

**THE ROLE OF VOLUNTARY PARTICIPATORY ORGANISATIONS  
IN SUSTAINABLE DEVELOPMENT: A CASE STUDY OF THE  
HAMMARSDALE WASTE MINIMISATION CLUB**

By

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Bachelor of Arts (Honours)

Submitted in partial fulfilment of the  
requirements for the degree of Master of Arts.  
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December 2000

I gratefully acknowledge the funding and support provided by the Water Research Commission for this research project.

Unless we change the direction we are headed, we might end  
Up where we are going

Chinese proverb

Responsibility for the environment entails concern for industries success.  
On the other hand, industry's success may depend also on its responsibility  
for the environment.

Jonathon Stapleton

## ABSTRACT

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In the postmodern era, the industrial sector faces a number of pressures. These pressures include keeping within the new and stricter laws, avoiding the stricter penalties in terms of finances and legal penalties, avoiding bad publicity that occurs through bad environmental action and responding to pressure groups and public concern, including industry's own work force. (Stapleton, 1996). Industry can respond to these pressures to become involved in efforts to 'green' their activities, for example, introducing waste minimisation practices into production.

To this end, the Pollution Research Group of the University of Natal, Durban was instrumental in developing the Hammarsdale Waste Minimisation Club early in 1999. Since its inauguration, this Club has been active in two primary spheres, namely, the implementation of waste minimisation into the industrial processes of member companies and the building of capacity of a range of employees of member companies.

This thesis provides a case study of the Hammarsdale Waste Minimisation Club in an attempt to assess the role of voluntary participatory organisations in sustainable development.

This study of the role of voluntary participatory organisations in sustainable development has taken place within the context of waste minimisation, waste minimisation clubs, and the specific characteristics of the Hammarsdale Industrial Complex and the regulatory context of South Africa. A combination of geographical and social theory has been used to study the characteristics of the Hammarsdale Waste Minimisation Club. Four bodies of literature have been drawn together to form a conceptual framework through which the case study can be analysed and understood. These bodies of literature cover the characteristics of postmodernism, the paradigm of sustainable development, social theory regarding civil society and social movements (including the environmental movement) and the impact of locality on activities.

Primary data for this study has been gathered through the use of participant observation and semi-structured interviewing techniques. The theoretical framework has played an important role in a process of qualitative data analysis and interpretation that aimed to establish answers to the research questions generated in this study.

Analysis of the Hammarsdale Waste Minimisation Club as a voluntary participatory organisation has revealed that these organisations do play a role in the achievement of sustainable development in two ways. Firstly, through the way in which they are organised and secondly, through the activities in which members of the organisation engage.

The case of the Hammarsdale Waste Minimisation Club, the Club has been organised in such a way as to promote the implementation of waste minimisation and to provide capacity building as extensively as possible. One important characteristic of the Hammarsdale Waste Minimisation Club is the strong sense of mutual support and community that has developed. These relationships enable the organisation to contribute to sustainable development as they facilitate the participation and procedural equity necessary for the achievement of sustainable development. Despite this, the organisational structure of the Club can be seen to have some weaknesses. For example, the failure to develop a constitution and the high level of dependency on the groups of professionals in the Club which has led to the need for motivation and leadership. It is possible that these weaknesses may lead to the decline of activities in the organisation or demise of the Hammarsdale Waste Minimisation Club in the long-term, thus inhibiting the role of the Club in sustainable development.

By comparison, the waste minimisation implementation and capacity building activities of the Hammarsdale Waste Minimisation Club enable the Club to make a direct contribution to sustainable development. The implementation of waste minimisation enables industry to become more efficient thus reducing its impact on the environment. Furthermore, capacity building has created a greater awareness of environmental matters while equipping employees of member companies with the skills to carry out waste minimisation for the benefit of the environment. Thus these activities can contribute to sustainable development through the increased care of local ecosystems and a reduction of the impact of industry on this natural environment.

Through these findings, this study proposes that if voluntary participatory organisations can be organised to provide a long-term motivational and facilitative framework through which activities that contribute to sustainable development can take place, then these organisations have an important role to play in bringing about on-the ground- changes which can lead ultimately to the achievement of sustainable development. Contrary to this, if care is not taken to create a voluntary participatory organisation that will be sustainable itself, the potential role of the organisation in sustainable development is reduced.

Notably, these findings are reliant on the investigation of one case study. It is suggested that further examinations of a wide range of voluntary participatory organisations would enhance these findings by creating a more general picture.

## ACKNOWLEDGEMENTS

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I would like to express my gratitude to everyone who has assisted in this project. In particular I would like to thank:

The Water Research Council for funding the first year of my research.

