakir (2002:14) notes that, particularly in urban development context, many of the urban environmental problems in Southern Africa can be “attributed to weak local government capacity, a limited capital investment for infrastructure improvement and weak monitoring.” Fisher and Ponniah (2003) further observe that most of the urban population live without basic services, which they refer to as ‘unjust societies.’ Shaw and Louw cited in United Nations Populations Division (UNPD, 2001) further observe that many African cities have an increasing number of overcrowded informal settlements, without proper housing, sanitation and waste management services. Fakir (2002:14 cited in Lotz-Sisitka 2004:6) notes that this is seen as a problem for the future, particularly where there is an increase in rural-urban migration in Southern

Africa. Almost 80% of the population is living in urban areas in Botswana. Therefore, Gaborone City Council Environmental Health Department (GCCEHD) is facing the same problem. The most critical issue here is they need basic services yet they are not in the planning and serviced area.

Moyo and Mtetwa (2000 cited in SAIEA 2003:14) observe that SADC countries also experience relatively poor standards of pollution control, and experience extremely high percentages of urban sewage discharge directly into rivers and lakes, without treatment of any kind. This is particularly precise with Gaborone city council. A lot of sewerage water is discharged into the “Notwane River” and to this end nothing has been done by GCCEHD to treat the water that communities use down stream.

Apart from sanitation issues, most SADC countries experience solid waste pollution due to lack of waste reduction, recycling and public involvement (SAIEA, 2003:18). The Gaborone Landfill is in an appalling condition. There are scavengers (people and animals) all over and there is no control as to who enters the landfill for whatever reason. This may lead to the spread of diseases.

SADC is facing serious threats to biodiversity and one of the main causes of loss of biodiversity is the loss of fragmentation and conservation of natural resources due to mining, agriculture or urban expansion (SAIEA, 2003). In fact, in SADC, 45% of urban households grow crops or raise livestock in urban environments in order to supplement their livelihoods (UNDP, 2001). In the case of the Gaborone City Council, such a practice is common, and even poses more problems as cattle stray into the city centre.

2.3.2. The SADC Regional Indicative Strategic Development Plan

The SADC *Regional Indicative Strategic Development Plan* (RISDP) is viewed as SADC’s regional expression and vehicle for achieving the ideas contained within the African Union’s NEPAD Programme. The RISDP seeks to provide clear direction for SADC policies and programmes during a period of significant restructuring and over

the long term. It places emphasis on poverty eradication through the “promotion of sustainable and equitable economic growth and socio-economic development” (SADC, 2003). Within this frame work “Environment and Sustainable Development” and “Human and Social Development” are recognised as priority intervention areas in the achievement of poverty eradication. However, the RISDP recognises that inadequate attention to the promotion of environmental awareness and acquisition of knowledge and skills” is a challenge in the current SADC policies and strategies (SADC, 2003).

In formulating a response to these challenges the RISDP (ch 4.7: 107) sets a target of “regular environment and sustainable development capacity building and training programmes by 2007”. There are a number of implicit references to education focusing on environmental and sustainable development issues in other sections of the RISDP, however as Lotz-Sisitka (2004:39) notes there is a lack of integration of environmental education across the priority intervention areas identified in the RISDP and also a lack of integration between the “Environment and Sustainable Development” and “Human and Social Development” components of the RISDP.

Another development effort relevant to environmental education in the SADC region, is the establishment of Trans Frontier Conservation Areas, which is being seen by the SADC RISDP as an important development initiative in the region (SADC 2003b: 38). The purpose of these areas is to foster cross-border tourism. The World Parks Congress (held in 2003 in Durban, South Africa) focused on ‘Benefits beyond boundaries’ and raised key issues associated with people and conservation.

At the interface of people and conservation initiatives lie education, communication and development processes, hence the potential significance of this development for environmental education in Southern Africa.

Human and social development is identified as priority ‘Sectoral cooperation and integration intervention area’ in the RISDP. *The Human and Social Development*

Strategy takes a broad-based view of human and social development, noting the need for well informed, skilled, healthy, flexible, culturally responsive and productive people (Lotz-Sisitka, 2004). These sentiments are also shared by Botswana's *Vision 2016*, which advocates for an informed and educated nation. (Botswana Government, 1997c).

2.3.3. SADC Policy and Strategy for Environment and Sustainable Development

In order to guarantee the proper management of natural resources and the environment in the SADC region, member states developed and adopted the SADC *Policy and Strategy for Environment and Sustainable Development: Towards Equity-led Growth and Sustainable Development in Southern Africa* as a vehicle for the implementation of *Agenda 21* in the context of environment and sustainable development (SADC-REEP, 2005).

The SADC policy and strategy identifies the need for a watch-tower and centre for the development of harmonised policies on environment; standards and guidelines; and protocols and agreements on environment and natural resources management, to ensure that economic growth strategies are in tune with SADC's environmental protection objectives and principles of equity and priority to the poor (*ibid*).

2.3.4. The EEASA Gaborone Declaration 2002

This position Statement and Declaration, the *Gaborone Declaration 2002* on Environmental Education Processes, was drawn by an international gathering of environmental education practitioners who met on 19-21 August 2002 in Gaborone, Botswana, under the auspices of the Environmental Education Association of Southern Africa (EEASA). EEASA is a network of environmental educators from diverse fields from across the region, with a track record of some 24 years. It acts as a responsible body for the purpose of consultation and coordination on matters of public and professional interest concerning environmental education processes in Southern Africa.

The *Gaborone Declaration 2002* provides scope and priorities of environmental education praxis in Southern Africa (EEASA, 2002). The scope includes environmental education processes using environmental education and training in industry contexts, community development contexts, urban environments, adult and teacher professional development and schools (Lotz-Sisitka, 2004).

Priority issues as defined in the *Gaborone Declaration 2002* include a strong concern for culture and indigenous knowledge systems in Southern African environmental praxis, sustainable funding frameworks for environmental education work, relevance in formal education curricula and policy processes that are participatory and that are praxis oriented and useful (Lotz-Sisitka, 2004).

The *Gaborone Declaration 2002* emphasises the need to include environmental education into environment and development processes in order to ensure sustenance of livelihoods. It does not, however, specifically identify environmental interpretation and education in community-based natural resources management or conservation contexts as a key arena of practice in the social field of environmental education with many complex contextual, social, political and economic dynamics which require deliberation amongst practitioners working in these areas (Lotz-Sisitka, 2004).

2.3.5. The New Partnership for Africa's Development (NEPAD)

NEPAD recognises that the range of issues necessary to nurture the region's environmental base and sustainable use of natural resources is vast and complex, and the systematic combination of initiatives is necessary in order to develop a coherent environmental programme

(NEPAD Environmental Action Plan, 2002:175).

At continental level, African governments have committed themselves to the Millennium Development Goals under the framework of the *New Partnership for Africa's Development* (NEPAD). NEPAD is an initiative of the Organisation of African Unity and a commitment by African leaders to place their countries "on a path of sustainable growth and development" (SADC-REEP, 2005). NEPAD seeks to

do this through a number of strategies including capacity building, regional and international co-operation, democracy, peace and security. Although issues of the environment and sustainable development are largely eclipsed in core initial NEPAD documentation by the notion of “sustainable growth and development” there has been a growing concern that the region’s environmental challenges could not be ignored when tackling socio-economic development (*ibid*).

This led to the development of the NEPAD Environmental Action Plan under the leadership of the African Ministerial Conference on Environment. The overall objective of the plan includes the “building [of] Africa’s capacity to implement regional and international environmental agreements and to effectively address the African environmental challenges in the overall context of the implementation of NEPAD” (UNEP, 11:2003). Embedded throughout the NEPAD documentation is a commitment to broad and deep participation that cannot happen without appropriate education and communication processes (Lotz-Sisitka, 2004).

The NEPAD Action Plan on the environment, notes that “... there appears to be lack of appropriate recognition by the political leadership of the importance and severity of the problem of the environment,” which accounts for the inadequate attention that is being paid to the environment by national and regional governments (NEPAD Action Plan, 2002:25).

2.4. National Perspective

2.4.1. Botswana’s State of the Environment

Population and environmental issues cannot be viewed in terms of a linear causal chain but as a series of concentric circles where the sphere of development, that is, the sum of social, economic and cultural activities, is intermediate between demographic aspects of the human population and the natural environment (Lutz, 1995 cited in SOER, 2002). Every life on earth, every economic activity, and any kind of development are embedded in the laws of nature. Hence at every stage, these development activities are intimately interwoven with the natural environment. In this

context, the environment should not only be seen as a constraint, but also as the basic life support system that makes all human activities possible. As such, it is simply impossible to think of economic activity as being independent from the physical environment.

On the other hand, State of the Environment Botswana report notes that the most common form of migration in Botswana is rural-urban migration and rural to rural migration. Botswana have a tripartite communal living of commuting between villages, cattle posts as well as lands areas. However, this pattern of movement has changed. Now the population tends to concentrate around the major urban centres (Botswana Government, 1997a). The 2001 preliminary population census results show that the proportion of towns / cities' population to the overall total population has barely changed over the past 10 years (Botswana Government, 2001).

The fast growing population exerts pressure upon the fixed and limited resources. When the population pressure on rural lands becomes intensive, many rural dwellers leave their places of origin in search of alternative places to settle. Some are forced to leave because they have exhausted the soils that used to provide their food and cash income (SOER, 2002).

There is evidence to show that resources are under pressure because of increasing population and developmental needs and this has given rise to the concern that the capacity of the environment to sustain the needs of future generations may fail. The impact of these development pressures is manifested in rangelands degradation, the cutting of trees without afforestation, excessive mining of ground water, reduction of wildlife species and veld products, the generation of waste which pollutes soil and water, and land erosion (Botswana Government, 1997).

More often than not, many migrants' expectations are not fulfilled. On arrival in the urban areas, they are usually met by costly accommodation that they can not afford. Jobs are not easy to find than as anticipated. Many rural to urban migrants usually

enter the informal sector and some find self-employment, which often leaves many of them living below the poverty datum line (Mazonde, 1997). Eventually they built slums where sanitation and safe drinking water are not available. Most of these people rely on fire wood for fuel. Because of the dependence on fuel-wood, the result is to walk long distances to collect fire wood and ultimately commit crime in order to make ends meet. Kgathi, (1997) has noted that the distance to collect firewood has increased with time mainly because fuel-wood which is used for heating, lighting and cooking is collected a distance away from town day by day.

The report further states that the major problem of urbanisation on the city's environment in Botswana concerns high levels of water pollution, because of lack of sewage systems in Self Help Housing Agency (SHHA) and squatter areas, or an improper solid waste disposal (Mosha, 1998). Mosha has further observed that toxic or hazardous industrial and commercial waste is disposed of in water bodies or land sites without special attention to treat it before disposal.

The HIV/AIDS epidemic in Botswana is the biggest social and economic threat facing the country today. HIV prevalence in Botswana is high than other HIV/AIDS cases found in other countries such as Zimbabwe and Zambia (Botswana Government, 2000). Data from United Nations Development Programme (UNDP) sentinel surveillance surveys shows that the number of antenatal clinic attendees tested for HIV/AIDS in the major urban areas (Gaborone, Francistown and Selibe-Phikwe) increased from 6% in 1990 to 43% in 1998 with a range of 39 to 50% in 1998 years, (SOER, 2002).

2.4.2. Botswana National Policies

The National Development Planning documents state that “planning in Botswana is intended to ensure that the nation's financial, manpower and natural resources are used effectively, in accordance with national priorities.” This provides an encapsulation of the philosophy of and rationale for planning (Gaborone City Council, 2002).

A number of policy frameworks guide development and environmental management processes in Botswana. To this end, Botswana has developed a number of policy frameworks that guide sustainable development. These include among others; National Development Plans (NDPs), National Policy on Conservation of Natural Resources and Development (NPCNRD), National Water Master Plan (NWMP), National Vision 2016 and Botswana MDGs Status Report.

2.4.3. National Development Plans (NDP)

Since Independence in 1966, Botswana has formulated its development plans and aspirations in six-yearly cycles. The main aim of the Government's development efforts since the inception of the First National Development Plan (1968-1973) has been to raise the standards of living of the people of Botswana. In line with this, the National Development Plans (NDPs) have been guided by the planning objectives of;

- Sustainable development,
- Rapid economic growth,
- Economic independence, and
- Social justice.

The planning process is intended to ensure that maximum benefits are derived from the limited financial resources available to Government by prioritising policies, programmes and projects. The development plans also set out Government policy on creating an environment conducive to Local Authorities development and expansion; hence they are expected to take a leading role in driving the development process at local level (Botswana Government, 1997a).

Thus in the Government's development ethos, sustainability is seen as a strategic concept that links population, the economy and natural resources together in the context of socio-economic development. In this regard, Botswana's long-term planning perspectives are based on the following pillars:

- Human resource development,
- Sustainable use of natural resources,
- Sustainable economic growth and diversification, and
- Democratic institutions within a market economy.

2.4.4. National Policy on Natural Resources Conservation and Development

Environmental conservation in Botswana is governed by the National Policy on Natural Resources Conservation and Development (NPNRCD) of 1990. The primary goals of the policy are;

- To increase the effectiveness with which natural resources are used and managed, so that beneficial results are maximised and harmful environmental side-effects are minimised,
- To integrate the work of many sectoral Ministries and interest groups, thereby improving the development of natural resources through environmental conservation.

The National Conservation Strategy Coordinating Agency (NCSA) is charged with the responsibility of implementing the National Conservation Strategy (NCS). One of the divisions of the Agency is the Environmental Education Division, which is charged with carrying out environmental education, and promoting environmental awareness building countrywide and seeking support from such bodies as Local Authorities (Councils) at local level and NGOs (Botswana Government, 1997a).

2.4.5. Botswana National Water Master Plan

The Botswana National Water Master Plan (BNWMP) documents all issues on water resources including environmental issues relating to water resources. The BNWMP evaluated and assessed various water resources and demand centres in terms of among others:

- Equitable distribution of the water resources, with the aim of ensuring that none of the demand centres is overly disadvantaged, thus leading to non-sustainable development,
- Sustainability of water resource utilisation given the abstraction rates (draw-off) as compared to potential replenishment (re-charge),
- Water resources like most natural resources do not observe national boundaries, the natural surface water resource originate from the outside the country.

Responsibility for water resources management is fragmented amongst a number of authorities in the country. This has led to the ineffective and inefficient exploitation of the scarce water resources in the country. Aspects of monitoring and control of water resources utilisation have suffered (Botswana Government, 1991)

At the Earth Summit, (refer to 2.2.3), *Agenda 21*, an international programme of action for the next century was agreed upon. *Agenda 21* called for sustainable and environmentally sound development in all countries:

- To preserve, protect and improve the quality of the environment,
- To contribute towards protecting public health, and
- To ensure a prudent and rational utilisation of natural resources.

It is in the context of the above principles that the Botswana National Water Master Plan pays attention to the Department of Water Affairs's efforts in water demand measurement, conservation, re-use and the use of effluent. Department of Water Affairs has decided to establish a water conservation unit that is responsible for the development and implementation of a water conservation policy.

2.4.6. Botswana Government position on Agenda 21

The Government of Botswana recognises and reaffirms *Agenda 21*, which aims at addressing pressing global socio-economic and environmental concerns and the challenges of the 21st century (Botswana Government, 1997). This recognition arises from the growing global consensus and political commitments at the highest level regarding development and environmental co-operation (Botswana Government, 2002).

Agenda 21 calls for sustainable and environmentally sound development in all countries, and observes that waste management, collection and disposal are among the environmental issues of greatest concern to the global community. In Botswana, from the ancient times to the present, waste has been burned, re-used or dumped depending on the economical, cultural, social and political developments of organised people in their own environmental contexts (Gaborone City Council, 2002). There was no sign of development regarding the methods of disposal.

In line with the requirements of *Agenda 21*, Botswana followed the trends from the Rio de Janeiro summit of 1992 by establishing a series of programmes such as; the national waste management plans, waste management strategy, national conservation strategy, world environmental day commemorations, national clean-up the world day, establishing quantities of waste produced, recycling targets (paper, plastic and glass), systems of collection, treatment and disposal of waste, markets for recycled materials and reduction in dioxin emissions (Gaborone City Council, 2002). However, looking at the current situation, more still needs to be done to make use of the available strategies.

2.4.7. Botswana National Vision 2016

In 1997, the Government of Botswana following exhaustive consultations with people from all strata of the society and after much study, published a document entitled “*Vision 2016: Towards Prosperity for All*”. This document sets out the Government of Botswana’s long-term vision of the achievement of *Kagisano* or social harmony. It

follows the five national principles of Democracy, Development, Self Reliance, Unity and Botho (Botswana Government, 2004).

Vision 2016 is founded on seven pillars, namely:

- An educated, informed nation,
- A prosperous, productive and innovative nation,
- A compassionate, just and caring nation,
- A safe and secure nation,
- An open democratic and accountable nation,
- A moral and tolerant nation, and
- A united and proud nation.

The issues of environment, natural resource development and utilisation, population growth, poverty reduction and sustainable growth feature prominently in the prosperity and productivity pillar of Vision 2016 and *Agenda 21* section of “Challenges and Opportunities”. The seven pillars of Vision 2016, in conjunction with the four planning objectives are mirrored in the four over-arching groupings of the 40 Chapters in *Agenda 21*, which are:

- Social and economic dimensions,
- Conservation and management of natural resource for development,
- Strengthening roles of major groups, and
- Means of implementation. (Botswana Government, 2002).

2.4.8. Botswana Millennium Development Goals Status Report 2004

In September 2000, at the United Nations Millennium Summit, the world leaders from 189 nations agreed to a set of time-bound and measurable goals and targets. Botswana also joined the rest of the world and became signatory to the Millennium Declaration, and all UN agencies, funds and programmes are committed to the eight (8) goals thus:

- Eradicate extreme poverty and hunger,
- Achieve universal primary education,
- Promote gender equality and empower women,
- Reduce child mortality,
- Improve maternal health,
- Combat HIV/AIDS, malaria and other diseases,
- Ensure environmental sustainability, and
- Develop global partnership for development.