Di Scott, my supervisor, without whose help, guidance and friendship I would neither have embarked on nor completed this 'research journey'.

The members of the Pollution Research Group for involving me in their project.

Everyone who assisted with the data collection. Thanks to those who were willing to be interviewed and to those who allowed me to take part in their meetings and capacity building sessions.

Cathy Oelofse, for being a surrogate supervisor and always answering my 'quick' questions.

Hem, for helping me to get the final product looking great.

All my friends who supported me and understood that when they hardly saw me for months, I would reappear at some stage. I would especially like to thank Joslyn, for being a fellow human geographer and Marian, for being a great office-partner.

My family, for all their support and encouragement during this research process and for always taking my side!

Julian, for encouraging me and believing I could do this, even when I didn't believe it myself, and for being there at all the hurdles and all the victories, big and small.

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# CHAPTER ONE

## INTRODUCTION

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### 1.1 INTRODUCTION

Currently, industry faces the challenge of needing to reduce pollution and waste outputs and their raw material inputs, thus minimising their impact on the environment. This challenge is magnified due to the pressure of reducing the environmental impact without minimising competitiveness and profitability (Gunningham et al, 1997). This forces or encourages industries and businesses to become involved in efforts to 'green' their activities.

Sustainable development is currently a prominent development theory. According to Stapleton (1996,118), "Sustainable development provides a means of integrating environmental and economic goals to produce outcomes that are both environmentally acceptable and cost effective in an economic sense. Business and industry, being the chief sources of wealth creation in any community, have a major role to play in achieving these integrated goals". In accordance with the idea of 'thinking locally and acting globally' it will be greatly beneficial for the environment and potentially, for the 'bottom line' if industry begins to 'think globally and act entrepreneurially'.

One means through which industry can begin to contribute to sustainable development is through the formation of voluntary participatory organisations such as waste minimisation clubs. The extent of the role of these organisations can play in contributing to a sustainable future has yet to be fully determined. To this end, this chapter outlines the rationale for the study, explaining the motivation and the need for this research. In addition, the aims and objectives particular to this research are outlined in section 1.3.

The structure of the thesis and a brief outline of the contents of each chapter are detailed in section 1.4.

### 1.2 RATIONALE FOR THE STUDY

Successful implementation of sustainable development is reliant on a fundamental acceptance of the importance of the environment and an acceptance of the necessity of considering the long term impacts of current activities. It is essential that industrialists begin to see that the environment is vitally important to the sustainability (and profitability) of their businesses. Environmental awareness needs to be greatly increased so that individuals can begin to view themselves as

responsible for the quality of the environment. Environmentally friendly practices in industry need to stem from this paradigm change because if practice changes occur on the 'shaky' base of profit-motivation then it is questionable whether these changes will have any longevity.

Participation is a cornerstone of sustainable development, but often participation involves community participation in conflict or development situations. It is necessary to discover whether participatory mechanisms can play a significant role when participation occurs proactively between industries rather than between developers and community or industry and community in reaction to an emerging problem.

In order to explore these broad topics in a study of limited size, it has been necessary to direct research through the development of a specific aim and objectives of investigation. These are discussed in the following section.

### **1.3 AIMS AND OBJECTIVES**

The aim of this study is to assess role of voluntary participatory organisations in sustainable development. A case study of the Hammarsdale Waste Minimisation Club, as a voluntary participatory organisation, will be used to make this assessment.

A number of objectives were formulated in order to fulfil the aim of the study. These objectives determined more specific areas of investigation that could be integrated to meet the overarching aim of the research. The objectives of the study are as follows:

1. To analyse the function and the structure of the club as a conduit for waste minimisation.
2. To assess the extent to which the club is a voluntary, participatory organisation.
3. To find out the extent of capacity building facilitated by the club.
4. To measure the changes taking place in policy and practice as environmental awareness is being raised in member companies.
5. To analyse the barriers and motivators towards successful waste minimisation through the club.
6. To assess the role of the club in facilitating sustainable practice and to investigate how this is taking place.

This research has taken place in an attempt to meet the above-mentioned aims and objectives. The following section outlines the structure of the thesis as a rigorous record of this research.

### **1.4 STRUCTURE OF THE THESIS**

This section outlines the structure of the thesis chapters as they describes the background to the study, the theoretical framework of the study, the techniques used to carry out the research and the results and discussion emerging from the analysis of the data collected in the study.

As is evident above, this first chapter introduces the study, including the aims and objectives that have formed the nexus of the research.

Chapter Two discusses the background to the study. This chapter presents the concept of waste minimisation as a mechanism for increased industrial efficiency and as a means of reducing the impact of industry on the natural environment. Waste Minimisation Clubs have been formed to facilitate waste minimisation. The experiences of these organisations internationally and the formation of Clubs in South Africa has been reviewed in Chapter Two. The Hammarsdale Industrial Area is discussed, including details of the industrial conservancy that exists in this area. Furthermore, an overview of the current regulatory context that impacts on the activities of industry is provided.

The literature reviewed for the study is discussed in Chapter Three. This chapter uses a number of bodies of literature to create a theoretical framework through which the case study of the Hammarsdale Waste Minimisation Club can be analysed. An explanation of the nature of society in the postmodern era, including the social, economic and political features of this era forms the first body of literature reviewed. Secondly, the paradigm of sustainable development has been considered, with a focus on those elements that are relevant to this study. Thirdly, social theories regarding civil society and the rise of social movements that aim to create societal change is discussed. Due to the nature of this particular study, a particular focus is directed at the environmental movement. In addition one of the tools of the environmental movement is that of environmental education. Some attention is given to theories of environmental education and the potential impact of these kinds of education. Fourthly, because the spatial contexts within which these processes occur has an impact on the outcomes of activities, an exploration of literature regarding space and place have been reviewed to complete the theoretical framework.

Chapter Four describes the methods of research used to carry out the study. The primary techniques of data collection for the study have been participant observation and semi-structured interviews. These data collection techniques have been reviewed. In addition details of the formulation of the sample used as the main source of data has been discussed. Qualitative methods of analysis have been used to analyse the data gathered in this study. The iterative process of data analysis has been explained.

Chapter Five provides the findings of the study through a discussion of the themes emerging from the analysis of the primary data. This chapter explains the ways in which the Hammarsdale Waste Minimisation Club has been organised and describes the activities that have been carried out through the Club. The role-players in the Club, the hierarchical nature of the Club's structure and the relationships that have been formed within the Club and in a broader context have been detailed. The extent of the implementation of waste minimisation in member companies and the capacity building programme has been addressed. These characteristics of the HWMC have been discussed in the light of the theoretical framework developed for the study in an attempt to discover the extent of the contribution of this Club to sustainable development.

Finally, Chapter Six forms the conclusion of the study. This chapter provides a summary of the main points of the research. In addition, a number of recommendations have been formulated through the course of the research process. This chapter lists these recommendations in an attempt to provide some guidelines that will enable voluntary participatory organisations to play a greater role in sustainable development.

## **1.5 CONCLUSION**

This study aims to investigate the role of voluntary participatory organisations in sustainable development through the use of a case study of the Hammarsdale Waste Minimisation Club. The meeting of the aims and objectives of the study has been carried out through a review of background material, the formulation of a theoretical framework, the collection of primary data and the qualitative analysis of this data.

The following chapter provides the background to the study in order to broaden understanding of the case study used in the research.



## CHAPTER TWO

### BACKGROUND TO THE STUDY

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#### 2.1 INTRODUCTION

This chapter provides the background for this investigation into waste minimisation clubs as a mechanism which can contribute to sustainable development.

Currently, industry faces the challenge of minimising their impact on the environment. This challenge is magnified due to the pressure of reducing the environmental impact without minimising competitiveness and profitability (Gunningham et al, 1997). One means of meeting this challenge is to introduce a programme of waste minimisation into industrial processes. In section 2.1 waste minimisation is presented, section 2.2 presents some details of the study area of Hammarsdale, in the Durban Metropolitan Area, in which a concerted effort is being made by industry to minimise their waste. Furthermore, section 2.3 discusses the current regulatory context within which industry operates and which encourages waste minimisation.

#### 2.2 WASTE MINIMISATION

Since the main focus of the club in Hammarsdale is waste minimisation, it is important to understand what this entails.

##### 2.2.1 What is Waste Minimisation?

Waste minimisation is defined as the application of a systematic approach to reducing the generation of waste at source (Barclay et al, 1999). This approach has much less of a focus on dealing with the common method of ‘end-of-pipe’ waste disposal, and rather attempts to reduce the amount of waste reaching the ‘end of the pipe’ (Gunningham et al, 1997). It is much less costly to prevent the generation of pollution than to dispose of it effectively (Cleaner Production Case Studies Directory, Internet, 1999)

Waste minimisation is often referred to as cleaner production (see Gunningham et al, 1997). UNEP defines cleaner production as “the continuous application of an integrated preventative environmental strategy applied to processes, products and services to increase eco-efficiency and reduce risks for humans and the environment” (in Gunningham et al, 1997, 2). Thus the similar concepts of waste minimisation and cleaner production should be seen as adhering to the principles

of sustainable development in their effort to decrease environmental impacts of industry for the benefit of the systems upon which people depend now and in the future.