The *Millennium Development Goals* (MDGs) resonate well with the development ideals espoused in *Vision 2016*. The MDGs Report indicates that the challenges facing Botswana that may hinder many of the development efforts are the high prevalence of HIV/AIDS, poverty and environmental degradation (Botswana Government, 2004)

In addition, there is globalisation, with flows of trade and finance among nations playing an increasingly critical role, presenting Botswana and her people with exciting opportunities, but certainly also some difficult choices and even some serious environmental and economic threats. Further the report proposes that the mobilisation of and coordination among all stakeholders would be an important precondition for bringing the MDGs all the way to the *Millennium Development Goals 2015* and *Vision 2016* goalpost (Botswana MDGR, 2004).

2.5. Environmental Education and Training in Botswana

The ten year basic education in Botswana is free. The Ministry of Education in 1994 completed a national consultative commission on education to review the whole education system. Recommendation 44 of the Revised National Policy on Education (RNPE) states that environmental education should be introduced in the national curriculum (Botswana Government, 1994).

As a response to recommendation 44 of the policy, the Department of Curriculum Development and Evaluation has reviewed the Primary School Curriculum and included Environmental Science as a subject. For secondary education, the infusion model was recommended and is being used (Botswana Government, 1992). Environmental education is not confined to the classroom and not aimed only at children; despite the formal ring to the term ‘education’, it has life-long relevance to people from all walks of life. Environmental education processes are open-ended, in recognition that environmental issues are complex, and that learners need to develop and implement solutions collectively, as no single authority can simply tell us how to develop and live our lives (City of Cape Town, 2003).

Environmental awareness is more limited endeavour, with a specific task of getting specific information or ideas across to people, seen here not as ‘learners’ but as ‘targets audiences’. While a communication campaign can be a valuable component of environmental education, the processes should not be confused. Communication is generally a one-way process, than interactive. It is not open-ended, as it aims to change a limited set of behaviours in defined ways (*ibid*).

Training is a particular form of education, aimed at developing specific skills, in relation to specific tasks which are often job-related. Examples are the skills to operate a front-ended loader, or implement an environmental management system in an office. Training overlaps with other educational processes, and environmental consciousness and commitment are important outcomes of environmental training, along with practical know-how (*ibid*)

Information, education and communication activities are being carried out by different departments and Non-governmental Organisations (NGOs). These activities are geared towards supporting the formal curriculum through NGOs extension services to schools and rural communities.

2.5.1. Botswana National Reports to United Nations

Botswana Government recognises and reaffirms *Agenda 21*, which aims at addressing the pressing global socio-economic and environmental concerns and the challenges of the 21st century (Botswana Government, 1997a). This recognition arises from the growing global consensus and political commitments at the highest levels regarding development and environmental co-operation (Botswana Government, 2002).

Botswana's development efforts since independence have been to raise the standard of living of the people of Botswana. This is reflected in the national reports on *Implementation of Agenda 21: Review of progress made since the United Nations Conference on Environment and Development in 1992* to date (Botswana Government, 2002). The reports mainly cover key areas of but not limited to;

- Sustainable Development in Botswana,
- Major Resource and Environmental Issues in Botswana,
- Government Policies, Programmes and Practices,
- Responding to the Challenges of Sustainable Development,
- Economic Independence, and
- Rapid Economic growth.

The reports mainly reflect Botswana's conformity with the principles of *Agenda 21*. The reports further indicate progress that Botswana has made since the Rio Summit in 1992.

2.6. Conclusion

The political discourse surrounding environmental education has changed significantly over the past years since the Rio Summit in 1992 (Lotz-Sisitka, 2004). This discourse is increasingly centred on adoption of Education for Sustainable Development (ESD). The discussion has shown that Botswana has taken strides towards achieving its goal of sustainable development at policy level. However, much still remains to be done. National priorities have been set as outlined in the foregoing

and it is the resolve of the Government of Botswana that all role players and partners in development will equally meet the challenges and tasks ahead, however daunting it may seem.

Local government issues, policies, *Local Agenda 21* implementation at local government level, Gaborone City Council *Local Agenda 21* and approaches to education and training in Botswana local government are discussed in the discussion of the results in chapter 4 and 5. In the next chapter I discuss the methodology which I used to generate data and all relevant tools used.

CHAPTER 3

METHODOLOGY

3.1. Introduction

This chapter outlines the methodology and research tools used to generate data related to my research question. My research question is how the Gaborone City Council Environmental Health Department (GCCEHD) implements *Local Agenda 21* (see Chapter 1). In this chapter, I have considered the theoretical orientations that influenced the methodology used. The data generation tools I used included face to face interviews, focus group interviews and document analysis. I further discuss the ethics and trustworthiness and explain how the study dealt with issues of validity and triangulation. This led to how data was analysed to come up with the first layer of categories and sub-categories, which guided the presentation of the findings in Chapters 4 and 5, and the second layer of categories and sub-categories which guided further discussions of the findings in Chapter 6.

3.2. Research Orientation

The study methodology is centred on an interpretive orientation to research, which recognizes the importance of people's subjective experiences and its sensitivity to context (Terre Blanche & Kelly, 1999) and seeks the understanding of particular social settings (Neuman, 2000). It is also influenced by particular ontological and epistemological assumptions shaped by the contextual perspectives and influences presented in Chapter 2, drawing on an interpretive orientation to recognize that reality and meanings are socially constructed and are modified and interpreted according to one's specific context (Cohen *et al.* 2000). It is also evident that these meanings are re-shaped through ongoing processes of social interaction (Neuman, 2000).

The orientation of this case study is interpretive. I decided to work within this orientation in order to understand the implementation of GCCEHD *Waste Management Plan 2003-2009* (waste management and education and awareness) issues. Janse van Rensburg (2001:16) notes that an interpretive researcher is

“interested in the meaning that people make of the phenomena.” Terre-Blanche and Durrheim (1999) argue that the meaning of human creation, words, actions and experiences can only be ascertained in relation to the context in which they occur.

Connole (1998) notes that an interpretive orientation allows an understanding of what is going on at least in the first instance, through active involvement in the process of negotiated meaning. She further argues that through this orientation, the researcher can easily identify patterns of meaning which emerge. In the context of this study, I have critically looked at how theory is put into practice as I understand the implementation of the GCCEHD *Waste Management Plan 2003-2009*.

Terre-Blanche and Kelly (2002) define interpretive research as a method that describes and interprets people’s feelings and experiences in human terms rather than through quantification and measurement. This study is aimed at interpretation and assessing (through workers experience and skills) the implementation (theory and in practice) of *Local Agenda 21* by the GCCEHD. The study relates theory and practice.

As indicated by Janse van Rensburg (2001), interpretive research provides well-grounded and rich information in the context of a study. Supporting the same argument, Terre-Blanche and Durrheim (1999) comment that interpretive research strives to make sense of feelings, experiences and social situations by studying their natural settings. In this study, this understanding will assist in finding out how the GCCEHD responds to environmental issues.

3.3. Case Study

As indicated above, the research takes the form of an interpretive case study. Patton (2001) observes that case studies become particularly useful where one needs to understand a particular group of people, a particular problem or unique situation in great depth, and brings out the issue of context and history of the issue under investigation. Janse van Rensburg (2001:16) further states that;

A researcher can take a close look at individuals or small groups in naturalistic settings, using in-depth case studies, often involving just a single case... [and] would look for rich, detailed information of a qualitative nature through in-depth interviews or the interpretation of documents.

Bassey (1999:30) also asserts that a case study is employed within which issues are indicated, discovered or studied so that a tolerably full understanding is possible. He further argues that:

for the case study this is particularly important in that sufficient data is collected for the researcher to be able to explore significant features of the case... another essential feature is that the study is conducted mainly in its natural context *(ibid:44)*.

Stake (1995) explains that a case study enables the collection of information that is specific to the particular case and that the idea of a case study is to understand a particular case under study. Yin (1989:13) on the other hand, observes that a case study “investigates a contemporary phenomenon within its real-life context.” Merriam (1998:19) further argues that a case study provides in-depth understanding using intensive descriptions and analysis.

With the above orientations, I decided to conduct a case study with Gaborone City Council Environmental Health Department (GCCEHD) because I wanted to get an in-depth understanding of the implementation of their *Waste Management Plan 2003-2009* in relation to public education and awareness as informed by Chapter 36 of *Agenda 21* and other policies and strategies relevant to waste management in Botswana. GCCEHD was a convenient case study for me as it is in Gaborone which is the entry point from South Africa, Gaborone is a developing city and centre of tourism and one of the fastest developing cities in Southern Africa as well as the head quarters of Southern African Development Community (SADC). I also live and work in Gaborone; hence it was a good choice for me to conduct my study there. My respondents included senior management officers, technicians and workers of GCCEHD, and political councillors, who provided their perspective on waste management and education and awareness issues.

3.4. Data generation tools

In order to get the required data to respond to my research question and to develop a case study. I used three tools of data generation, including; I used three tools of data generation, including:

- Face to face semi-structured interviews,
- Focus group interviews, and
- Document analysis.

Apart from these, I decided to keep a research journal where I recorded information related to the study. The research journal helped me to record my own observations on issues pertaining to my study. I worked with the GCCEHD staff as most of them were previously my colleagues in environmental education. Preliminary data analysis was undertaken immediately after data from the department management was generated and emerging issues were taken into consideration in the next data generation process. This facilitated a process of progressive focusing during the research.

3.4.1. Interviews

The first research process started with interviews with the GCCEHD staff (management). According to Cohen *et al.* (2000), an interview is inter-subjective; it allows participants (interviewers or interviewees) to discuss their interpretations of the world in which they live. On the other hand, Wellington (2000) argues that interviews allow a researcher to investigate and prompt things that one can not observe and that through interviews one can probe an interviewee's thoughts, values prejudices, perceptions, views, feelings and perspectives. This benefited my study a lot as most my respondents opened up during the interviews.

Gay and Airasian (2000) regard an interview as a purposeful interaction, usually between two people, focused on one person trying to get information from the other person. They further add that interviews permit the researcher to obtain important

data that can not be obtained from observation. It is in this context that I intended to get information as to how the GCCEHD staff implements the *Waste Management Plan 2003-2009 (Local Agenda 21)*. Further more, interviews can explore and probe participants' responses to gather in-depth data about their experiences and feelings. Gay and Airasian further argue that an interview is a joint construction of meaning between the researcher and the participant, not just construction of the participant. It is in this context that i intended to generate information on service provision by the GCCEHD.

In order to get in-depth information on the process of waste management, collection, disposal and public education and awareness, I developed a semi-structured interview schedule and used a face-to-face approach, which Terre-Blanche and Durrheim (1999) refer to as 'a process of getting to know each other'. I also developed guiding questions for the focus group interviews. The process of the face to face semi-structured interviews, focus group interviews and document analysis are explained in 3.4.1.1, 3.4.1.2 and 3.4.1.3.

3.4.1.1. Face to face interview process

The face to face interviews were conducted at the offices of the GCCEHD in Gaborone. Permission was sought through a letter of introduction from Rhodes University. The interview process provided a critical insight into the Gaborone City Council's environmental programmes (see appendices A-K). The City Council was cooperative, arranged interview sessions with various senior managers in areas directly involved with the environmental management and education in strategic settings. As is the requirement, ethical considerations were taken into account and respondents were informed in detail as to the purpose and intention of the interviews and the research. The total population of my study consisted of fourteen respondents: Mayor of GCC, two Councillors, Manager Landfill, Manager Abattoir, Manager Waste Management, Manager Education and Awareness for the face to face interview and two groups of three and four workers for the focus group interview.

3.4.2. Focus Group Interview

A focus group interview as described by Berg (1998) is a type of interview employed in small groups to obtain information from participants relevant to the research topic and was used as the second data generation tool. The choice of using this tool was guided by the need to explore...” the subjective experiences of people who have been exposed to the situation” (Merton & Kendall 1946, cited in Cohen *et al.* 2000:290), as well as enabling interaction and shared discussions amongst research respondents (Berg 1998; Schurink *et al.* 1998).

A focus group should consist of a small group of people for easy management (Patton, 1990:335). A focus group in this study was applied as a special kind of interview which is largely ‘non quantitative’ (Neuman 2000:274). Terre-Blanche and Durrheim (1999:388) further observe that we, as researchers, can ‘gain access to inter-subjective experiences [that are] shared by a community of people’.

I developed guiding questions, drawing on the responses that emerged from the operational manager’s interviews to assist and guide the focus group interview. However, this did not serve to re-focus the interview because most of the time the group interview was followed by questions to further explore the issues arising in more detail. Terre-Blanche and Durrheim (2002) say the triangulation of data entails collecting material in as many different ways and from as many diverse sources as possible. As such the focus group interview helped me to triangulate the data from the interviews.

3.4.2.1. Focus Group Interview Process

Initially I had planned to interview one group but after discussions with the manager, he emphasised the importance of interviewing another group as there were two groups, one working at the landfill and the other collecting waste from the residential areas and malls. The interviewees were told that the exercise was meant to get their views on their work and this will contribute to the study which I was conducting. I also assured them that their names were not going to be revealed in the report.

According to Terre-Blanche and Durrheim (1999), when one works with a group of people, one gains access to understanding differences between people, who might previously have been thought of as a homogeneous group. Patton (2001) supports this argument by saying in focus group interview, participants get to hear each other's responses and make additional comments beyond their own original responses as they hear what others say. In the context of the GCCEHD workers they expanded their answers by giving practical examples. Furthermore, Lewis (1992) indicates that a group of six or seven is the optimum size for a focus group discussion. In this study I worked with seven workers who dealt with the daily waste collection and disposal. There were two focus groups; in the first, there were three men. In the second, there were three men and a woman. A focus group, as Terre-Blanche and Durrheim (1999:388) note, is typically a group of people who share a similar type of experience but are not naturally constituted as an existing social group. In this study the group was made up of people with a similar work equivalent and these ranged from waste collectors, the Incinerator Operator and the Compactor Operator. However, there was an attempt to represent gender differences.

3.4.3. Document Analysis

As stated elsewhere, the key document analyzed in this study is the GCCEHD *Waste Management Plan 2003-2009*, which is the main policy document that the department uses for its implementation of *Local Agenda 21*. I considered the arguments put forward by Terre-Blanche and Durrheim (1999) that an interpretive analysis sometimes make use of documentary sources such as letters, newspapers articles, official documents and books.

As an outsider in the GCCEHD, I used documents as a way of opening a path of inquiry. Patton (2001:302) observes that documents prove valuable, not only because of what can be learned directly from them, but also as stimulus for a path of inquiry. He further notes that documents could help with:

- Description of the social environment,
- Capturing historical perspectives, and
- Commenting on what does not happen.

So, I wanted to capture the historical perspective of GCCEHD in terms of the social environment and to establish what the public perceived to be environmental management, education and awareness issues in GCCEHD. However, I was aware of Patton's warning that it would be difficult to:

- Get access to some important documents,
- Understand how and why the documents were produced, and
- Determine the accuracy of documents (Patton, 2001:498-499).

The choice of reviewing the official council document is supported by Patton (2001:498-499), who observes that "qualitative researchers are uniquely positioned to study those texts by analyzing the practical social contexts of everyday life within which they are constructed and used." This assisted me in understanding what debates had been discussed in the Gaborone City Council on environmental issues and how the issues have been resolved. The plan was analyzed in relation to what *Agenda 21* recommends for the Local Authorities.

3.4.3.1. Process of Document Analysis

A review of the GCCEHD *Waste Management Plan 2003-2009* was undertaken to assess the extent to which it addresses environmental education and training. This is the only official document which I assessed. I could not access other documents such as the staff minutes of the meeting because I was not allowed to do so for purposes of confidentiality. I read through the document, so as to check if the document has provision for environmental education and awareness component in the departmental units. The assessment also looked at the budget that is allocated to environmental education and training, whether it is significant as compared to other units.

3.5. Data Analysis:

Glaser and Strauss (1967) suggest that a method in qualitative data analysis use an analytical procedure of constant comparison. In this context, I used an explicit coding procedure to code the raw data generated by three different methods above, while data was continuously being generated. The use of constant comparison enabled me to identify themes and sub themes. Glaser and Strauss (1967) explain that with a constant comparison, each stage informs the successive stage until the analysis is terminated.

Scholars have varying views on data analysis. Among them are Miles and Huberman (1984) who specifically look at qualitative data analysis. He further explains that qualitative modes of data analysis provide ways of discerning, examining, comparing, contrasting and interpreting meaningful patterns or themes. Meaningfulness according to Miles and Huberman is determined by the particular goals and objectives of the project at hand: the same data can be analyzed and synthesized from multiple angles depending on the particular research or evaluation questions being addressed. I adopted the qualitative approach and was working well in this study. Miles and Huberman further explain that in quantitative analysis, numbers and what they stand for are the material of analysis. By contrast, qualitative analysis deals in words and is guided by fewer universal rules and standardized procedures than statistical analysis.

Qualitative analysts are justifiably wary of creating an unduly reductionistic or mechanistic picture of an undeniably complex, iterative set of processes. In this study I have adopted the framework developed by Miles and Huberman (1984) to describe the major phases of data analysis: data reduction, data display, and conclusion drawing and verification. In data reduction, the mass data has to be organized and somehow meaningfully reduced or reconfigured. Data display goes a step beyond data reduction to provide “an organized, compressed assembly of information that permits conclusion drawing...” A display can be an extended piece of text or a diagram, chart, or matrix that provides a new way of arranging and thinking about the more textually embedded data. Finally, conclusion-drawing involves stepping back to

consider what the analyzed data means and to assess its implications on the questions at hand. I chose Miles and Huberman's model of data analysis, because it sounds more systematic and easy to follow. Verification, integrally linked to conclusion drawing, entails revisiting the data as many times as necessary to cross-check or verify these emergent conclusions. "The meanings emerging from the data have to be tested for their plausibility, their sturdiness, their 'conformability'- that is, their validity" (Miles and Huberman 1984:11).

Miles and Huberman's approach to analysis enabled me to come up with categories and sub-categories used to guide the reporting of findings in Chapters 4 and 5. Table 3.1 shows the summarized categories and sub-categories of responses by interviewees of the face to face semi-structured interviews regarding the Implementation of *Waste Management Plan 2003-2009 (Local Agenda 21)* Education Awareness and Training component by the GCCEHD. Table 3.1 below presents the general responses of interviewees categorised and subcategorised as per the various units within the department.