There is much emphasis on the implementation of waste minimisation through a systematic approach. This approach requires input on all levels from management to the shopfloor, and can include process changes, internal recycling, the reduction or alteration of raw materials and the implementation of new technology within the manufacturing process (Gunningham et al, 1997). Through a process of waste minimisation, pollution prevention moves past being an *ad hoc* reactive practice and becomes firmly integrated in the management practices of industrial concerns (Gunningham et al, 1997).

The environmental performance of a company is improved when waste minimisation is applied to products and processes. The use of water, energy and raw materials is reduced, limiting the impact of industrial practices on the environment and reducing resource exploitation. These reductions result in financial savings for the company as utility costs drop and less hazardous waste needs to be disposed of (Barclay et al, 1999). The operating efficiency of a plant can be improved and 'greener' products can be produced (Gunningham et al, 1997). Since improvements can often be achieved with very little initial cost, the practice of waste minimisation can increase the profitability of the industry while it may also enable a company to benefit from a green corporate image (Stapleton, 1996).

Although waste minimisation has a host of benefits for industry, communities and the environment there are a number of barriers that prevent companies from adopting this strategy. Some of these barriers are:

- ❖ Lack of knowledge and awareness
- ❖ Reluctance to change
- ❖ Acceptance of end-of-pipe strategies as the norm
- ❖ Belief in the adequacy of current production processes and systems
- ❖ Lack of resources to make the change e.g. time, manpower, process data and measurements (Cleaner Production case studies Directory, internet, 1999).

Despite these barriers many companies have successfully implemented waste minimisation practices and the waste minimisation strategy is seen increasingly by governments as a viable waste and pollution management option.

One means of enabling the implementation of waste minimisation in industry is through the development of waste minimisation clubs. These clubs have been successful internationally, particularly in the developed world, and are now being introduced in South Africa. The following section describes the history of waste minimisation clubs overseas and in South Africa.

### **2.2.2 Waste Minimisation Clubs: An International and South African History**

Waste minimisation requires skills development and information sharing and thus a participatory and informative mechanism to facilitate waste minimisation in industry was needed. To meet these needs, the concept of waste minimisation clubs was developed. Waste minimisation clubs act to encourage the sharing of knowledge regarding the implementation of waste minimisation measures amongst industrial companies that are situated in the same location. The clubs can be formed with members from sector-specific industries or from across sectors, e.g. clubs based in a particular place. (CEST, 1995) Members have benefited from these clubs through improved environmental performance, improved process efficiency and the large financial savings that accompany these improvements (Barclay et al, 1999).

To achieve the successful implementation of waste minimisation clubs in South Africa it is necessary to implement the lessons learnt from the experiences of previous waste minimisation projects and to make use of the abundant literature regarding waste minimisation, environmental education and public participation.

#### An International Example

A number of waste minimisation projects have been carried out in New Zealand, the Netherlands, India and the United Kingdom (Barclay et al, 1999). These projects successfully implemented waste management in industry using the waste minimisation club concept as the conduit for waste minimisation. According to Barclay et al (1999), these clubs were often funded (at least partially) by government organisations and include examples of both cross-sectoral and sector-specific membership. In many cases a consultant was appointed to deal with the technical waste audits and to organise meetings of the clubs (Barclay et al, 1999). The experiences gained through international waste minimisation clubs are valuable for the establishment of South African clubs.

One example of a waste minimisation club project is the Aire and Calder Project in the United Kingdom. This project was launched in March 1992 as a response to increasing environmental regulation and as a means to decrease the rising costs incurred by industry due to waste disposal. The catchment area of the Aire and Calder rivers was used as the location of the project because the area had a history of excessive pollution (CEST, 1995).

Enviros-March (then known as March Consulting) was appointed the managers of the Aire and Calder project (CEST, 1995). Representatives of this consultancy are acting as consultants on the Pollution Research Group's waste minimisation club project and their experience gained on the Aire and Calder Project is invaluable to facilitating the successful implementation of waste minimisation through the pilot waste minimisation clubs in South Africa.

According to the experiences of the Aire and Calder project, the key factors for success are:

- ❖ Explicit management commitment
- ❖ Effective project champions
- ❖ Training and involvement in the project across the company
- ❖ Monitoring and targeting for continuing improvement (CEST, 1995); and
- ❖ The availability and use of a consultant or external manager (CEST, 1995a).

Good housekeeping measures were introduced into factories as a means of implementing waste minimisation practices within companies. These measures include minor changes to working practices that have a relatively short payback time and are not costly to implement. Good housekeeping measures generated positive results and significant waste reduction (CEST, 1995).

Up to 70% of the companies involved in the Aire and Calder project have environmental policies. Even though these companies have environmental policies few had set targets to reduce environmental impacts and to reduce or minimise waste. It is necessary for the successful facilitation of waste minimisation that companies have individuals or teams responsible for the enactment of environmental policies so that targets can be set and actions taken to meet these goals (CEST, 1995).

The main barriers to successful implementation of waste minimisation in the Aire and Calder project were seen as the lack of time to invest in waste minimisation initiatives and monitoring and targeting, as well as a lack of human resources to devote to accomplishing waste minimisation. It was found that companies that were in direct competition were less willing to share information with their competition thus hindering the process of knowledge sharing (CEST, 1995a). It seems apparent from this that clubs may need to be formed from companies that do not compete directly even if they are in the same broad industrial sector.

One finding from this project is that environmental issues are viewed by industrialists as a threat or problem rather than as an opportunity. The experiences of the Aire and Calder Project indicate that environmental concern is usually due to the need to boost public relations while “sustainable development had little or no meaning at an operational level. In most cases project champions (leaders in each company) neither understood nor recognised the concept” (CEST, 1995a). It is within the context of sustainable development that waste minimisation programmes need to take place. It is unfortunate that those acting towards sustainable manufacturing have a narrow view of their achievements and of the importance of the steps taken towards waste minimisation in terms of resolving a multitude of environmental problems (CEST, 1995a).

The lessons learnt from international experiences of waste minimisation projects have a number of benefits. The consideration of the concept of waste minimisation, the analysis of the role of clubs as a mechanism for facilitating waste minimisation and the recognition of the importance of environmental education has enabled the development of the process, structure and functioning of South African waste minimisation clubs.

#### Waste Minimisation Clubs in South Africa

A government-funded research project has been established to determine whether the waste minimisation club concept is a viable pollution control option in South Africa. The research project has as its main objectives the initiation and managing of two waste minimisation clubs within the Durban Metropolitan Area (DMA). The South African Water Research Commission (WRC) allocated funding of R1.2 million to the Pollution Research Group (PRG) at the University of Natal, Durban for a waste minimisation club project from 1998 to 2000 (Barclay et al, 1999). Additional funding was granted through the European Union's Thermie Project. Thermie funding matches those of the South African Water Research Commission and enables the involvement of two European consultants in the project.

The Pollution Research Group is a well-established research centre in the School of Chemical Engineering at the University of Natal, Durban. Research in this centre focuses largely on technical and scientific methods as a means of reducing the impact of industrial and other processes on the environment (Friedrich, pers com). There is a strong research focus on effluent control as an 'end of pipe' solution to waste generation. In addition, research is carried out in the areas of pulp and paper production, life cycle assessments and the prevention of waste generation through cleaner production and waste minimisation (Friedrich, pers com).

The European funding enabled two international consultants to work on the project. Working in conjunction with the PRG, each consultant has played a particular role in the establishment and facilitation of the clubs. The focus from Thermie is on energy savings and thus the consultant from Enviros-March in the United Kingdom has been especially involved in saving energy through the waste minimisation approach. The second consultant is from Kagiso-COWI, a Danish organisation that is based in South Africa. The focus of Kagiso-COWI's involvement has been on environmental education.

In addition to the PRG and the consultants, a number of post-graduate research students from differing disciplines are involved in the waste minimisation project. In March 1999, the School of Life and Environmental Science (SLES) was approached by the PRG to assist with the project to develop aspects relating to environmental education and training. In addition it was felt that a critical analysis of the interrelations involved in the club approach would be beneficial to the long-

term success of waste minimisation clubs. While working to achieve the general aims of the PRG the post graduate student in the SLES is involved primarily in the field of environmental education and analysis of the participatory nature of the Hammarsdale Waste Minimisation Club (HWMC).

Through this project, the first waste minimisation club in South Africa was established in June 1998 for the metal finishing industry in the DMA (Barclay et al, 1999). The second club was initiated in the Hammarsdale area in November 1998 and involves a cross-sectoral membership. These clubs will act as pilot studies of the potential success of the club mechanism for promoting waste minimisation within South Africa.

After a recruitment meeting in June 1998, 29 companies joined together to form the Waste Minimisation Club for the Metal Finishing Industry (Barclay et al, 1999). These members have gained extensive experience in waste minimisation and have made significant savings by implementing a waste minimisation strategy. Members have benefited from the club through improved environmental performance, improved process efficiency and the large financial savings that accompany these improvements (Barclay et al, 1999).