Table 3.1: Summary of categories and sub-categories of the face to face interviews responses

Department Units	Category	Sub-categories
Education and Awareness Unit	<p>Promotion of 3Rs</p> <p>Workshops for community leaders</p> <p>Campaigns</p>	<ul style="list-style-type: none"> • Recycling, reusing and reducing with economic potential, • Develop educational brochures on 3Rs, • Importance of community /council partnership in waste management, • Sensitizing community on waste handling, separation at source and types, • Create partnership with public and private sector, • Cleaning of public places.
Waste management unit	<p>Development of educational strategies</p> <p>Workshops and seminars</p> <p>Radio programmes</p> <p>Ward competition</p>	<ul style="list-style-type: none"> • Development of brochures of waste management, • Develop an over arching strategy for waste management, • Training on waste separation at source and implementation, • How to source out recycling , • Public debate on dangers of waste and importance of knowing the types of waste, • Cleanliness ward, • Inspection of wards & prize, • Waste management hierarchy, • Identify opportunities for income. generation
Landfill unit	Training of workers	<ul style="list-style-type: none"> • Training of workers on types of waste, • Training workers on waste handling and separation.
Abattoir unit	In-house training	<ul style="list-style-type: none"> • Training workers on waste management in office.
Politicians	Training and orientation of councillors	<ul style="list-style-type: none"> • Train councillors to encourage public participation in waste management, • Encourage law enforcement officers to do their work.
Focus group 1	Training of workers	<ul style="list-style-type: none"> • Need to be training on waste handling. • Need to be trained of types of waste,
Focus group 2	Training of workers	<ul style="list-style-type: none"> • Need to be trained on protective clothing.

Table 3.1 above summarised the respondents’ responses and further categorised them in subcategories that show the linkages of different thematic areas. The second layer of analysis involved synthesis of the main findings (presented in chapter Four and Five) and the development of further categories and sub-categories. This enabled me to further discuss the implications of the main findings in depth, identify new meanings and insights, to further elaborate on the summarized thematic areas chosen and see if my research question was being answered. The layer also enabled me to come up with recommendations to the council on how best they can improve on their education and training component. Table 3.2 shows a summary of these categories and subcategories of the respondent’s responses in key thematic areas.

Table 3.2: Categories and subcategories for the second layer analysis

Categories	Subcategories
1. Promotion of the 3Rs	<ul style="list-style-type: none"> • Recycling and its income generating incentives, • How reusing saves resources, • Develop educational brochures on 3Rs, • Waste reduction methods. • Identify opportunities within office for recycling.
2. Workshops	<ul style="list-style-type: none"> • Importance of community participation in waste management, • Importance of waste management, • Why waste separation at source is important.
3. Radio programmes	<ul style="list-style-type: none"> • Public debates on waste management policy and its implications. • Law enforcement.
4. Ward competitions	<ul style="list-style-type: none"> • Competition on waste management practices, • Ward inspection, • Prizes for the best cleaned wards.
5. Clean-up Campaigns	<ul style="list-style-type: none"> • Promotion of waste management hierarchy, • Encouragement of public private sector participation, • Waste fair exhibitions, • Encourage schools Participation, • Better ways of waste disposal.

3.5. Ethics

Bassey (1999) notes that a researcher needs to respect the origin of data and ensure the dignity and privacy of the respondent. Cohen *et al.* (2000) further argue that one needs to consider confidentiality, anonymity, non-identifiability and non-traceability when conducting interviews. Kelman (1982 cited in Merriam 2001:234) observes that serious ethical problems arise only when respondents agree to provide information for a stated purpose and the data is used for a clearly different purpose.

In this study, I worked with two groups of people. These are the GCCEHD Department Operational Management units, and the workers (waste collectors). Wellington (2000) argues that participants in a research study have the right to be informed about the aim, purpose, findings and their potential consequences. Before the start of the data generation, I held briefing meetings for the Department management and operational management units (Landfill Manager, Education and Awareness Manager, Abattoir Manager and Waste Management Manager) to explain the purpose of my study.

I then requested the Department management to allow me to work very closely with the operational management units as they were involved in the daily management of waste in Gaborone and for the fact that I had previously worked closely with them on environmental education while I was working for Kalahari Conservation Society (KCS) and Somarelang Tikologo (ST). I proposed to work with them in order to get their support throughout my study by making critical contributions.

After the interview, the Operational Manager (Landfill) organized meetings with the workers and we briefed them about the study, its aims, purpose and their role to the development of Gaborone City Council. We requested that they participate in the study process. The study process took account of the three ethical values in social research: respect for persons, respect for truth and respect for democratic values (Bassey 1995).

Apart from the first briefings to those involved in the study, those who were involved with the initial data generation were given feedback through the process of member checking. In this context, the operational managers were given the opportunity of commenting or adding to the findings before moving on the next phase of data generation. All this was done in an effort to respect the people with whom I have worked in this study.

Terre-Blanche and Durrheim (2002) argue that in a research process, there should be freedom for research participants to withdraw from the research at any time. For this reason, we agreed with participants on their free participation and withdrawal from the study at any time depending on the individual's interest in the study. All the study participants were told to be free to give information or not and that they should not feel obliged to do so. They were also assured of having freedom to express their ideas on the implementation of *Local Agenda 21* by the Department and critique the ideas raised in the study where they felt necessary. The participants were also assured that the information they would provide would be treated with utmost confidence and that their names would not be revealed. The participants were gratefully thanked for their commitment and participation in the study.

3.6. Validity

Historically, validity has been associated with experimental research where experimentalists sought to establish the trustworthiness of influences drawn from data such as measurements, testing and interaction between maturation and selection effects on results (Le Compte *et al.*, 1992). Based on the experimental approach to validity, researchers in qualitative research such as Goetz and Le Compte (1984), Lincoln and Guba (1985) have proposed alternative ways of looking at validity within the social sciences. For example, they argue that experimentalist's procedures for external validity can not apply to qualitative research. They emphasise the fact that qualitative researchers can validate their work if they clearly and comprehensively describe the contextual conditions of their studies.

Mc McCormick and James (1983) suggest that:

In view of the apparently subjective nature of much qualitative interpretation, validation is achieved when others, particularly the subjects, recognize its authenticity. One way of doing this is for the researcher to write out his / her analysis for the subjects of the research in terms that they will understand, and then record their reactions to it (Mc McCormick & James, 1983:241).

Roman (1992) argues that for research in critical education to be “valid”, it should use a methodology that;

- Resonates with the lived experiences of the group being researched,
- Enables members of the group to comprehend and transform their experiences of subordination,
- Reduces the divide between the researcher’s intellectual work and group members ‘ordinary ways of describing and understanding their experience,
- Allows the researcher’s prior theoretical and political commitments to be informed and transformed by understanding derived from the group’s experiences.

In order to ensure validity and trustworthiness, I used Lincoln and Guba (1985:374), who states that:

Completion of the draft case provides a final opportunity to test the credibility of the inquiry report as a whole with respondents at the case site. The purpose is to check accuracy but also provide evidence of credibility and trustworthiness.

In support of the above, I presented the findings to the respondents (GCCEHD employees) in the form of feedback and asking for critical observations from them.

As part of ensuring a good quality case study, I have used a number of sources of data. I used face to face semi-structured interviews, focus group interviews and document analysis. This was aimed at triangulating the data and ensuring that the findings are valid and trustworthy. Using the above data generation tools, I managed

to get quality data from which I was able to provide a detailed description of the findings (Maxwell, 1996).

3.7. Reflection on the methods used in this study

I encountered some limitations in using some of my data collection tools during the case study. As a beginner researcher, I was faced with a number of challenges in handling and sticking to the methods used.

The problem I experienced with the interview schedules was that a number of the respondents did not have time to sit with me for the interviews. I kept on changing the appointments to suit their schedule. Our schedule was at times interrupted by emergency meetings which were called at short notice or at times no notice at all.

Some respondents wanted to get the interview questions and look at them before the actual interview. Some did not want to explain exactly what they meant and it was difficult to follow up with each respondent to get clarity except with the focus groups. This might be because they did not have the relevant information and or were not sure of what they were saying. Some usually used some abbreviations of certain units / departments (e.g. S&CD- meaning Social and Community Development), which they work with and assumed that I knew what thus meant and did not see any reason to explain the details.

The weakness which I noticed with analyzing *Waste Management Plan 2003-2009* is that it is a standing policy document which is supposed to be used as the main guidelines for department, but there is very little on the practical interpretation of the document by the GCCEHD.

As for the two focus group discussions, the weakness which I noticed was that before our discussions started, the senior members had a brief discussion with them, which I believe was to guide them on what to say during the interview. But interestingly the group was more open and at liberty to say out all they felt was to be said.

The other limitation with the interviews was that transcribing was extremely time-consuming. Some of the interviewees talked for a long time until the cassettes were full on both sides, rendering it difficult to interrupt them. Some used some technical terms, which also are difficult to understand.

3.8. Conclusion

This chapter outlined the methods used to generate data. Three data generation tools were used; face to face interviews, focus group interviews and document analysis. The data generated from the face to face interviews and focus group interviews is presented and discussed systematically in chapter 4.

Chapter 4

Findings from Semi-Structured Interviews and Focus Group Interviews

4.1. Introduction

Education is a major priority in ensuring improvements in the quality of life of our people, the eradication of poverty, reducing inequalities and placing the African continent... on a path of sustainable development... Environmental education is conceptualised as an integral formal facet of education... there is consensus that education at all levels is central for giving impetus to sustainable development.

(Wagiet, 2002:28, 27)

In Chapter 3, I discussed the methodology for data generation to be presented and discussed in Chapter. In this Chapter I present findings that came from the GCCEHD staff. The presentation of the findings will be guided by the two tools of data generation that were used in the field. These are Semi Structured Interviews (SSI) and Focus Group Interviews (FGI). After the presentation of findings, I will go into the discussions of the findings of the face to face semi-structured and focus groups interviews and link them with environmental education orientation processes and make reference to international, regional and national contexts as articulated in chapter 2.

Before going into the details of this chapter's discussion, one needs to pause and ask a question: *If environmental issues are socially constructed, complex and emergent, and if people learn in different ways, how then do we as educators begin to respond?* The response to this question can be a major challenge for us as environmental education practitioners to find ways to 'make things better' where we live and work! As I present the findings in this chapter, I will also discuss the challenges and opportunities faced by the GCCEHD, and see how best they can address them in terms of environmental education processes.

4.2. Data from Semi-Structured Interviews

Four Operational Managers in charge of different units within the Department and three politicians were interviewed using face to face semi-structured interviews. See table 4.1 below for their responses. Also see appendix 1, section 2.2.4.1 and table 4.1.

Table 4.1. Education, Awareness and Training claimed to be in place by Managers in implementing Local Agenda 21

<i>GCCEHD Operational Units</i>	<i>Respondent</i>	<i>Education awareness and training component</i>	<i>Frequency of occasion</i>
Education Awareness and Training Unit	EHD 01	<ul style="list-style-type: none"> • Promotion of good handling of waste by community members • Promotion of the 3Rs community members • Workshops for community leaders • Educational campaigns for community • Cleanup campaigns schools, community and private sector • Waste fair exhibition for the community • Radio programmes for nation debates • School health club activities 	Continuous On going 4 times a year Continuous Continuous 2 times a year 4 times a year Once a year
Waste Management Unit	EHD 02	<ul style="list-style-type: none"> • Development of educational strategies for all • Sensitizing the community on waste issues • Workshops and Seminars for community leaders • Radio programmes for the nation • Literature distribution by the GCCEHD • Ward competitions for the community • Cleanup campaigns, community and private sector • Morning talks for workers before starting work 	Continuous Continuous Continuous 2 times a year 4 times a year Continuous Once a year Three times a year continuous
Landfill Unit	EHD 03	<ul style="list-style-type: none"> • Training of workers on waste disposal • Training workers on waste handling 	2 times a year 3 times a year
Abattoir Unit	EHD 04	<ul style="list-style-type: none"> • In house training of workers 	continuous
Other	EHD 05 EHD 06 EHD 07	<ul style="list-style-type: none"> • Training for councillors • Orientation of newly elected councillors 	3 times a year continuous

Key:

EHD 01: Education and Awareness Manager
 EHD 02: Waste management Manager
 EHD 03: Landfill Manager
 EHD 04: Abattoir Manager
 EHD 05: Mayor
 EHD 06: Councillor 1
 EHD 07: Councillor 2

4.3. Discussion of findings from semi-structured and focus group interviews

Educators writing from a critical perspective have developed a system of distinguishing between three broad orientations in education. While this classification has its limitations, it also has considerable value, particularly in helping to characterise and explain different educational processes and their related outcomes. For this reason, it is used in this study to classify educational processes and guide discussions on educational practice. The study mainly draws from the framework developed by Kemmis, Cole and Suggett (1983) and adapted by Fien (1993) and Janse van Rensburg (1995) to the field of environmental education. This framework draws on the work of Habermas (1972), a critical theorist who described three knowledge-constitutive interests namely; the technical, the practical, and critical as central components of the theory of knowledge.

In the context of this study, the Operational Managers (Education and Awareness) and (Waste Management) said a number of educational components and strategies are in place for reaching out to the public and stakeholders. They said they promote appropriate handling of waste by workers and the general public to better dispose off waste. This they allege came out in the workshops that were organised for community leaders. The units hold a total of four workshops per year for the community leaders. As part of the workshop deliberations, they say issues of the promotion of the 3Rs (Reduce, Re-use and Recycle) are highlighted. *“Re leka go rotloetsa tiriso ya bo R ba ba raro gore ba bone mosola wa go phepafatsa tikologo,”*she said. (We try to encourage the public to use the concept of 3Rs so as to see and appreciate the importance of taking care of their environment!)

From data presented in table 4.1, it is apparent that as much as there is considerable work done on the ground through regular waste collection by council workers, the question that one may ask is “how knowledgeable are the workers with regards to proper waste handling techniques as alluded to by the managers?” From the responses given by the workers, there is need for the department to consider buying workers’ protective clothing as all of them during the interviews and waste collection in town,

were not wearing protective clothing such as (gloves, mask, overalls, boots etc). During the interviews, they were using their own personal attire. This is a sign of workers not being aware of the implications of not using protective clothing on their health.

Regarding the promotion of the 3Rs: (Recycling, Re-use and Reduce), one can deduce the fact that very little seems to be done in this area. The department needs to improve their involvement of the private sector and the public, to utilise the opportunity of income generation through recycling. This is similar to an issue I earlier discussed in 2.3.1 regarding a lot of sewerage water discharged into the 'Notwane River,' which communities down the stream use for various purposes and for livestock drinking. From data generated, the GCCEHD has not embarked on mobilising and educating the public on the possible threats of using the water down stream.

The purpose of the liberal progressive education is to prepare learners (exhibitors and community) for life rather than work (Fien 1993). Through contributing experiences (during the fairs as explained in section 4.3.4) as a basis for learning, the learners become central to the learning process (Elias & Merriam 1980). This orientation is thus responsive to learners' material conditions of existence. This is important in addressing the issue of relevant learning, which is an essential component of community-based educational programmes. The importance of the individual as the centre of social life distinguishes the liberal progressive education orientation from others. In the context of my study, the GCCEHD claim to use workshops as forums where the community learns how to keep their surroundings clean and involve them in litter campaigns are clear examples that link with Fien's liberal progressive education theory.

Grundy (1987) describes the technical interest as a fundamental interest in controlling the environment through rule-following action (GCCEHD law enforcement officers), based upon empirically grounded laws. Since the technical interests aim at controlling

and mastering the physical world, it is responsible for instrumental knowledge and educational processes that aim to satisfy physical and economic needs, and to shape learners in line with the world in its current form. The technical interest gives rise to instrumental action governed by technical rules based on empiricist knowledge.

4.4. Educational Campaigns

Educational campaigns on proper waste management at household level have been going on throughout the city. The campaigns include school-community litter campaigns in which every one is free to participate. However, one may argue that these campaigns do not make any impact on the change of attitudes as school children are used in litter campaigns and not the adult population, who in my view, is to blame for littering. On the contrary, one may also contend that litter campaigns are crucial in that when litter is being picked by a larger group in a selected area, people would see and appreciate the importance of keeping their environment clean.

In environmental education, the above is a liberal orientation to education that has been associated with what Fien (1993) calls education 'in or through the environment'. Education in the environment emphasised the centrality of the individual learners and their experiences (in this case in and for the environment) as the basis for (campaigns) learning. The purpose of 'education in the environment' is to use learner-centred methods to present environmental issues in such a way that the learner (Gaborone resident) can make meaning from the environment. With regards to the campaigns that the respondents claim to use, I strongly feel that they can be encouraged work very closely with schools and get regular progress reports as they only alleged that it was evident that schools and wards that participated. It can make more meaning and attract public attention if the department can lobby the private sector to assist with incentives such as refreshments during campaigns and vehicles collecting the collected waste to the landfill. The private sector can also consider having best prices for the overall clean ward and school to further encourage and attract others to follow.

However, there are several challenges associated with liberal progressive community-based educational activities. Whilst participatory methods and approaches are emphasized, cases of using them manipulatively to meet predetermined (GCCEHD organizing clean-up campaigns for the sake of completing a work plan) goals have been cited (Janse van Rensburg and Lotz, 2000). Challenges in defining the boundaries of communities have also emerged. This is because communities are diverse and so are their needs, interests and aspirations. In the context of Gaborone, there are those residents who are economically able and participate in clean-up campaigns and those that are economically disadvantaged whose priority is how to get the next meal and not cleaning-up their surrounding. Contrary to the above view, I argue that it is these financially disadvantaged that always pick cans, bottles, etc to make a living, hence keeping their environment clean. However, one needs to consider the fact that picking cans and bottles for sale does not clean the environment as there are other types of litter that are left un-attended because they are considered uneconomic.

The issues of environment, natural resources development and utilization, population growth, poverty reduction and sustainable growth feature prominently in the prosperity and productivity pillar of *Vision 2016* and *Agenda 21* section of “Challenges and Opportunities.” (See section 2.4.7.) This is a great challenge when it comes to harmonizing the needs of the different interest group, and individuals, and might lead to manipulations and tensions between the individual group, and community interest. All these are important factors that can affect the character of programmes if not understood and carefully managed. From data presented in table 4.1, educational campaigns for community, clean-up campaigns in schools, exhibition fairs for the community and sensitising community on waste issues are challenges that the department faces regarding the mobilisation the public.

My view is that educating the public supports Vision 2016 as articulated in 2.4.7 and on the other hand puts the community in the forefront in facing the challenges and finding solutions to them. The question that one may ask is ‘to what extent does the

department involve the community?' This should not be an excuse of '*we involve the community and they are not forthcoming.*' It must be community involvement from the planning stages to the end. In my view, if what the managers claim to use as educational campaigns are to succeed, the people should be part of each and every planning stage hence considering and harmonising their interests.

Discovery through exploration (clean-up campaigns for the Gaborone residents) with the aim of gaining understanding is a distinguishing factor of methodology in 'education in the environment'. In terms of educational methods and techniques, education in the environment differs from the transmission teaching approaches common in neo-classical education about the environment. Emphasis is on the use of experiential learning approaches in which the learner (Gaborone resident) becomes wholly immersed in the learning process (the actual picking of litter during the clean-up campaigns). In my view and considering data generated in table 4.1, clean-up campaigns are activities which are hands on and learning takes place as people participate in the event. However, one may wonder how much community mobilisation the department embarks on before the actual event to warrant for more participation and learning by the community. Education 'in the environment' uses the environment as the media for education. Methods like field work, group work and litter campaigns are designed to encourage public participation.

The assumptions of the liberal orientation and the related education programmes have come under criticism. 'Education in the environment' has been criticized by Fien (1993) for arousing learners' anxiety about environmental issues but failing to empower them to appropriately respond to the issues. This in my view came out in the GCCEHD clean-up campaigns, where I noted the fact that there is no plan on what happens after the campaigns to further keep the environment clean. Critics further believe that the liberal approach does not go far enough in raising the necessary capacity for people to address environmental issues. If the department had long-term plans of what to do after the clean-up campaigns then that will address the concern of building the capacity of the people.

Huckle (1986) criticizes 'education in the environment for stressing personal values while making little mention of politics and other related dynamics. This is detrimental to change as a goal of environmental education, for change in relation to resource management and utilization is necessarily a political process characterized by contradictions and conflicts related to power and control over resources. The liberal view of change through reform is also questionable; it implies that those in power will determine the pace and direction of change, yet change might mean compromising their privileged positions (GCCEHD versus Community). On the contrary, I contend that yes, for work to be done, there should be an overall facilitator who has the knowledge and skills to drive well, and of course considering the views and aspirations of others that follow (community). My opinion is that education should take deliberate steps to address social problems in a more radical way.

4.4.1. The 3Rs: Reduce, Recycling and Re-use;

Reduce is a technique that can not be universally applied. It is an attitude of mind and requires commitment from all sectors of society. In this context, the managers interviewed believe much can be achieved by good housekeeping and materials management with industries. This can be done with little or no investment and probable cost savings. The managers claim to use the concept of 'Reduce'. I believe the concept is not practically used effectively. My view is that there is no deliberate programme geared towards mobilising communities to consider 'Reduce' as a good concept. The department should work on better strategies of encouraging the community to use the concept e.g. community making practicing waste separation and re-using some items in their households and as such reducing the amount of waste.

'Recycling' is a process of re-using some materials with or without some form of processing. Recycling of industrial waste is generally easier than of household waste. The materials are less diverse, often less contaminated and their composition is more predictable. The respondents claim to use recycling as an income generating activity.

On the contrary, my view is that there is very little or no attempt to encourage the community and private sector to embark on recycling activities. There is no recycling company operating at the Gaborone Landfill. This is an indication that there is need for the department to consider promoting recycling and mobilising the community to understand the importance of recycling as an income generating activity.

“Re-use is’ the using of certain items for the second or third time for other purposes. Empty tins and jars make good storage, yoghurt pots are ideal for seedlings, magazines once read can be passed on to neighbours and friends. In my view people need to understand the meaning and positive implication of practising re-use. In this way the department will open opportunities for people to practice re-use. Practising re-use in my view will encourage the keeping of a clean environment and little waste generated at household level.

From the data presented in table 4.1, the most evident issue is the encouragement of the community to *participate* in waste recycling, re-using and reduction activities. This brings in the concept of participation. Participation could mean different things to different people depending on the development goals and perspectives. It is a concept that has become integral to development, political and educational discourses, particularly in developing countries like Botswana. In all the above three fields, participation has been associated with a demonstration process, the restructuring of power relations and levelling of power gradients with society (Janse van Rensburg and Lotz, 2000). It is believed to consist of action that empowers people (Gaborone community) to affirm their ability to collectively organise themselves without authoritarian control. On the ground I feel a lot still needs to be done. The GCCEHD needs to work hard in making the community participate in their planned activities. Participation should not only be on paper, it must involve the community at all stages of planning so that they appreciate that they are part of the system.

The notion of participation has been used in community development contexts world wide to describe different dimensions of community development; first in terms of how it happens, second in terms of the goals and motivation behind it, and third in terms of the power dynamics involved. Lele (1975) sees participation as sensitizing rural people to increase their receptivity and ability to respond to development as well as to encourage local initiatives. With regards to the GCCEHD, little has been done so far in sensitising people as well as encouraging them to participate in waste management activities. In my view, if the Gaborone community can be taken on board with regard waste recycling, re-use and reduction and clearly be taken through the entire process and incentives associated with their participation on the above, then they can make a difference. This, I believe, is a reflection of environmental education not as one addition to the existing programmes, but being incorporated into programmes intended for all learners [community inclusive] whatever age, and stress the social role of educational institutions (service provision institutions) and establish a new relationship. See section 2.2.2.

My view is that participation is the act of partaking, or sharing with others. If we take participation as ‘taking part’, getting involved or playing a role in an activity, then there is no community where there is no participation. The perspective resonates with a view advanced by Oakley and Marsden (1984) and Rahnema (1992) among others, that participation is often perceived from two major angles: as a means to an end or an end in itself. Considering the above school of thought and what the GCCEHD perceives to do, one may argue for a more rigorous involvement of the community in waste recycling, re-use and reduction and clean-up campaigns activities for them to better understand the waste management strategies. This view is closely related to what the Danish educator Bjarne Jensen has called *Action Competence*. Action Competence refers to a person’s ability and commitment to take action in addressing environmental issues (Janse Van Rensburg, 2000). An action competent learner or community member is one who has developed both ability and a will to actively participate in the solving of immediate and future environmental problems. From data generated little is done in terms of participation by the community. This might be

because the department is not forth coming to encourage the community to participate and feel they are recognised as a stakeholder in waste management activities.

4.4.2. Workshops

Respondents revealed that workshops are used by GCCEHD as forums to convey a message on waste management. These workshops, they claim are mainly organized for community leaders so that they can enable or create a multiplier effect by communicating the issues to the people during *kgotla* meetings. The community leaders include the Chief, Ward Development Committees, Councillors, School heads and Teachers. In my view, although workshops are important for community development, they are for a selected group of people, which in most cases is not a full representation of the city population interests and needs. Another view point on the contrary is that what representatives acquire from the workshops is normally shared with the greater population. I strongly believe that for workshops to be more effective there should be practical recommendations from workshops in which the community can make some input. The workshops should not be talk shows where people come to present, discuss and leave without any tangible and implementable activities. This is the challenge which the city council is faced with and should work on and deliver accordingly.

Socially critical education emphasises the ideological nature of education in which education is seen as a process to engage society and social structures immediately through workshops, not merely to prepare learners for later participation (Carr & Kemmis 1986, Freire, 1972, Giroux, 1983). The ultimate goal of socially critical education is to empower learners (in this case workshop participants) to take control of their emancipation from all socio-political, economic and cultural limitations (Giroux 1983). According to this critical pedagogy, emancipation arises from within, when those concerned become aware of the need for liberation as their responsibility, and act. Socially critical education sees knowledge as socially located and part of a wider socio-economic, political and cultural framework, for human understanding of the world is seen as an interpretation of reality as observed from a particular view

point. In the context of the GCCEHD, I believe much needs to be done to empower residents of Gaborone to understand and critically address environmental issues of concern. In my view to agree with Giroux 1983's thinking, the GCCEHD should move away from workshops, which mainly fulfil their work schedule. They should rather work very closely with the community to implement resolutions and recommendations from the workshops organised.

Knowledge is also seen as a catalyst for the social action necessary for positive change in society (Giroux 1983, Mayo 1999, Bertrand 1995) and learners (Gaborone residents) and educators (GCCEHD) as co-constructors of knowledge in a situation of mutual respect in order to respond to collective needs. It is evident from table 4.1 that knowledge is a catalyst for social action, as the community through their leadership will be better placed to deal with social challenges after being trained in workshops. This view is shared by the SADC Regional Indicative Strategic Development Plan in its priority intervention area of environment and sustainable development's capacity building, information sharing and awareness creation on problems and perspectives in environmental management (see section 2.3.2.) (SADC, 2003). The learner (in this context Gaborone resident attending a workshop) is expected to be a critical and constructive-co-participant, where self-actualization is understood in a social context and the 'true' and the 'good' are pursued in transforming and being transformed by society (Fien, 1993).

4.4.3. Waste Exhibition & Competition Fairs

The Waste Management Manager explained that the Waste Management Unit had organized a Waste Exhibition Fair where members of the public, private sector and Non-governmental organizations were invited to attend and share experiences on environmental education and how waste was managed. In these exhibitions, it was claimed that different waste management companies were invited to exhibit and put up some demonstration projects on waste management which individuals could also copy. As much as fairs are good, there are some limitations. If the organisers are not careful, they may become shows with no impact on the ground. It became evident that

the shows are organised, people attended but there is still little impact they bring to the community, as nothing evident on the ground has been implemented. The department needs to make follow-ups with people through their ward committees to check if there is any progress from what people learnt from the fairs.

The Waste Fairs are viewed in the context of the learner being an active constructor of knowledge through experience and opportunities to discover and enquire. Two Waste Fairs in a year are organised and participants attend and share experiences. The educator is in contrast, viewed as a facilitator (GCCEHD) of the learning process (exhibition) who takes the role of an organiser of learning opportunities, enabling the learner to take advantage of those opportunities and achieve autonomy (Bertrand 1995, McKay & Romm, 1992). A progressive orientation to education is informed by the practical knowledge constitutive interest described by Habermas (1972). In the context of data generated in table 4.1, exhibition fairs are meant to sensitise the community on waste management activities. This is where the department needs to work tirelessly to convince the public in understanding the importance of waste fairs. At the same time the stakeholders (private sector and NGOs) invited must be lobbied to frequently work with the communities so that fairs may not just be shows.

According to liberal progressive philosophers, human beings are born with a great potential for good, but as a result of unjust social restrictions, evil creeps into the individual's character (Ashley 1989, Bertrand 1995). Fien (1993) argues that the liberal orientation adopts a reformist approach to address social problems on the assumption that the means of social change exists in the structures of democratic societies. Ashley (1989) agrees with this view and argues that reform is the most compatible form of change for liberal societies. For the department to better facilitate community participation, one wonders if there is consideration that the community is equally aware of environmental issues and should not be undermined. The GCCEHD may instead utilise the community experiences to address environmental issues.

It has been explained by respondents that Ward Development Committees (WDC) within Gaborone compete among each other for the best and well cleaned ward. A team of inspectors is commissioned by the unit to inspect the wards with guiding inspection sheets drawn up and agreed upon by the organising committee. The top three cleanest wards are awarded prizes and represent the district at national competitions. However, the issue that surfaces from the face to face semi-structured interviews with operational managers is that with ward competitions, the playing field is not level in the context of Gaborone. Some wards are better resourced; hence this may demoralise the least resourced ones from competing. On the other hand, one may equally point out that the arrangement may encourage those who could not do well to aim higher in the future, while those who performed exceptionally well should continue to work hard and be winners in the future, hence this strengthens the spirit of competition.

Furthermore, these fairs are attended by few interested people who may not be representing the greater population of the town. The challenge with the fairs is whether it is the appropriate method or not, for public awareness promotion. The big task facing the department is to mobilize more people in Gaborone to attend the exhibition fairs. According to the respondents, fairs increase awareness, knowledge, attitude change and behaviour change as participants take part throughout the activities of the fair by asking questions to exhibitors and sharing experiences. If one raises awareness of people through environmental education, then this is geared towards change of people's attitudes resulting in the change of people's behaviour to become environmentally responsible citizens. While awareness-raising and information-sharing may not be sufficient in themselves, they are nonetheless critically important dimensions of environmental education processes.

Without awareness on environmental issues, we are unlikely to be able to recognize or engage meaningfully with environmental challenges. This is viewed as a liberal orientation to education. My point of view is that development and education are about liberating people from all that holds them back. In any case, development and

education are about transforming society. It is amongst the poor and disadvantaged that development programmes and education must start.

Educators writing from a critical perspective have developed a system of distinguishing between three broad orientations in education. While this classification has its limitations, (see section 4.4.2). It also has a considerable value, particularly in helping to characterise and explain different educational processes and their related outcomes. The critical emancipatory knowledge-constitutive interest is defined as a ‘fundamental interest in emancipation and empowerment to engage in an autonomous action arising out of authentic, critical insights into the social construction of the human society (Grundy, 1987). This knowledge interest gives rise to educational processes that seek to enable the disadvantaged to transform their situation for the better. At local government level, there has been a remarkable and refreshing interest in environmental issues over the past two decades as humanity is now being forced to investigate the environmental consequences of its development actions, at local, national and global scale. To the GCCEHD, it is important to consider some of their development projects, which some how may have some negative impacts on the environment. The question that one may ask the GCCEHD is whether the sewerage water that runs down the ‘Notwane River’ (see section 2.3.1), is healthy for drinking by people and animals. An Environmental Impact Assessment must be carried out before any development project can be commissioned.

4.4.4. School Health Clubs

The Managers interviewed claim that the GCCEHD has facilitated the formation of School Health Clubs in many primary schools in Gaborone. In this regard, Schools are encouraged to work on health demonstration projects that will benefit their school in resource conservation. Other schools are expected to adapt it to their own context. The school health clubs mainly focus on waste management projects. An example of such a school is Tlhabologo Primary School, which was adopted as a resource conservation demonstration school by a local environmental NGO (Somarelang Tikologo Environment-Watch Botswana) and later supported by the Gaborone City

Council. This process is supported by Grundy (1987) when she describes the practical knowledge-constitutive interest as a fundamental interest in understanding the environment through interaction based upon a consensual interpretation of meaning. She argues that the practical interest aims at understanding the environment, not to formulate rules for controlling and manipulating it, but “so that one is able to interact with it”. This interest leads to educational processes and outcomes that create opportunities for learners to play active roles as stakeholders in learning programmes in which they consciously and willingly choose to take part.

The Gaborone Declaration (EEASA 2002) see section 2.3.4, developed at a regional environmental education conference in 2002, emphasised the need to address environmental, educational and environmental education policies and policy development. The can project enable schools to embark on environmental auditing. Environmental auditing can happen at many different levels, for example commerce, industry, councils and government, as well as on a less formal level in households, schools, and community projects. In a school context, the audit can focus on a classroom, school grounds or the entire school. The challenge with the adopted school project is its sustainability, based on the fact that an NGO does not have resources to sustain it, hence the need for the Local Authority to come in and support the project. The other challenge is to convince the city council to take over the sustainability of the project as they might say it is expensive to maintain and not in their plan. The project is crucial as it prepares a student to face other social challenges at home. Such include cleanliness of the home environment and general safe utilization of household resources such as water and electricity and avoid high bills.

4.4.5. Brochures, Radio and Morning Talks

The Managers also claim to have developed brochures on environmental issues for the public. The *brochure* development by the GCCEHD can be associated with the neo-classical orientation to education, which is informed by technical knowledge-constitute the interest described by Habermas (1972), Sarup (1978) and Ashley (1989). They see the purpose of neo-classical education as to preserve the existing

social, cultural, political, ideological and economic order. The theoretical underpinning of this orientation is that knowledge worth its name is that which helps to solve technical problems. Under this assumption, education becomes a technical process and an instrument at the disposal of the educator (GCCEHD) to manipulate in order to achieve predetermined behavioural goals and objectives (Elias & Merriam 1980, Higgs 1998). This places the educator (GCCEHD brochure development team) in a superior position, as a possessor of the 'right' knowledge and skills to provide answers and solutions to problems, while the learner (Gaborone residents) is viewed as an empty receptacle to be filled by the educator (Freire 1970). My view is that as much as the GCCEHD is in a superior position to facilitate the development of brochures, there is need to involve the community in the planning stage of brochure development. All the stakeholders should initiate and agree on what should be written in the brochure. The community should also be part of the team (through their leadership) that distributes the brochures.

The ensuing power relations foster a sense of inadequacy and dependency in the learner that become a basis for accepting the status quo (Giroux, 1983). In respect to the above assumptions, one may argue in relation to the process of developing the brochure. The question can be; *were the residents of Gaborone consulted prior to the development of the brochure?* Regardless of the above, I strongly contend that as much as consultation is crucial, there is need for someone with the expertise to facilitate the process. For example, if there is expectation that the managers should continuously consult, then they risk not doing any other work apart from consultation! Additionally, I believe that in practice, all people's views can not be considered and represented in each process of consultation, hence a need for a facilitator to lead the process.

The challenge however, with the distribution of brochures is that in some (disadvantaged low income) residential areas such as 'Old Naledi,' this may not make any difference as they are concerned with activities that generate immediate income. Reading brochures and practising the theory articulated will be a waste of time, which

they could have used on doing ‘*small piece jobs*’ (*informal short time jobs*). Equally, waste can generate income for people through collection of cans, bones and bottles. Workshops and seminars are also organised and used as forums where communities are sensitized on proper waste management initiatives. See section 4.4.3.