The Hammarsdale Waste Minimisation Club was initiated six months after the metal finishers club was established (Buckley, 13/9/2000). The details of this club will be discussed in detail throughout chapters four and five as its activities and organisation form the main focus of this study.

Clubs, by their nature are voluntary, participatory bodies. Thus their function is to facilitate the participation of members in a common project or interest. In this role, clubs differ from other participatory environmental decision-making organisations in South Africa such as forums and panels which are often constituted to monitor environmental impacts and resolve specific issues of conflict between a number of stakeholder groups, for example, bodies of authority, industry and communities (see Scott, 1999). Some of the guidelines for public participation thus become largely irrelevant when applied to the concept of the waste minimisation club and the paths of these clubs remains largely uncharted within the South African context. The lessons learnt from the international, and local, experiences of waste minimisation clubs will inform new methods and progressions in participation and voluntary actions.

The second club was initiated in November 1998 in the Hammarsdale Area. The following section describes the industrial area of Hammarsdale where the second waste minimisation club was established.

### **2.3 STUDY AREA: THE HAMMARSDALE INDUSTRIAL COMPLEX**

The Hammarsdale industrial area is located on the outskirts of the Durban metropolitan region and adjacent to Mpumalanga, a formally black residential area (see Figure One). Hammarsdale was initially developed during the 1970s as an industrial area to encourage industry to move out of the central urban areas, closer to formally black areas (Bell, 1998). Mpumalanga was to be the labour pool for the Hammarsdale industrial area, thus encouraging residents to work near to their homes rather than commuting into the urban areas.

Industry in Hammarsdale focuses mainly on the textile sector with approximately nine textile factories and a number of dyeing factories in the area (Bell, 1998). Other companies are also located in the area, for example, two chicken processing plants and a chemical manufacturing company and the Hammarsdale Waste Water Treatment Works (Bell, 1998).

As evident in Figure Two, the Sterkspruit River runs alongside the Hammarsdale industrial area and into the Shongweni Dam. The river runs adjacent to the wastewater treatment works and effluent is released into it, causing the impact of industry on the local environment to increase at this point. Thus creating a heightened awareness of the need for effluent control.





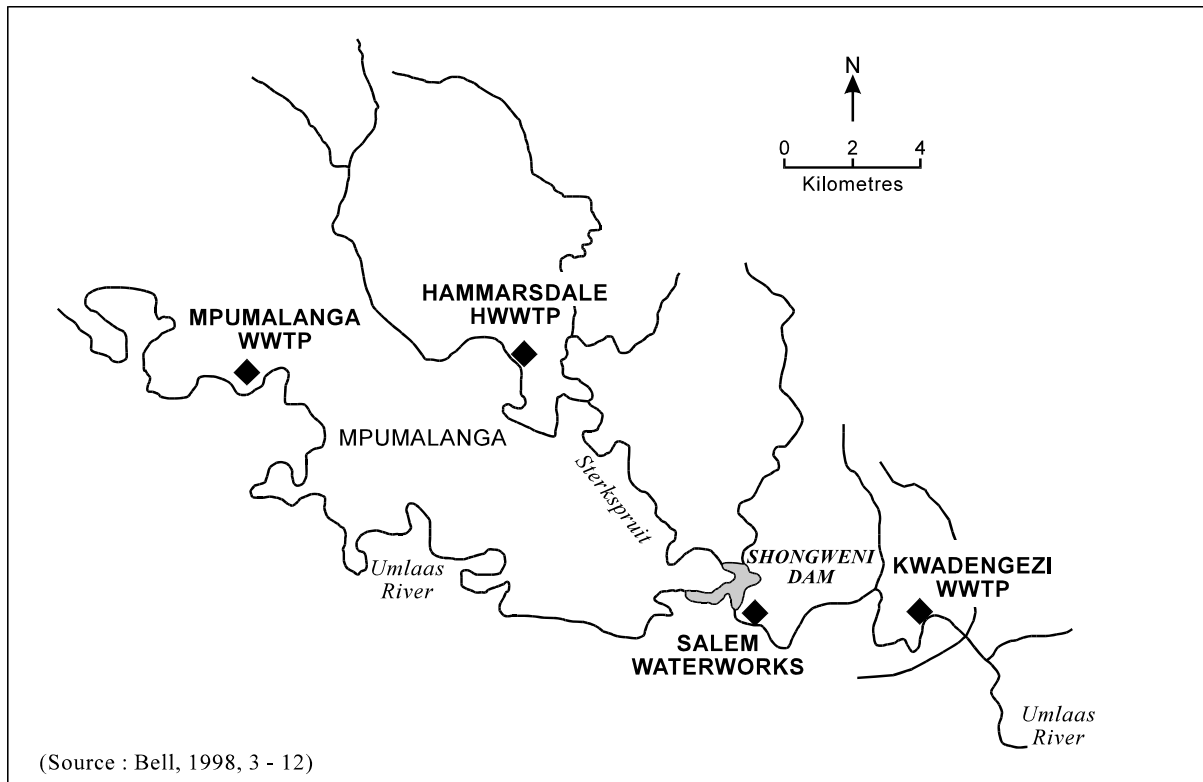


Figure 2 : The Sterkspruit and Umlaas Rivers adjacent to the Hammarsdale Area.