The respondents also claim to utilise the call in a radio talk show (called Maokaneng) on Radio Botswana to talk to the public on waste management issues. This is where a representative of the GCCEHD talks to the nation through the radio on issues of waste management. The people thereafter phone in and comment or ask questions and at times suggest better ways of waste management. In my view, this can be an effective method of sharing information. However, I believe that a sizeable portion of the population (youth and workers) listen to other Radio stations, which are popular among them. This then means important debates might be missed by this group, who are undoubtedly the school going and working class, hence may aimlessly generate waste. For the GCCEHD to address this issue, it must utilise other radio stations that are listened to by the youth and workers.

In this context, the educator’s role is to design a learning environment that elicits a desired behaviour towards meeting the learning goals and to change behaviour that is not desirable (Elias & Merriam, 1980). Because of the assumption that the learner is entirely ignorant of what it is intended to be learnt and needing to be equipped with the right knowledge and skills, neo-classical practitioners adopt transmittal methods of teaching. (Freire, 1970) describes the approach to education as an act of depositing, in which the learners become depositories and the teacher a depositor. This approach has thus come to be known as the “banking method” of teaching, in adult education contexts.

The respondents allege the department holds morning talks every morning before they start work. The morning talks, according to the respondents, cover issues of waste management such as handling and separation at source. The morning talks were said to go beyond waste management tips to cover issues and risks of HIV/AIDS in

the work place, how workers should treat and accept their colleagues who are either affected or infected by HIV/AIDS so as to reduce stigma. According to the respondents, issues of home based care waste disposal are discussed during the morning talks. This is crucial in that when the home based care waste finally reaches the landfill, the workers must be trained and should know how to handle it.

From data reported in table 4.1, campaigns have been conducted with other stakeholders such as NGOs, schools, construction industries and communities in order to disseminate information and encourage more participation. (See section 4.3.3.) However, the only danger with this is that so far both units never touched on the limitations of the above activities. Since the establishment of ward competitions and subsequent participation in national and international activities such as the World Clean-up day every November, there has been a lot of interest and participation from members of the community and other stakeholders. It appears the activities are widely used by department units to involve the public in conjunction with other partners, and this is good for public participation. On the contrary, there is a view that during the World Clean-up day, only a few that has been invited to display and compete benefit. (See Table 4.1 EHD 01) This then leaves a sizeable number of potential participants missing the occasion to loose out. The GCCEHD should consider ways in which other people can benefit from campaigns.

4.4.6. Training on Proper Waste Management and Handling

The managers explained that the landfill unit has embarked on the training of unit workers on proper waste management and handling. The landfill is the place where different kinds of waste (chemical, domestic, construction and clinical) is disposed of. It is important for people working in this type of environment to be thoroughly trained. The training is geared towards the landfill workers and those coming from outside the landfill to dispose of waste. The landfill Manager explained that they are faced with the challenge of new society *scavengers* that is emerging (people who frequently source food and other materials from a given place) in the landfill. The challenge is to convince the scavengers that the landfill is not a safe and healthy

place. He says he must convince them to understand that their health is in danger. In my view, I don't see these efforts and the landfill fence is down, people are still getting to the landfill as they wish and generally, there are no control mechanisms in place.

One of the fundamental achievements of the unit is to encourage community members (especially those looking after HIV/AIDS patients) to protect themselves with gloves and masks when attending to their patients, and dispose of home based care waste appropriately in the red bags. He believes this is an achievement because there is now a significant number of red bags coming in and incinerated immediately. This is in line with what other scholars regard as education about the environment. Education about the environment and the associated pedagogical processes have been criticised for being teacher-centred and expert-driven, using top-down methods such as '*show and tell*' and targeted messages, all of which make a learner (landfill workers) only visible, but inaudible (Lotz & Ward 2000, Taylor 1997). In essence, this is the technical knowledge interest; founded on a world of problems and nature at risk (O'Donoghue & Janse van Rensburg, 1996). However, as part of our socialisation process in a society, we learn, and imitate, and in the process do trial and error as we learn from our elders (those with the know how), hence I strongly argue there is value in the '*show and tell*' method.

4.4.7. In-House Training

The respondents claim that the abattoir unit has embarked on in-house training of its staff (workers) on disposal of the abattoir waste such as blood, ruminal and intestinal contents and condemned carcasses and other organs. Since the training was instituted, there were a number of changes in the unit such as a clean and odourless environment. However, there is nothing done regarding training the public as they mainly concentrates on their own work. The challenge is that as workers, they must understand that since they are working in a community context, they must account to the community in terms of their moral and professional responsibility.

Regarding the above exercise, environmental education becomes a technical enterprise for redeeming the environment. A linear relationship between knowledge, awareness and behavioural change does not necessarily depend on increased knowledge and awareness alone; pedagogical processes, learner’s existing knowledge also play an important role (Taylor, 1997). Methods like “*show and tell*” can raise awareness, but do not necessarily help learners to develop the motivation and capacity to act, both of which are attitudinal and skills-development related matters, which require different methods and approaches. In this case I advocate for the GCCEHD to consider embarking on in house training workshops that are hands on for the workers to better and technically understand the operations of the landfill. Table 4.2 summarises the key responses of the two Focus group discussions.

Table 4.2: Summary of two Focus Group Interviews responses

Groups interviewed (workers)	Key Responses from the focus group interview
Focus group 1	<ul style="list-style-type: none"> • Collect different types of waste • Trained on waste handling when employed • Need minimum training on how to handle waste • Have never attended Workshops • No protective clothing • Little knowledge on Waste separation at source and disposal
Focus group 2	<ul style="list-style-type: none"> • Trained on waste collection and disposal when employed • No protective clothing to wear at work • Have never attended Workshops • No training on waste separation at source

4.5. Results / Findings from Focus Group interviews

From table 4.2 above, a total of seven workers were interviewed in the focus group interview (discussion). These consisted of mainly workers who collect household waste and those based at the Gaborone Landfill. The first group comprised three men and the second, three men and a woman. From the focus group discussions, their responses are mainly based on their work and what they feel the department should do for them. Their work comprises collection of different types of waste “... *tiro ya*

rona ke go olela matlakala (malele), mo malapeng, le mo mekgwatlheng, dikatse le dintsa tse di suleng mo toropong!” (Our work is to collect waste from households and streets; we also collect dead cats and dogs in town!) stressed one member of the focus group.

With regards to education and awareness training, it came out clearly that they were only trained on waste handling when they were first employed by the Department. Since then no one had ever invited them to a waste handling and disposal workshop or a seminar of any kind, hence they do not know much about public education on waste management. They strongly felt that workshops were for managers. They said this because frequently they were told their manager was out attending a workshop in Gaborone and at times in Francistown. ... *‘Rona re itse gore di seminara le dithuto se ka dipuisano ke tsa bone...’* (All we know is that seminars and workshops are for them). They strongly felt community education and awareness is very crucial as it can help ease their work if the community is aware, understands and appreciate waste management strategies.

The other aspect that came out as their work was the separation of waste at source. This included household food waste, paper, tins, and bottles according to their colours as well as plastic bags that fly all over the place. They felt that for them to better deliver on their work, they needed basic training on waste handling, needed to be trained on waste collection and disposal techniques, needed protective clothing, and workshops to be trained on different aspects of waste management. They also feel that the public should be sensitized on waste separation at source. The above in environmental education processes is associated with neo-classical orientation, which is associated with ‘education about the environment’ as articulated by (Fien, 1993). The assumption underlying ‘education about the environment’ is that environmental problems can be solved by exposing learners (workers) to information about them.

The argument is that people do not behave positively towards the environment because they don’t understand it and the problems facing it. They said they always

heard people (including their managers) saying one would make a lot of money from waste and want to know how this was possible. (In this case the workers must be exposed to all opportunities and incentives associated with the making of money from waste. Through learners (workers) contributing experiences as a basis for learning (Fein, 1993), they (workers) become central to the learning process. It was evident from the two focus groups that they did not have protective clothing for either collecting waste in the households or receiving it in the landfill. This was clear as the groups that I interviewed were not wearing any uniform or putting on protective clothing and yet they were to start their day's work.

4.5.1. Focus Group 1

Members of focus group one revealed that they were first inducted on issues of waste management when they were first orientated as employees of GCCEHD. However, they had never attended any workshop since. They only heard at times that their manager was not in because he was attending a workshop. The educational theory associated with this scenario is the neo-classical orientation. This theoretical underpinning of this orientation is that knowledge worth its name is that which helps to solve technical problems. It is important in my view that the GCCEHD should address the situation on the ground by training the workers who are even eager to learn. The workers should not be relegated to the status of *labourers* who are not supposed to be trained.

With the GCCEHD situation, one is bound to believe that, education becomes a technical process; an instrument at the disposal of the educator to manipulate in order to achieve predetermined behavioural goals and objectives (Elias & Merriam 1980, Higgs 1998). This places the educator (Manager) in a superior position, as a possessor of the right knowledge and skills to provide answers and solutions to problems, while the learner (worker) is viewed as an empty receptacle to be filled by the educator (Freire, 1970). Adherents of the neo-classical orientation do not seem to recognise the need to address the different forms of inequality on the basis of class, gender, religion and other forms of social stratification upon which society is founded, and which

have the potential to undermine the ability of educational programmes to equitably respond to the people's problems. This is the situation that exists in the GCCEHD where workers are not trained to cope with the demands of the changing developmental challenges. In my view all workers are important in the operation of the organisation regardless of their positions in the organisation and the GCCEHD should seriously consider this.

It was evident that the GCCEHD workers did not have uniform (protective) clothing as it was observed during the interview. (See Appendix L, face to face and focus group interviews in pictures). It was also clear that they did not have protective clothing and gloves for handling waste. They claimed that they had on several occasions asked their manager to provide them with protective clothing but the response they got was that there was no money for protective clothing. They alleged that they last got their protective clothing in May 2003. They also revealed that there was a lot of dust and chemicals that they inhaled as they collected waste from the domestic bins and public skip. My view is that the environment in which the workers are working is not conducive to their help and may hamper their effectiveness. Concerning protective clothing, the GCCEHD should be seen to be exemplary to the entire Gaborone City Council operations as they deal with hazardous waste on daily basis. One may even ask a question; if the GCCEHD is treating its workers this way, what about the other council departments who are not working in the environmental and health field?

4.5.2. Focus Group 2

The views of the second Focus Group are generally similar to those of the first group. The key important factor was that workers had on numerous occasions requested their manager to buy them protective clothes that they would use at the landfill but to no avail. The landfill is a central and an essential component of any waste management concept. Despite active waste prevention and recycling, a residue will always remain, which requires proper final disposal. Therefore, the people who are at the centre of the landfill (compactor operator and incinerator operator) must be properly dressed so

that they are protected. In addition to the above, there are a number of issues associated with implementation of *Local Agenda 21*, by the Gaborone City Council which are;

- Local rules for waste handling and resource recovery are not available,
- The present waste management organisation falls under the City Council, and therefore has to conform to the administrative rules and regulations, which sometimes hamper proper waste management implementation,
- The performance of the present collection fleet is extremely low and not regularly available,
- The potential advantages provided by the involvement of the sector are rarely considered, and
- Waste reduction, minimisation and recycling programmes are currently ineffectively implemented (Waste Management Strategy 1998).

4.6. Conclusion

The chapter has discussed the shaping of environmental education, the theoretical frame works of educational orientations and their manifestations in different contexts. The discussion has further unpacked and presented what the GCCEHD has done to address and cope with environmental challenges in Gaborone. I must however, strongly credit the GCCEHD operational units for initiating and implementing an educational and awareness strategy despite the fact that there is *no* deliberate inclusion of education, awareness and training in the *Waste Management Plan 2003-2009*.

In the next chapter I discuss the findings from the Document analysis (*Waste Management Plan 2003-2009*).

Chapter 5

Discussion and findings of the Document Analysis

The environment is the basis of human health, wellbeing and security. The majority of Africans derive their livelihoods directly from the goods and services [sic] provided by the environment... the deterioration of the environment has left many Africans more vulnerable to adverse environmental change than before. African countries need to halt or reverse the current trend in environmental degradation. (UNEP, 2002:5)

5.1. Introduction

In this chapter I present findings related to the environmental education and awareness components identified in the *Waste Management Plan 2003-2009* as key components of communicating with the public. I begin by explaining whether the *Waste Management Plan (2003-2009)* has a deliberate section on public education, awareness and training. I then discuss the relevance of other aspects and their possible adaptation to the local context. These include; *Vision for Greater Gaborone, Agenda 21, and the DPSEEA Model* and their relevance to local government and further discuss aspects of the *Waste Management Plan 2003-2009* that include education, awareness and training.

In view of the environmental problems facing the world today, I feel the world is at the crossroads; we are the last generation that can irreversibly transform this planet for the worse; we are the last generation that can avert disaster! This is particularly true now that the world is facing a lot of environmental problems such as global warming, acid rain, deforestation and threats to biodiversity. As a consequence of the high population growth, Botswana suffers from several acute environmental constraints due to a high pressure on the environment. I analysed one document; *GCCEHD Waste Management (2003-2009)* in relation to the *Vision for Greater Gaborone* and *Botswana Environmental Planning Principles*. I considered the fact that analysing one document to understand the operation of a department may not necessarily give convincing reasons as to why the department is operating in a

particular manner; hence this may not give a true reflection of environmental situation at hand for the department.

5.2. Agenda 21

Agenda 21 is a global action plan on sustainable development agreed by the International Community at the Earth Summit in 1992. *Agenda 21* aims to put the world into a more sustainable basis in the 21st Century, hence the name *Agenda 21*. *Agenda 21* links environmental problems to social and economic pressures and concludes that if we want to protect the planet up on which we all depend, then we all have to change our lifestyles. (See section 2.2.4.1.)

World leaders at the summit took the view that local governments were ideally placed to encourage their communities to take responsibility for their actions on the environment and to find ways to live more sustainably. (See section 2.2.4.1.) That is why local authorities have been asked to produce scaled down versions of *Agenda 21*, known as *Local Agenda 21* action plans (which the study is investigating), in consultation with their communities. Just like people throughout the world, Batswana have to find ways of living and working so as to use resources in a more efficient and less polluting way.

From the analysis of the GCCEHD *Waste Management Plan 2003-2009*. I can strongly deduce that the Council's *Local Agenda 21 Strategy (Plan)* should set the framework for the people and community as well as the variety of organisations which represents their interests, to come together to discuss and agree on actions that will lead council towards a more sustainable future, and better quality of life. This will encourage collective planning and collaboration by all stakeholders in addressing environmental issues in Gaborone.

5.3. Waste Management Plan (2003-2009)

The GCCEHD *Waste Management Plan 2003-2009* was developed by a team of consultants (Rodeco Consulting, Robert Praetzel and Ecosurv (Pty) Ltd, 2003.) The data and inputs were prepared and provided by the Gaborone City Council officers, under the guidance of the Department of Sanitation and Waste Management (DSWM) in collaboration with the German Agency for Technical Co-operation (GTZ). As part of its commitment to implement the aims and objectives of *Agenda 21*, the Government of Botswana defined and established the strategy for managing waste. Consistent with the *Agenda 21* philosophy, government formulated this strategy to ensure the sustainable and the environmentally sound management of waste, which would guarantee to a significant extent, the following:

- Preservation, protection and improvement of the quality of the environment,
- Contribution towards the protection of human health, and
- Ensuring prudent and rational utilisation of the natural resources.

The consulting team worked with the Gaborone City Council and in particular with the GCCEHD. Most of the departments with the council also participated in the development process. There were some visits to the landfill and several waste collection sites during the revision of the *Waste Management Plan 2003-2009*. This in my view is a commendable move as other council departments were involved. I however, contend that this move should have been extended to other stakeholders such as the NGOs, private sector and the community so that they have their input on the document that is going to guide the operations of the GCCEHD which directly affects them. Consultation with stakeholders instils a sense of ownership to the community and consider may consider integrating GCCEHD plan with theirs.

The information gathered was used to calculate present waste management performance and to develop a waste generation forecast. Considering the consultative process during the development of the plan, I feel that the arrangement provided room for the GCCEHD to consider their education, awareness and training component to be

included. There is also a provision for reviewing the planning assumptions used in the waste management model. This review can also be an opportunity for the GCCEHD to include the education and awareness component.

Specifically, there is no deliberate section on the GCCEHD *Waste Management Plan 2003-2009*, which presents and explains the education, awareness and training strategy. Instead section 3.1.2 with a subheading of “*Public Involvement*” merely mentions a number of companies and groups of people that are involved directly in waste management. (See table 5.1.) A question may be asked, do the companies and groups that are involved directly in waste management do education, awareness and training for the GCCEHD? My view is that it is important for the GCCEHD to consider developing their own education, awareness and training programme to better publicise their activities. Table 5.1 elaborates and explains other organisations, private companies and government departments involved in waste management.

Table 5.1 Organisations involved in waste management

Organisation	Field of Activity	Remarks
Collect A Can	Collection of tins	Non contractual
Truck Africa	Collection of waste oil	Non contractual
Micro Entrepreneurs	General waste picking at landfill site and all around the city	Pay GCCEHD minimal rents at Landfill site
Daisy Loo	Commercial waste collection	Pay GCCEHD at Landfill site
Skip Hire	Commercial waste collection	Pay GCCEHD at Landfill site
Botswana Defence Force	Brings own waste	Not charged disposal

Source: Waste Management Plan 2003-2009

From table 5.1, the organisations/companies and groups of people that have been mentioned, it is evident that they are doing their tasks as part of their normal work requirements, for example, the *Botswana Defence Force (BDF)*. The other companies as it has been stated are doing that for commercial purposes.

Environmental issues have been discussed in a number of international fora from which the concept of sustainable development was adopted. *Collect A Can* is a profit making organisation that collects cans and gives incentives to people and schools. The issue of education, awareness and training may not be part of the company’s

strategy for waste management. Instead their goal may be to maximise the ignorance of people's waste management skills and make profit. In this respect, it is very important to stress that waste management has different components of waste reduction, re-use, recycling, treatment and then disposal. Waste disposal (by landfill) should be regarded as the last stage of waste management (Botswana Government, 1998). Public education, awareness and training on waste minimisation, waste recycling and re-use should be the main emphasis of the GCCEHD so as to strengthen their capacity to deliver on their mandate.

5.4. Environmental Vision for Greater Gaborone

Somarelang Tikologo (ST), a local urban environmental Non-governmental Organisation (NGO) carried out a survey in 2002 (Somarelang Tikologo, 2002), to develop the *Environmental Vision for Greater Gaborone* indicated that from the survey that they carried out, most of the stakeholders interviewed indicated that the aspired image of Gaborone includes a city which is peaceful and democratic, well resourced and serviced, neat and well planned, and conducive to business. According to the residents the most positive aspect of the city is the availability of service infrastructure such as clinics, schools and malls.

The survey report indicated that a total of 2500 questionnaires were sent out to the general population and 1000 were returned. 500 questionnaires were sent to Kgale (a residential area in Gaborone) and all 500 were returned. A total of 200 competition entries were received from the youth sector as an indication of how they would like to see their city grow, key stakeholder consultations targeted specific officers in their offices and only 20 were returned. The report further alludes to the fact that public consultation is part of the current Gaborone City Council planning process, and that participation is usually low and time is always a limiting factor. The report further indicates the need to include policy-makers in the Environmental Vision process. The survey further summarised the respondents' priorities for the development of Greater Gaborone. The ranking shows how the people interviewed preferred how their city should look like, and table 5.2 summarises their responses.

Table 5.2 Priorities of residents

Priority need	Ranking
Law enforcement	1
Better roads	2
Clean streets	3
Lower cost housing	4
Cattle in the streets	5
Less crime	6
Parks	7
Improved architecture	8
Plant more trees	9
Flood control	10

Source: Environmental Vision for Greater Gaborone 2004 (2003)

According to table 5.2, the priorities of Gaborone residents regarding issues that needed urgent attention differ according to the areas in which they resided. According to the report, more than half of the survey's respondents however, indicated that law enforcement and clean streets were the most highly prioritised needs. According to the key stakeholder survey, developing the city in terms of infrastructure and service provision and in general portraying Gaborone as a well-planned city with environmentally aware residents was considered as being quite important.

The survey revealed that residents would like to participate in planning decisions, but current participation in the planning process was very low. The low participation was mainly attributed to inadequacies in the consultation process, both at public and government level. In my view, consultation is in support of the fact that the notion of participation has been used in community development contexts to describe different dimensions of community development; first in terms of how participation happens, second in terms of the goals and motivation behind it, and third in terms of the power dynamics involved. Participation has also been associated with a demonstration process, restructuring of power relations and levelling of power gradients with society (Janse van Rensburg and Lotz, 2000).

The ST survey identified a number of challenges which the GCCEHD is likely to face. The most common challenges reported are the general lack of resources (both financial and human). The current bureaucratic, top-down approach to planning (education about the environment) and associated pedagogical processes have been

criticised for being teacher-centred and expert-driven, using top-down methods such as ‘*show and tell*’ and targeted messages, all of which make the learner only visible, but inaudible (Lotz & Ward 2000, Taylor 1997), lack of adequate legal instruments, environmental awareness and policy were also highlighted as constraints. From the document analysis, what came out is the fact that the document was developed by the GCCEHD in collaboration with other council departments and the consultants. The plan does not have consideration of other role players because they were not part of the planning process. I feel it is going to be difficult to operationalise the plan with the people who were not involved at the start. The study (document analysis) revealed the fact that though educators talk of participatory development, in this case there was no involvement of the stakeholders (community and private sector).

According to O’Donoghue, 2000 (cited in Lotz-Sisitka & Raven, 2001) environmental education has a key role in enabling citizens (Gaborone residents) to improve environmental management practices in all walks of life, and to make sustainable life style choices. Environmental education is critical to enabling learners (Gaborone residents) to contribute actively and competently to sustainable development. This has been recognised in a number of international environmental initiatives, including *Agenda 21*, and by large international organisations such as UNESCO (UNESCO, 1980). Chapter 36 of *Agenda 21* highlights the need to increase people’s sensitivity to, and involvement in finding solutions to environment and development problems. It recognises that education can enable the development of environmental and ethical awareness, values and attitudes, the skills and behaviour needed for sustainable development (UNESCO, 1980). The other issue of relevance that came out strongly in the *Vision for Greater Gaborone* is the considerations of *Botswana Environmental Planning Principles* (BEPP) see section 4.4.2, during the planning process, which can help to avoid developments with negative effects on the environment and therefore, contribute to a sustainable city. The main elements of the BEPPs include:

- Resource use,
- Socio-economic development,
- Environmental management,
- Public participation and
- Design/planning.

5.5. Environmental Health Indicators for Decision-making

In defining and addressing environmental issues, as educators, we usually attempt to isolate a specific concern from a much wider range of processes and effects. A different person may place the focus of attention on a different point, and different links and factors will thus become relevant. There is no single response to environmental health issues, rather, each issue's response is an artefact of the person who defines it. One other crucial model developed by the World Health Organisation (WHO) as a response to improving information use and availability in support of decision-making process in environmental health is the '*DPSEEA framework Model*'. The framework addresses all issues of *Agenda 21*, especially the education, awareness and training component. The GCCEHD can adapt this model to their context for their improved environmental performance. It aims at making valid and useful information on the local and national health impacts of environmental hazards available to decision-makers, environmental health professionals and community. In this context, data generated is analysed and converted into information presented in a form that can be understood, interpreted and acted upon by those responsible for environmental health protection. See figure 1 for the *DPSEEA framework*.

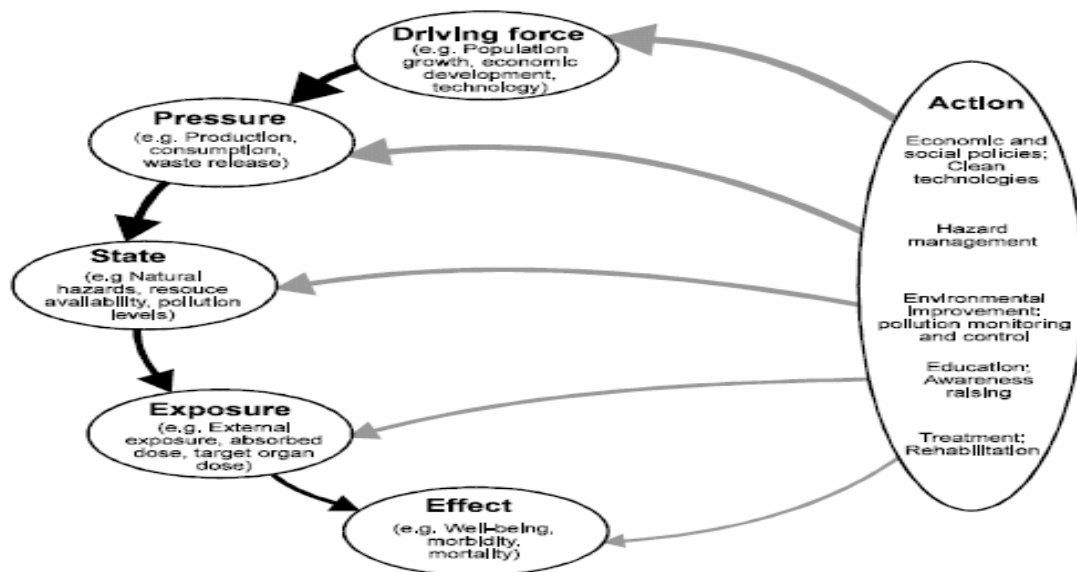


Figure 1: DPSEEA Framework model
<http://www.sustainablemeasures.com/indicators/page1>.

The indicators are arranged in terms of the now widely-used *DPSEEA framework* (figure 1). Within this framework, the driving forces component (D) refers to the factors which motivate and push the environmental processes involved. Of these, possibly the most important is population growth; others include technological development (Gaborone city development processes), economic development and policy intervention. In the context of GCCEHD, the model can be used to address issues of urbanisation (continuous construction), influx of local and illegal immigrants, employment fatigue all of which contribute to population growth.

The driving forces within the *DPSEEA framework* result in the generation of pressures (P) on the environment. These are expressed through human occupation or exploitation of the environment, and may be generated by all sectors of economic activity such as infrastructure development, quarrying, sand river harvesting, manufacturing, pollution and indiscriminate disposal of waste in Gaborone. In each case, pressures arise at all stages in the supply chain from initial resource extraction,

through processing and distribution, to final consumption and waste release. The GCCEHD can adapt the model to help address environmental issues of concern.

In response to these pressures, the state of the environment (S) is often modified. The changes involved may be complex and far-reaching, affecting almost all aspects of the environment and all environmental media. They are expressed, therefore, in terms of the frequency or magnitude of natural hazards, the availability and quality of natural resources, and the levels of environmental pollution. Many changes are intense and localised, and often concentrated close to the source of pressure (e.g. urban air pollution, contamination of local water supplies). Many of these issues are widespread, contributing to regional and global environmental change (e.g. climate change). The model can be used to support the GCCEHD response to environmental issues in context.

When people are exposed to these environmental hazards, then risks to health may occur. Exposure (E1) thus refers to the interaction between people and the hazards inherent in the environment. The United States National Academy of Sciences (1991:112) defines exposure as ‘an event that occurs when there is contact at a boundary between a human and the environment with a contaminant of a specific concentration for an interval of time’. In the case of environmental pollution for Gaborone and as a result of infrastructure development, exposure can occur in different ways. It can be by inhalation, ingestion or dermal absorption and may involve a wide range of organs. The GCCEHD can utilise the DPSEEA model to assist in identifying environmental issues of concern and respond appropriately.

Exposure to environmental hazards, in turn, leads to a wide range of health effects (E2). These may vary in type, intensity and magnitude depending upon the type of hazard to which people have been exposed, the level of exposure and the number of

people involved. The earliest, and least intense, effects are sub-clinical, merely involving some reduction in function or some loss of wellbeing.

It must be emphasised that the *DPSEEA framework* works well for risks associated with environmental pollution, where the chain from driving to source activity and health effects and exposure is evident. It can also be applied to the many psychological and perpetual health effects. Like other aspects of environmental health indicators, therefore, the *DPSEEA framework* (www.sustainablemeasures.com/indicatorspage1) should be seen as an aid, not a straight-jacket; it needs to be adapted and modified according to contextual circumstances. Finally the (A) leads to action that can be taken. In the context of environmental issues in Gaborone, the GCCEHD is better placed to adopt the model and take action. Action in this context is in the form of education. The role of education in achieving sustainable development has been a focus of on going deliberation over the past fourteen years, since the Rio Earth Summit in 1992. For example, the UNESCO 1997 Conference on Education for Sustainable Development held in Thessaloniki highlighted the critical role of education and public awareness in achieving sustainability (UNESCO, 2002b).

According to article 3.1.1 in the *Waste Management Plan 2003-2009* which discusses existing supporting organisations, besides and other council departments are indirectly involved in the waste management besides the GCCEHD. The private sector offers skip services for domestic, construction and commercial waste removals. The waste collected by the private sector is dumped in the council landfill. Waste recycling is also largely carried out by the private sector (both formal and informal).

The issue arising from the above is that the existing supporting organisations are not necessarily explicitly concerned with education, awareness and training on waste management. The local environmental NGO Somarelang Tikologo (ST) is active in promoting environmentally friendly management services. ST is better placed support in ensuring a broad and effective public awareness, through initiating environmental awareness campaigns at all levels of society, and encourage active participation of the

private sector and communities in the provision and management of facilities and services and ensure they benefit directly (recreational areas, parks, waste management, etc).

This is the opportunity where the GCCEHD should utilize and promote education, awareness and training. This is in line with what Butler, (1997:4) see section 2.2.4 referring to as many problems and solutions addressed by *Agenda 21* as having their roots in local authorities, and that participation and co-operation of local authorities would be a determining factor in fulfilling its objectives. On the basis of the above GCCEHD could utilize the NGO expertise available on education, awareness and training of the public and other stakeholders.

Article 3.1 of the *Waste Management Plan 2003-2009* explains that the existing waste disposal site for Gaborone is near the centre of the city, off Machel Drive and adjacent to the Fairground Holdings. The area covers approximately 21.5 hectares. The Notwane River passes the eastern face of the site. The location of the site indicates a high potential for pollution of the groundwater table. The site is already filled to capacity according to its original design layout. Settlements neighbouring Gaborone are also using the site for waste disposal. This is where education, awareness and training are crucial. The site impacts negatively on commercial and residential developments to the north (downstream) and on surrounding residential areas in the form of smoke and odour. There is therefore, public pressure to move the site away from Gaborone centre. This is where the education, awareness and training component can work to the benefit of both the public and GCCEHD.

Article 3.3.3 of the *Waste Management Plan 2003-2009* indicates that the GCCEHD has no direct control on the performance of recycling activities. Recycling of waste is still at an infant stage. Certain amounts of materials to be recycled are picked by waste pickers who are not monitored. With regard to the above scenario, there is an opportunity for GCCEHD and local environmental NGOs such as Somarelang Tikologo to promote recycling. At present there are two stages of recycling in

Gaborone. Prior to waste being moved to the landfill, some of the waste is diverted to recycling activities and serves to minimize waste quantities. These include paper and plastic recycling. The challenge for the GCCEHD is to balance the budget for overall waste management and public education, awareness and training. Table 5.3 shows the total budget allocated to waste management by the GCCEHD for 2004.

Table 5.3 investment budget for Gaborone Waste Management

Project	Unit item	Place of implementation	Investment cost in BWP
Landfill compactor	1	New landfill site	1.600.000
Shredder tyres	2	landfill	1.700.000
Compaction (static) containers	8	Shopping centres	1.800.000
Refuse compactors	6	Waste collection	2.826.000
Skip trucks	6		2.868.000
Front end loader	4		2.800.000
Tipper trucks	8		2.560.000
7 ton flat truck	4		1.352.000
Supervisory vehicles	4		360.000
Vacuum street sweepers	4		1.000.000
Public toilets	7	Different shopping centres	1.850.000
New municipal abattoir	1	Sebele	30.000.000
Total			47.916.000

Source: Waste management Plan 2003-2009

It has become evident from table 5.3 above that to manage waste is expensive. Therefore, cost recovery is very crucial in the overall budget of the city council, since the precondition for the Central Budget Grant is that the council generates a minimum income of at least 10% of the council budget. It is on the basis of table 5.3 that I advocate for rigorous environmental education, awareness and training for the community of Gaborone, and on issues of cost recovery. The other way is for the GCCEHD to exhaust their resources on education and training so that the public can start responding to the challenges of waste management by separating waste at source, reducing waste, recycling practices with some incentives. The council and the private sector can provide impetus and support for public cleaning campaigns. They should carry out public awareness campaign to inform people of their rights and obligations relating to waste, and ensure that the public is aware of their role of monitoring illegal dumping.

Article 4.1.2 of the *Waste Management Plan 2003-2009* states that the private sector should be included as far as possible, as they are often more reliable and cheaper. It

further states that before private sector parties become involved, contracts have to be carefully scrutinized, as they would have a substantial impact on the overall budget. As shown in section 3.3.2 the private waste collection already covers 71% of total domestic waste generated. However, the involvement of the private sector by the GCCEHD does not mention any education, awareness and training.

It is becoming clear that NGOs are playing a crucial role in complementing government through the council's plan of action. Article 4.1.5 of the *Waste Management Plan 2003-2009* elaborates that there is a strong public support for the minimisation of waste. A good example is the on-going campaign by Somarelang Tikologo to ban the use of plastic disposal shopping bags. Equally, there are initiatives within the civil service to introduce green accounting as a means of improving efficiency in resource use and reducing wastage (Somarelang Tikologo, 2003) see Chapter 2, section 2.5.1. What this study has established from the *Waste Management Plan 2003-2009* is that the GCCEHD has not planned adequately for education, awareness and training throughout the plan. This is contrary to Chapter 36 of *Agenda 21*, which was dedicated to 'education, public awareness and training' and its key programme areas which are:

- Re-orientation of education towards sustainable development,
- Increasing public awareness,
- Promoting training.

Finally, ensuring environmental education and training in all sectors of society; increasing access to environmental education and training; promoting environment and development concepts in all education programmes is crucial for a better managed environment, by the GCCEHD.

The data I collected in this study indicated that there was no deliberate consideration of education, awareness and training by the GCCEHD. This is evident in the *Waste Management Plan 2003-2009* as there is no deliberate inclusion of education,

awareness and training in it. In most cases, the unit managers used their own discretion to use clean-up campaigns, workshops and development of brochures as educational activities.

5.6. Conclusion

I must strongly credit the GCCEHD units for their commitment to addressing environmental issues facing Gaborone with initiatives out of the *Waste Management Plan 2003-2009*. The introduction of the *Botswana Environmental Planning Principles* has enhanced the need for, and awareness of, a more sustainable development of the country. However, these are not provided for in the *Waste Management Plan 2003-2009*. As much as I credited the GCCEHD for making the initiative of developing programmes that are not planned, there remains cause for concern to the GCCEHD. For the department to perform better in service provision, they must work closely with the relevant stakeholders. During the development of the *Waste Management Plan 2003-2009*, they did not see the need to advocate and lobby for the inclusion of the education, awareness and training.

In the next chapter I synthesise the findings reported in chapter 4 and 5 and consider the realities that appear to be ideal for the GCCEHD to better deliver on their mandate.

Chapter 6

Conclusion

6.1. Introduction

The changing environmental challenges especially between the industrialised and developing countries based on labour standards are such that they require constant evaluation of our environmental programmes and especially with regards to training of implementers (GCCEHD managers and workers). These environmental standards are mediated through World Trade Organisation (WTO) negotiated processes where developing countries such as Botswana have limited influence on the outcomes. They therefore have to rely on their balancing stability between the requirements of the foreign direct investment and the imperative of nationally sound environmental practices.

It is in this context, therefore that in this chapter, I present environmental education, awareness and training implications associated with the Gaborone City Council Environmental Health Department (GCCEHD), changing contexts and challenges facing employees in their respective places of work. I consider these in the light of Edwards' (1997) view of the need for adult education to enable learners (GCCEHD and Gaborone community) to adapt to change. I discuss this in relation to the issues discussed in chapter 4 and 5.