### 2.3.1 Waste Management and Disposal Facilities in Hammarsdale

There is no HH site for the dumping of toxic wastes in KwaZulu Natal and so these have to be trucked to Gauteng or Port Elizabeth (Mugonda, 1998). Often, industries in Hammarsdale are forced to send their toxic waste to Gauteng to be disposed of in a HH landfill (Buckley, pers com). Transferral of waste and disposal costs are extremely high, placing an added financial pressure on industry and creating the potential for illegal dumping (Mugonda, 1998). This pressure has the potential to encourage waste minimisation as this process provides a means of reducing both toxicity and volume of waste that would need to be disposed of, thus enabling the dumping of less toxic materials in local landfills and reducing the overall costs of waste disposal.

The Hammarsdale Industrial Complex has a wastewater treatment works (WWTW) located on the outskirts of the industrial area. This WWTW is responsible for the treatment of effluent released from the industries in the Hammarsdale Area (Bell, 1998).

### 2.3.2 The Hammarsdale Industrial Conservancy

Conservancies are voluntary environmental forums registered with the KwaZulu-Natal Nature Conservation Services (KZNNCS). Hammarsdale has one of the few industrial conservancies in the DMA. The Hammarsdale Industrial Conservancy (HIC) was formed early in 1998 and acts as a forum for discussion and for action towards the improvement of the environment of the Hammarsdale area (Naicker, pers comm.). The conservancy consists of representatives of a number

of companies within the Hammarsdale area, as well as representatives from the KZNNCS, Durban Metro and Umgeni Water. The HIC meets at regular intervals to discuss activities for the improvement of the surrounding environment and has as one of its main projects the upgrading of the water quality of the Hammarsdale Falls and the Hammarsdale Dam which are currently badly polluted (Naicker, 31 May 2000).

Just as the location of Hammarsdale and its very existence was initiated by the national policy of apartheid, the current national regulatory context impacts on the activities of industry in this area. New legislation has been formulated and passed regarding the environment and acceptable conduct in industry. The following section briefly touches on some of the legislation and policy that currently impacts on the Hammarsdale area.

## **2.4 THE REGULATORY CONTEXT OF THE HAMMARSDALE WASTE MINIMISATION CLUB**

Recently, South African environmental legislation and policy has reflected the increased acceptance of sustainable development across the globe (Scott et al, 2000). The following section outlines the regulatory context that discourages environmentally damaging industrial activity and encourages the adoption of waste minimisation practices.

### **2.4.1 International Responsibilities**

To date, a host of international agreements have been made pertaining to the environment. South Africa has acceded to or ratified nineteen of the twenty-six international agreements which exist (White paper on Integrated Pollution and Waste Management for South Africa, 2000). Some of these international treaties relate specifically to air, water and land pollution while others relate to the environment in an integrated manner that incorporates all three parts of the natural environment (White paper on Integrated Pollution and Waste Management for South Africa, 2000).

The endorsement of these international agreements requires that national legislation and actions realise the intentions of the agreements. To this end, a number of laws and strategies have been instigated to control pollution and to protect the environment. The following list considers only those laws and strategies relevant to industry and, in particular, to waste management and is by no means a definitive list of environmental legislation and policy within South Africa.

### **2.4.2 National Legislation and Policy**

A number of laws and policies form a regulatory web in which waste minimisation and waste minimisation clubs need to act, and which encourage waste minimisation.

The following list details, chronologically, some of the important legislation which forms this context:

- ❖ Atmospheric Pollution Prevention Act (Act 45 of 1965)
- ❖ Environmental Conservation Act (Act 73 of 1989), especially section 24
- ❖ The Constitution of the Republic of South Africa (Act 108 of 1996)
- ❖ The Water Services Act (Act 108 of 1997)
- ❖ National Water Act (Act 36 of 1998)
- ❖ National Environmental Management Act (Act 107 of 1998)
- ❖ National Waste Management Strategies and Action Plans for South Africa, August 1999
- ❖ White paper on Integrated Pollution and Waste Management for South Africa, notice 227 of 2000

The role and impacts of some of these laws and policies are elaborated on below.