Given the contemporary landscape of environmental issues in a developing country like Botswana and in particular Gaborone, I consider education, awareness and training very important to the GCCEHD employees capacity for better service delivery, and the Gaborone community in the light of developments surrounding the implementation of *Local Agenda 21* as it pertains and dictated to by *Agenda 21* framework. The discussion is biased towards improving the environmental quality of Gaborone which the GCCEHD serves, for its citizens through a more environmentally sensitive, sustainable and participatory urban planning, awareness and development for better service provision to the people of Gaborone. The implementation and enforcement of Agenda 21 is dictated to by Botswana's necessity

to attract foreign direct investment which in many instances are induced by sub-standard labour and environmental conditions, requires a substantively balanced approach regarding environmentally sound policies and dictated needs of investors.

The discussion considers the importance and role of education, awareness and training in support of the implementation of *Local Agenda 21*, by the GCCEHD. In conclusion, I highlight some of the limitations of this study and make recommendations for further consideration and research.

6.2. Environmental Education, Awareness and Training Component

From the data presented in chapter 4 and 5, two significant aspects emerged. These include the fact that the GCCEHD operational managers have initiated and implemented education, awareness and training strategies of *Local Agenda 21*, which are not however, included in the *Waste Management Plan 2003-2009*. The other aspect is that there is no inclusion of education, awareness and training component in the GCCEHD *Waste Management Plan 2003-2009*. In fact, education, including formal and informal education, public awareness and training should be recognized as a process by which human beings and societies can reach their fullest potential.

6.2.1. Education

Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development initiative. It provides the underpinning for environmental education. Both formal and non-formal education is indispensable to changing people's attitudes so that they have the capacity to assess and address their sustainable development concerns. It is in this light that the GCCEHD managers claim to have initiated and implemented the education, awareness and training component. It is critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development for effective public participation in environmental management. To be effective, environment and development education should deal with the dynamics of both the physical and socio-economic environment and human

development, should be integrated in all disciplines, and should employ formal and non-formal methods and effective means of communications. In the context of this study, it has been established that proper communication between the GCCEHD and the community is crucial and must be enhanced.

The respondents agreed on the crucial role that education plays in sustainable development and encouragement that residents of Gaborone participate in waste management activities after training. Supporting this initiative is the Rio Summit of 1992 (see section 2.2.4.1), which gave high priority to *Agenda 21* in explaining the role of education in pursuing the kind of development that would respect and nurture the natural environment. Based on information provided by the respondents in this study, it was clear that as part of the workshop deliberations (see section 4.4) the promotion of the 3Rs (Reduce, Re-use and Recycle) were highlighted. The promotion also covered the issue of incentives associated with the waste management hierarchy. The GCCEHD managers agree to the inclusion of environmental literacy, as they have developed educational strategies though it is not included in the *Waste Management Plan 2003-2009* to educate the public and their workers on waste management. This contention is shared by *The Gaborone Declaration (2002)* by emphasizing the need to address environmental, educational and environmental education policies and policy development. *Agenda 21* recognised that people's participation and responsibility are essential elements of environmental protection and sustainable development. In fact, participation involves education, training and public awareness. (See section 2.2.4.1.)

In the interviews, respondents emphasised the need for the public to be trained on waste management, especially the waste separation at source and emphasised the need for educating those taking care of the home-based care patients. This move is in support of the notion that education and training have a central role in strengthening the role of women, youth, indigenous peoples, farmers, local officials, trade unions, business, industry and the scientific community. (See section 2.2.4.1.) *Agenda 21* emphasized the scope of environmental education and training at local government

level (GCCEHD and Gaborone residents), sustainable agriculture, extension work as a process of education and rural development. In short implementation of *Local Agenda 21* is a national challenge. My view is that there should be a deliberate effort by Government to see to it that *Local Agenda 21* is implemented in Botswana

The World Summit on Sustainable Development's *Implementation Plan*, advocates support for local authorities in elaborating slum upgrading programmes within the frame work of urban development plans and facilitates access, particularly for the poor, to information. (See section 2.2.4.1.) Managers revealed that they use the radio programmes for educating the public on waste management issues. The radio debates are aired four times a year. (See table 4.1). However, one may equally argue that the debates are not enough and propose that they may be aired in other Radio stations to cover a larger population. This reflects similar approaches to describing and defining environmental education as found in the World Summit on Sustainable Development (WSSD) *Implementation Plan* and the New Partnership for Africa's Development (NEPAD).

6.2.2. Awareness

There is still a considerable lack of awareness of the interrelated nature of all human activities and the environment, within the GCCEHD due to inaccurate or insufficient information that can be useful to workers. Developing countries like Botswana lack relevant technologies and expertise. There appeared a need to increase public sensitivity to environment and development problems, and involvement of the community in their solutions to foster a sense of personal environmental responsibility and greater motivation and commitment towards sustainable development. The study established the importance of GCCEHD to initiate and promote regular consultations with the community (Gaborone residents) to better improve on their mandate.

The promotion of broad public awareness is an essential part of the GCCEHD education effort to strengthen attitudes, values and actions which are compatible with

sustainable development. It is important to emphasize accountability at the most appropriate level with preference given to local government responsibility and control over awareness-building activities.

Drawing from chapter 28 of *Agenda 21* (see section 2.2.4.1); which states that many problems and solutions addressed by *Agenda 21* have their roots in Local Authorities, participation and co-operation of local authorities with communities will be the determining factor in fulfilling the objective. From the interviews conducted, the GCCEHD managers reiterated the fact that they had embarked on public awareness campaigns, which included litter campaigns, exhibition fairs and ward competitions. This is an example of a local authority initiative in realising and implementing *Local Agenda 21*, which is a participatory and multi-sectoral process to achieve the goals of *Agenda 21* at local level. This re-affirms the importance GCCEHD's *Waste Management Plan 2003-2009* strategy that is in place. However, based on the findings from the study, the strategy needs to explicitly address the education, awareness and training components, which are the basis for broad stakeholder participation.

The GCCEHD respondents affirmed the importance of education, as they said it is important for promoting sustainable development and improving the capacity of the people to address environment and development issues. However, from the different interviews conducted, I found out that there is generally a limited understanding and appreciation of the context and substance of *Local Agenda 21* by most of the managers, which raises important questions as to what extent they (managers) are able to generate interest in the programme and drive it in the absence of their own knowledge of *Local Agenda 21*.

From the focus group interviews, the workers revealed that they were trained on their work when they were first employed and orientated, which was a good effort. On the other hand, they need continuous training to cope with the trends of new developments and social challenges. The workers believe that education, awareness

and training are important and can be useful for the benefit of GCCEHD and the public. This was evident when the workers stated that for them to effectively deliver, they needed basic training on waste management issues. They highlighted the fact that community education and awareness was very crucial as it could help ease their work if the community was aware, understood and appreciated waste management strategies. (See section 4.3.)

6.2.3. Training

Training is one of the most important tools to develop human resources and facilitate the transition to a more sustainable world. It (training) should have a job or on the job-specific focus, aimed at filling gaps in knowledge and skill that would help individuals to find employment or rather perform better in the work place and be involved in environmental and development work. At the same time, training programmes should promote a greater awareness of environment and development issues as a two-way learning process. It is in this context that the GCCEHD operational managers initiated and planned workshops for both the community leadership and workers to better deliver on their part, despite the fact that training is not included in the GCCEHD *Waste Management Plan 2003-2009*.

The Tbilisi conference, (see section 2.2.2) recognised that education made a “*crucial contribution*” in enabling people to manage the earth and put forward many approaches for understanding pressing problems which populations face. This is supported by the fact that the GCCEHD workshops are geared towards making residents of Gaborone understand their environmental responsibilities. However, environmental education should not be just one more subject to add to existing programmes, but should be incorporated into programmes intended for all learners.

The study revealed through the face to face interviews that environmental education should make individuals and communities (through workshops and seminars) understand the nature of the natural environment and the problems associated with it and further respond appropriately. This further explains that the understanding of the

environment will be achieved through the interaction of biological, physical, social, economic and cultural aspects. As such, community leaders and workers are made to understand the environment not only from the waste perspective, but from a holistic approach with associated environmental management issues.

Regarding training, I believe that there must be frequent trainings on waste handling, waste separation, and collection and disposal techniques. This is not only for the benefit of the workers, but also for the workers to adequately assist other people who come to the Landfill to dispose of waste. This is supported by the fact that one of the Divisions of the National Conservation Strategy Coordinating Agency (NCSA) is charged with the responsibility of carrying out environmental education and promoting environmental awareness building countrywide and also seeks support from such bodies like Local Authorities (councils). The question is; does it (NCSA) do that?

6.3. Waste Management Plan 2003-2009

The study revealed that as part of the GCCEHD commitment to implement the aims and objectives of *Agenda 21*, GCCEHD developed a *Waste Management Plan 2003-2009* for the sustainable and environmentally sound management of waste and better service provision (Gaborone City Council, 2002).

The *Waste Management Plan 2003-2009* is intended to satisfy the following goals to a significant extent:

- Preservation, protection and improvement of the quality of the environment,
- Contribution towards the protection of human health,
- Ensuring prudent and rational utilization of natural resources.

The *Waste Management Plan 2003-2009* stipulates that waste management in Gaborone shall be undertaken in a manner that adequately protects human health and the environment, and is consistent with affordability and available expertise of the

council. The above is entirely supported and can be enhanced by advocating appropriate waste handling, separation and disposal so that when waste reaches the Landfill, it must be properly sorted out.

The *Waste Management Plan 2003-2009* incorporates the principles of:

- Principle of Prevention
- The Polluter Pays Principle
- The Principle of Co-operation

However, the study found out that although the respondents initiated and worked on educational strategies, what they do on the ground does not correlate with what is in the *Waste Management Plan 2003-2009*. The managers have actually gone a step beyond the *Waste Management Plan 2003-2009*. They initiated and developed educational programmes outside the *Waste Management Plan 2003-2009* and implemented it. I commend the officers for this initiative, which is beginning to bear positive results. However, shortfalls arise in that the education, awareness and training components were developed by the officers in 2004, a year after the development of the *Waste Management Plan 2003-2009*.

6.4. Recommendations of the study

Recognising the crucial role that education, awareness and training play in sustainable development, I recommend to the GCCEHD the following:

- A deliberate inclusion of education, awareness and training in the GCCEHD *Waste Management Plan 2003-2009* and the subsequent *Waste Management Plans* so that the department can work closely with the community and other stakeholders.
- To work closely with Somarelang Tikologo (ST) an environmental NGO to increase their involvement in environmental education, awareness and

training, this is based on the school environmental education project that the NGO has been working on.

- To develop a *Local Agenda 21* strategy in line with the *Waste Management Plan* that sets the framework for people and organisations (community, NGOs and CBOs) representing community interests to discuss and agree on action plans that will lead Gaborone towards a more sustainable future and better quality of life.
- Based on the role the local people played in waste management from data generated, the *Waste Management Plan 2003-2009* should explore ways in which *Local Agenda 21* can be popularised within the local communities through translating it into the local language for people to understand and act accordingly.
- Based on our tradition of consultative democracy, the GCCEHD should take a lead in consulting the community of Gaborone and train them to internalise and own-up to the environmental challenges facing Gaborone.
- Develop an internal educational programme for employees including managers and senior personnel on environmental issues and in particular *Local Agenda 21* on an on-going basis, for sound service delivery, mastery of job content and coming up with new ideas to enhance the department.

6.5. Concluding remarks

In short, in this study, I have established that the education, awareness and training strategies that the operational managers use are crucial to waste management in Gaborone. These are workshops, litter campaigns, the promotion of the 3Rs, ward competitions and formation of school health clubs. The study points out that utilising these strategies is crucial in the GCCEHD's move to addressing issues of waste

management. The current strategies need to be incorporated into the *Waste Management Plan 2003-2009* for the GCCEHD to improve its service delivery.

In Botswana context, the process of consultation is important as is rooted in our traditional democracy of consultation on national issues. The GCCEHD should not be an exception and must take a lead in community consultation on waste management issues. Drawing from these, recommendations were made to inform the environmental education, awareness and training strategy, which should be part of the GCCEHD's efforts to ensure sustainable development through the local governance, hence realising the implementation of *Local Agenda 21* with community participation.

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APPENDIX A

Interview Questions

1. What do you think the Environmental Health Department Local Agenda 21 says about Education and Training? -----

2. What kind of environmental education and awareness training has your department / section conducted? -----

3. How have this education & training helped the operation of the EHD? ----

4. What kind of public environmental education and awareness your department / unit has been involved in? -----

5. Briefly describe the impact this has had on the public -----

6. Can you illustrate this with one or two examples? -----

7. With reference to the Department's Local Agenda 21 (Education and Training)

a) What has worked well with the department staff?

b) What has worked well with the public?

c) What has not been working well?

d) In your opinion what measures need to be put in place?

APPENDIX B

Questions and general responses from Semi-structured interviews

<i>Questions</i>	<i>Responses</i>	<i>Respondents</i>
Q1. What do you think the EHD Local Agenda 21 say about Education and training?	It calls for individuals to think Global and Act locally. The principles at Rio Declaration Agenda 21 should be implemented at all costs. The conventions adopted by Botswana should be put in place to promote the good handling of waste generated hence promoting the 3Rs	EHD 01
	To develop educational strategies to empower the public with necessary best approaches to sustain best efforts to keep the environment clean. Training calls for sensitizing the communities through workshops and seminars	EHD 02
	Sensitize politicians on Local Agenda 21	EHD 05
Q2. What kind of education and awareness training has your department / section conducted?	EHD has conducted workshop for the community leaders, GCC councillors, and Primary and secondary school teachers especially for school health clubs, clinical waste workshops, P&P and industrial class (workers) and community members and so on.	EHD 01
	Morning talks hours before starting work, held seminars for our workers, undertook educational tours to benchmark with other local authorities, taught how to handle hazardous waste.	EHD 02
	The Department conducted training for industrial class (workers) on medical waste and councillors were also trained	EHD 03
	In-house training of workers about disposal of abattoir waste i.e. blood, ruminal and intestinal contents, condemned carcasses and organs	EHD 04
	Workshops for councillors	EHD 05
	Litter campaigns for the Wards	EHD 06
	Kgotla meetings for the public	EHD 07
Q3 How has this education and training helped the operation of the EHD?	Understanding the facts and concepts has made people to be very efficient and effective resulting in good or best results	EHD 01
	It had improved service delivery and proper storage and handling of wastes. It had also helped in dissemination of information to	EHD 02

	<p>communities through workers (employees)</p> <p>The understanding on waste handling has improved</p> <p>Clean and odourless environment , uncontaminated meat (good quality meat) , healthy staff</p> <p>Councilors can now include waste issues in their speeches at the wards</p> <p>We discuss issues of waste management with our people</p> <p>Our people now understand how to separate waste at source</p>	<p>EHD 03</p> <p>EHD 04</p> <p>EHD 05</p> <p>EHD 06</p> <p>EHD 07</p>
<p>Q4 What kind of public environmental and awareness your department / unit has been involved in?</p>	<p>Training and orientation of newly elected councillors, EHD services provided to the public / customers, GCC HCC meetings and also education, Educational campaigns (ward health committees), cleanup campaigns, waste fair exhibitions, cleanup assessment, choir competitions, school health clubs activities</p> <p>Holding seminars, workshops for communities on how to keep environment free of litter, Maokaneng radio programme, literature distribution, public address system, competition among wards, clean up campaigns</p> <p>Our section (landfill) has mainly been training people on proper handling of waste and different types of waste.</p> <p>General cleanup campaigns</p> <p>Clean up campaigns</p> <p>My ward has won one of the competitions</p> <p>They move around with loud speakers encouraging people to keep their environment clean</p>	<p>EHD 01</p> <p>EHD 02</p> <p>EHD 03</p> <p>EHD 04</p> <p>EHD 05</p> <p>EHD 06</p> <p>EHD 07</p>
<p>Q5 Briefly describe the impact this has had on the public</p>	<p>People are now having better skills which they could apply in their day to day lives in order to leave a better live.</p> <p>This has driven communities to formulate health clubs in their residential areas and school health clubs</p> <p>The community is now conscious of the way they deal with waste especially in the era of HIV/AIDS, they are able to know what care to apply when handling home based waste</p>	<p>EHD 01</p> <p>EHD 02</p> <p>EHD 03</p>

	<p>The public is well educated on the management of waste</p> <p>Public willing to participate on waste issues</p> <p>The people are now participating in litter picking</p> <p>Public now participate in ward competitions</p>	<p>EHD 04</p> <p>EHD 05</p> <p>EHD 06</p> <p>EHD 07</p>
<p>Q 6 Can you illustrate with one or two examples</p>	<p>Most of the people are using recyclable materials for a living (selling bottles & cans & boxes to get cash, GCC HCC conducted cleanup campaign on their own at their catchments areas and they educate and impart knowledge to others on the importance of cleanliness.</p> <p>People compete in beautifying their plots through competition, competition between wards and clinics</p> <p>People especially those looking after patients at home, do protect themselves with gloves and masks when they attend to their patients. Also when disposing the waste, they put it in the appropriate red bags</p> <p>Our workers clean their work sections after work</p> <p>Participation in clean up the world has been helpful as people are starting to manage waste</p> <p>Some of the wards in the city are clean</p> <p>There are now Ward competitions</p>	<p>EHD 01</p> <p>EHD 02</p> <p>EHD 03</p> <p>EHD 04</p> <p>EHD 05</p> <p>EHD 06</p> <p>EHD 07</p>
<p>Q7 With reference to the department 's local agenda 21 (education and training) a). what has worked well with the department staff?</p>	<p>Cooperation from mates, training of different individuals</p> <p>Managed to educate and training of staff and results is that we speak the same environmental language</p> <p>A lot of training has been done with the staff to try and raise the awareness of the problems, this has resulted in constructing scientific disposal sites to meet the demand</p> <p>Workers are trained and know their roles in systems</p> <p>Councilors address kgotla meetings on waste management</p>	<p>EHD 01</p> <p>EHD 02</p> <p>EHD 03</p> <p>EHD 04</p> <p>EHD 05</p>

b). what has worked well with the public?	The staff understands their role in facilitating cleanup campaigns	EHD 06
	They are trying to keep the town clean	EHD 07
	Volunteerism and fully involvement from the community members	EHD 01
	Spirit of competition evident	EHD 02
	The public is also rising to the standard needed, they are bringing their waste to the landfill, also they participation on cleanup campaigns is an indication of education and knowledge	EHD 03
	Don't know the views of the public as we work in an enclosed building.	EHD 04
	Public now participates in cleaning the environment together with politicians	EHD 05
	The city is becoming clean which show public understanding	EHD 06
	Some of the stakeholders also understand their role in keeping the city clean	EHD 07
	c). what has not been working well?	Minimum enforcement of waste management act, minimum support and involvement of staff in the public efforts, shortage of funds to train more public members and to undertake projects, minimum involvement in Local Agenda 21
Change of attitude in littering still a problem, dumping at ungazetted areas		EHD 02
People don't understand the need for them to pay for waste when disposing it, some still think it is council responsibility		EHD 03
We are still working in an old building and most of our machines keep breaking down		EHD 04
The budget for waste management is too little and must be increased		EHD 05
The budget for waste management is small		EHD 06
Involvement of the public is slow		EHD 07

d). In your opinion what measures need to be put in place?	New landfill to be constructed, serious law enforcement and imprisonment of culprits, involvement of leaders e.g. President in waste management or cleanup campaigns, communities to be financially supported by the business community.	EHD 01
	Government to introduce municipal police like in other countries, waste management officers be given powers to arrest	EHD 02
	There should be law enforcement, more law enforcers should be employed, a better landfill be constructed	EHD 03
	A new abattoir should be built to ease the situation	EHD 04
	Introduction of the council police can be better	EHD 05
	The budget for waste management must be increased	EHD 06
	More money should be allocated to waste management	EHD 07

Key:

EHD 01: Education and Awareness Manager

EHD 02: Waste management Manager

EHD 03: Landfill Manager

EHD 04: Abattoir Manager

EHD 05: Mayor

EHD 06: Councillor 1

EHD 07: Councillor 2

Appendix C; Data Transcribed from the tape (Focus Group interviews)

Focus Group 1. EHD FG1 (Waste collectors in town)

As workers in the Environmental Health Department of Gaborone City Council, our work is as follows:

Collect waste all over the city, we collect different types of waste ranging from:

Domestic waste,

Collect plastics bags scattered all over town,

Tree branches.

We are sent out everyday to collect waste everywhere in the city as we are labourers. “Dingwe tsa tse re dioleleang ke dikatse le dintsa tse di suleng mo mekgwatlheng!” Some of the things that we pick are dead cats and dogs hit and killed by moving cars. NO we are not trained on how to handle waste. We were orientated about waste collection when we were first employed by the council. We only heard that our managers attend workshops and seminars. They attend them at Bopiuso hall and at times they go as far as Francistown. We wish we could also attend and learn to better handle waste.

We collect and load in the waste truck. Some of the problems that we are faced with are that in spite of the fact that we are trying to keep the city clean, the public continue to throw waste and litter especially on areas that we have cleaned. They do this because they are saying they are creating jobs for us. This is bad as we feel the public should be assisting us in keeping our town clean.

We believe that if training workshops and seminars that are organized for our managers could also be organized for us, we may improve on our service provision. We do not have protective clothing for handling waste. We are told there is no money to buy protective clothing. We last got our protective clothes in June 2003. There is a lot of dust and chemicals that we enail as we collect waste from the domestic bins and public skip. We clean the trucks that we use to collect waste on daily basis. This has affected our health. ‘Nna yo ke buang yo, ha ke hema go tswa mowa oo maswe, o ke dumelang gore o bakiwa ke lerole...’ ‘When ever I breathe there is bad smell coming out of my mouth...’ explained one of the interviewees.

There used to be a machine that cleans the truck. But now the machine is not functioning and we are using ordinary water and our hands, we feel this is not healthy for us. The situation (our working conditions) needs to be improved so that we can better deliver. The management must have our health and welfare at heart as through enailing this dust and other chemicals may cause permanent dysfunction to our body hence causing diseases such as TB and HIV/AIDS. We thank you for coming to listen to our views and hope that you will report this to the right people in the Ministry. We never had such a good person like you. Others should learn from you!

Focus Group 2. EHD FG2 (Landfill workers)

We work as Landfill attendants. We do everything that our colleagues who collect waste in town do. For example our tasks are as follows:

Compactor Operator

My main duty is to compact waste as is dumped at the landfill. The problems that I am facing is that there are no protective clothing more especially me as I drive the compactor and it generates a lot of dust. As you can see me here, this is how I work and there is no protective clothing for me as we were told there is no money to buy them. Some time back I was given a big musk to use and it was not good for me. I complained and later on they gave me a light cap that covered the nose and mouth just like the ones used by nurses in hospitals. There is even no protection for my ears as there is a lot of noise coming from the compactor.

Incinerator Operator

My main responsibility is to burn all types of waste as they come to the landfill. There are two types of plastic bags being red and black. The red one contains clinical waste and the black one contains other domestic waste. There is no protective clothing for me and I use my own clothes. This is not healthy for me as I continue to inhale all the dust, smoke and chemicals that are disposed off as the incinerator.

We were orientated when we started our jobs, but we feel there is need for continuous training on us more especially that a lot of things are dumped at the landfill everyday. There are chemicals which are dumped there and home based care waste which is very dangerous to us. So we should be regularly be trained and prepared for any eventuality.

There has not been any training for us, if a seminar is organized; it is organized for the managers as we always hear that they are attending workshops and seminars outside the office, outside Gaborone and outside the country (“Rona gare tsene di workshops, ke tsa bo Manager ka re aga re outlaw got we ba bayou bailer di works pong!”) We try our best to do some informal trainings especially for people who come to dispose off waste and also tell and show them where to put waste.

We try to teach them on issues of waste separation and sorting at the landfill. We believe the public should be trained on waste management so that waste separation can be at source. The compactor sometimes breaks down for up to six months or so and we will wait for the mechanic to attend to it. Sometimes it will function for a day and then break down again. We thank you for coming to get our views and you are the first person to come to our rescue. We hope this discussion will help us.

Appendix D; Document Analysis (Waste Management Plan 2003-2009)

<i>Education and awareness</i>	<i>Source</i>
<p>Clean-up campaigns The public are involved in waste management through clean-up campaigns, and are informed about waste activities. The GCCEHD works very closely with the Ward Environmental Health Committees to maintain links with the public. Public informed of their roles and obligations in waste management. Public support on monitoring of illegal dumping activities. Identify and manage borrow pits for rubble disposal and inform construction companies of their existence. Supply of composting bins to participating households.</p>	WMP: 4.1.5
<p>Radio programmes Public are informed about waste activities through the radio</p>	WMP: 4.1.5
<p>NGO involvement There is strong public support for the minimization of waste. A good example is the on going campaign by Somarelang Tikologo to ban the use of plastic disposable shopping bags. There are also initiatives within the civil service to introduce green accounting as a means of improving efficiency in resource use and reducing wastage (Environmental Planning Programme). Public involvement and an increased sense of ownership is needed to transform these public areas from waste disposal problems into areas of public benefit. Provide impetus and support for public cleaning campaigns particularly those arranged through the NGOs. Ensure the public is aware of their role in monitoring illegal dumping and GCC should provide a prompt response to reported activities. Support private composting activities through provision of compost bins to households. Create links to NGOs that actively promote urban agriculture such as FONSAG</p>	WMP: 4.1.5

APPENDIX E

Interview conducted 25/08/05

EHD 001 Guiding questions (Education and Awareness)

8. What do you think the Environmental Health Department Local Agenda 21 say about Education and Training?

It calls for individuals to think global and act locally. The principles at Rio Declaration. Agenda 21 should be implemented at all cost. The conventions adopted by Botswana should be put in place to promote the good handling of waste generated hence the 3Rs

9. What kind of environmental education and awareness training has your department / section conducted?

The department has conducted workshops for community leaders, GCC councillors, primary and secondary school teachers especially for school health clubs, clinical waste workshops, P&P and industrial class (workers) and community members and so on

10. How has this education & training helped the operation of the EHD?

Understanding the facts and concepts has made people to be very efficient and effective resulting in good or best results

11. What kind of public environmental education and awareness your department / unit been involved in?

Training and orientation of newly elected councillors, the department services provided to the public/customers, GCC HCC meetings and also education, educational materials campaigns (ward health committees), clean-up campaigns, waste fair exhibitions, clean-up assessment, choir competitions, school health clubs activities

12. Briefly describe the impact this has had on the public

People are now having better skills which they could apply in their day to day lives in order to live better life.

13. Can you illustrate this with one or two examples?

most of the people are using recyclable materials for a living (selling bottles & cans & boxes to get cash, GCCHCC conducted clean-up campaign on their own at their catchments areas and they educate and impart knowledge to others on the importance of cleanliness

14. With reference to the Department's Local Agenda 21 (Education and Training)

a) What has worked well with the department staff?

Cooperation from mates (work mates), training of different individuals

b) What has worked well with the public?

Spirit of competition evident, the public is also rising to the standard needed, they are bringing their waste to the landfill, also they participate on clean-up campaigns is indication of education and knowledge

c) What has not been working well?

Minimum enforcement of waste management act, minimum support and involvement of staff in the public efforts, shortage funds to train more public members and to undertake projects, minimum involvement in local agenda 21

d) In your opinion what measures need to be put in place?

Construction of new landfill, serious law enforcement and imprisonment of culprits, involvement of leaders e.g. HE the president in waste management or clean-up-campaigns

APPENDIX F

Interview conducted 30/08/05

EHD 002 Guiding Questions (Waste Management)

1. What do you think the Environmental Health Department Local Agenda 21 say about Education and Training?

Develop educational strategies to empower the public with necessary best approaches to sustain best efforts to keep the environment clean. Training calls for sensitising the communities through workshops and seminars

2. What kind of environmental education and awareness training has your department / section conducted?

Morning talks hours before starting work, held seminars for our workers, undertook educational tours to benchmark with other local authorities, taught how to handle hazardous waste.

3. How has this education & training helped the operation of the EHD?

It has improved service delivery and proper storage and handling of wastes. It had also helped in dissemination of information to communities through workers

4. What kind of public environmental education and awareness your department / unit been involved in? *Holding seminars, workshops for communities on how to keep environment free of litter, Maokaneng radio programme, literature distribution, public address system, competition among wards and clean-up campaigns*

5. Briefly describe the impact this has had on the public

This has driven communities to formulate health clubs in their residential areas and school health clubs

6. Can you illustrate this with one or two examples?

People compete in beautifying their plots through competition, competition between wards and clinics

7. With reference to the Department's Local Agenda 21 (Education and Training)

e) What has worked well with the department staff?

Managed to educate and training of staff and results is that we speak the same environmental language

f) What has worked well with the public?

Volunteerism and fully involvement fro the community members

g) What has not been working well?

Change of attitude in littering still a problem, dumping at ungazetted areas

h) In your opinion what measures need to be put in place?

The Government should introduce municipal police like in other countries, waste management officers be given powers to arrest

APPENDIX G

Interview conducted 26/08/05

EHD 003 guiding questions (Landfill)

1. What do you think the Environmental Health Department Local Agenda 21 say about Education and Training? *There was no response to this question*

2. What kind of environmental education and awareness training has your department / section conducted? *Our Unit organised training for industrial class workers on medical waste and councillors.*

3. How has this education & training helped the operation of the EHD?
The understanding on waste handling has improved.

4. What kind of public environmental education and awareness your department / unit been involved in?
Our section has been training people on proper waste handling and different types of waste

5. Briefly describe the impact this has had on the public *The community is now conscious of the way they deal with waste especially in the era of HIV/AIDS, they are able to know what care to apply when handling home based waste .*

6. Can you illustrate this with one or two examples?
People especially those looking after patients at home, do protect themselves with gloves and masks when they attend to their patients. Also when disposing the waste, they put it in the appropriate red bags.

7. With reference to the Department's Local Agenda 21 (Education and Training)
 - a. What has worked well with the department staff?
A lot of training has been done with the staff to try and raise the awareness of the problems; this has resulted in constructing scientific disposal sites to meet the demand

b. What has worked well with the public?

The public is also rising to the standard needed, they are bringing their waste to the landfill, also their participation on cleanup campaigns is an indication of education and knowledge

c. What has not been working well?

People still don't understand the need for them to pay for waste when disposing it, some still think it is council responsibility

d. In your opinion what measures need to be put in place?

There should be law enforcement, more law enforcers should be employed, a better landfill be constructed

APPENDIX H

Interview conducted 27 /08 /05

EHD 004 Guiding questions (Abattoir)

1. What do you think the Environmental Health Department Local Agenda 21 say about Education and Training?

There was no response to this question. The Manager does not know and have not seen the Waste Management Plan 2003- 2009

2. What kind of environmental education and awareness training has your department / section conducted?

In-house training of workers about disposal of abattoir waste i.e. blood, ruminal and intestinal contents, condemned carcasses and organs

3. How has this education & training helped the operation of the EHD?

We now have a clean and odourless environment, uncontaminated meat (good quality meat), healthy staff

4. What kind of public environmental education and awareness your department / unit been involved in?

General cleanup campaigns

5. Briefly describe the impact this has had on the public

The public is well educated on the management of waste

6. Can you illustrate this with one or two examples?

Our workers clean their work sections after work

7. With reference to the Department's Local Agenda 21 (Education and Training)

- a. What has worked well with the department staff?

Workers are trained and know their roles in systems

b. What has worked well with the public?

Don't know the views of the public as we work in an enclosed building.

c. What has not been working well?

We are still working in an old abattoir; most of the machines keep breaking down

d. In your opinion what measures need to be put in place?

A new abattoir should be built to easy the situation

APPENDIX I

Interview conducted 21/08/05

EHD 005 guiding questions (Mayor)

1. What do you think the Environmental Health Department Local Agenda 21 say about Education and Training?

Sensitise politicians on Local Agenda 21

2. What kind of environmental education and awareness training has your department / section conducted?

Workshops for councillors

3. How has this education & training helped the operation of the EHD?

Councillors can now include waste issues in their speeches at the wards

4. What kind of public environmental education and awareness your department / unit been involved in?

Clean up campaigns

5. Briefly describe the impact this has had on the public

Public willing to participate on waste issues

6. Can you illustrate this with one or two examples

Participation in clean up the world has been helpful as people are starting to manage waste

7. With reference to the Department's Local Agenda 21 (Education and Training)

a. What has worked well with the department staff?

Councillors address kgotla meetings on waste management

b. What has worked well with the public?

Public now participates in cleaning the environment together with politicians

c. What has not been working well?

The budget for waste management is too little and must be increased

d. In your opinion what measures need to be put in place?

Introduction of the council police can be better and may be you can come and address the full council meeting on the outcome of your study once you have finished.

APPENDIX J

Interview conducted 29/08 /05

EHD 006 Guiding questions (Councillor 1)

1. What do you think the Environmental Health Department Local Agenda 21 say about Education and Training? *The Department has not presented anything of that kind to us as councillors*
2. What kind of environmental education and awareness training has your department / section conducted?

Litter campaigns for the Wards

3. How has this education & training helped the operation of the EHD?
We discuss issues of waste management with our people
4. What kind of public environmental education and awareness your department / unit been involved in?
My ward has won one of the competitions
5. Briefly describe the impact this has had on the public
The people are now participating in litter picking
6. Can you illustrate this with one or two examples

Some of the wards in the city are clean

7. With reference to the Department's Local Agenda 21 (Education and Training)
 - i) What has worked well with the department staff?

The staff understands their role in facilitating cleanup campaigns

- j) What has worked well with the public?

The city is becoming clean which show public understanding

k) What has not been working well?

The budget for waste management is small

l) In your opinion what measures need to be put in place?

The budget for waste management must be increased

APPENDIX K

Interview conducted 30/08 /05

EHD 007 Guiding questions (Councillor 2)

1. What do you think the Environmental Health Department Local Agenda 21 say about Education and Training?

The department of environmental health has not explained that to us.

2. What kind of environmental education and awareness training has your department / section conducted?

Kgotla meetings for the public

3. How has this education & training helped the operation of the EHD?

Our people now understand how to separate waste at source

4. What kind of public environmental education and awareness your department / unit been involved in?

They move around with loud speakers encouraging people to keep their environment clean

5. Briefly describe the impact this has had on the public

Public now participate in ward competitions

6. Can you illustrate this with one or two examples?

There are now Ward competitions

7. With reference to the Department's Local Agenda 21 (Education and Training)

m) What has worked well with the department staff?

They are trying to keep the town clean

n) What has worked well with the public?

Some of the stakeholders also understand their role in keeping the city clean

o) What has not been working well?

Involvement of the public is slow

p) In your opinion what measures need to be put in place?

More money should be allocated to waste management

APPENDIX L: Introduction letter of Mr. B. Mogotsi



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EDUCATION DEPARTMENT

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5th July 2005

The Permanent Secretary
Ministry of Local Government
Gaborone

Dear Sir/Madam

Ref: Introduction of Mr. Barulaganye Mogotsi

This serves as a letter of introduction of Mr. Barulaganye Mogotsi, who is doing Masters in Education (Environmental Education) here. His student number is 04M5076.

Mr. Mogotsi is a Masters part-time student here at the University. As part of his final year requirements, he is expected to conduct a research programme which will contribute to his final year thesis. Your office is cordially requested to give Mr. Mogotsi the necessary assistance he may need to complete this potentially valuable piece of research.

His thesis is on *Implementation of Agenda 21 by the Gaborone City Council Environmental Health Department*. I must also emphasise at this juncture that his thesis will contribute significantly to the development of the country.

Thank you.

Yours Sincerely,

A handwritten signature in black ink, appearing to read 'Pat Irwin', written over a horizontal line.

Prof. Pat Irwin
Supervisor

APPENDIX M: Interview in Pictures



Snap 1: *Interview with EHD 001*



Snap 2: *Interview with Workers 1*



Snap 3: *Educational Materials used*



Snap 4: *Interview with worker 2s*



Snap 5: *Interview with EHD 003*



Snap 6: *Over spilling bins Gaborone*