#### The National Constitution

The Constitution forms the overarching framework within which all other legislation is framed.

The environmental right in section 24 of the Bill of Rights provides that:

"Everyone has the right:

- a. To an environment that is not harmful to their health or well-being; and
- b. To have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that -
  - i. prevent pollution and ecological degradation;
  - ii. promote conservation; and
  - iii. secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development " (The constitution of the Republic of South Africa, 1996).

It is recognised through this right that the environment in South Africa should not impact negatively on human wellbeing. Furthermore, the constitution requires the state to promulgate legislation and to implement policies to uphold this right (The constitution of the Republic of South Africa, 1996).

#### National Environmental Management Act (NEMA)

NEMA is founded on the principles of human rights laid down in the South African Constitution and on the principles of sustainable development.

NEMA (1998) takes a strong stance regarding industrial impacts on the environment. It protects the worker by enabling him/her to not undertake any action that is felt to be environmentally damaging without the threat of any recrimination. It also makes the head of any company personally responsible for any environmental damage caused by that company with the possibility of

incarceration. NEMA provides for harsher penalties for damage to the environment and requires that the polluter pays.

This law facilitates the resolution of environmental problems through conciliation and partnerships and uses prosecution and enforcement as a last resort. It requires stakeholders to participate in the generation of local solutions to environmental problems and recognises the legitimacy of local knowledge (NEMA, 1998).

NEMA provides the foundation for all other environmental laws and requires the government to pass further legislation for the setting of penalties and the provision of management directives for the host of elements which make up the natural environment within South Africa.

#### The White Paper on Integrated Pollution and Waste Management for South Africa

The White Paper on Integrated Pollution and Waste Management for South Africa aims to integrate fragmented and uncoordinated environmental legislation to increase control and monitoring of pollution and to fill gaps which exist in the current legislation.

The development of partnerships and the use of public participation is an important focus of the white paper (Mugonda, 1998). The fostering of partnerships between government and the private sector and between the various government departments is seen as being imperative for effective and sustainable pollution and waste management.

Some of the objectives of the White Paper are:

- ❖ To promote cleaner production and establish mechanisms to ensure continuous improvements in best practice in all areas of environmental management.
- ❖ To prevent, reduce and manage pollution
- ❖ To set targets to minimise waste generation and pollution at source and promote a hierarchy of waste management practices, namely reduction of waste at source, reuse and recycling with safe disposal as the last resort.
- ❖ To regulate and monitor waste production, enforce waste control measures, and co-ordinate administration of integrated pollution and waste management through a single government department.

In a positive light, these objectives provide an enabling legal context for waste minimisation clubs as they show an increased focus on pollution prevention rather than end-of-pipe solutions. The development of this white paper also indicates that waste minimisation as a form of pollution control may be a mandated activity within industry, forcing industry to become involved in the process. This would then result in the loss of the voluntary nature of waste minimisation at present.

### The National Waste Management Strategy for South Africa and Action Plans

The National Waste Management Strategy (NWMS) recognises that existing legislation is still fragmented and requires a review of existing laws to produce a more integrated approach to waste management.

As a means for integrated waste management, the NWMS pays particular attention to waste minimisation. For the purposes of the NWMS, waste minimisation refers specifically to the steps taken towards source reduction and/or internal recycling so that there is a reduction in the “volume and/or environmental impact of waste that is generated, treated, stored or disposed of” (NWMS, September 1999, 9). This definition is in line with the concept used by the waste minimisation clubs and will serve to encourage further activities and clubs by creating the official recognition of waste minimisation.

The Action Plan for this strategy encourages government to provide sufficient motivation and capacity amongst waste generators such as industry so that they can successfully implement waste minimisation and recycling practices. The plan details a programme of information dissemination on waste minimisation by 2001, the development of regulations and their enforcement by 2002 while concurrently implementing economic incentives for the adoption of these waste management strategies (NWMS, September, 1999). The clubs therefore are a forerunner to the implementation of these action plans.

In addition to these national laws and policies local bylaws and regulations provide standards for effluent and other pollutants, thus providing a network of laws and policies to guide the actions of industry in an attempt to reduce pollution and waste in an integrated manner. The following section briefly discusses the regulatory context of industry in the Durban Metropolitan Area.

#### **2.4.3 The Regulatory Context of the Durban Metropolitan Area**

In terms of local legislation and policy, many laws are relevant to the regulation of activities that impact on the environment. This discussion briefly introduces some of the legislation that acts to regulate the activities of industry in an attempt to limit the negative impacts of these activities.

Metro bylaws exist to control health and safety within industry, to control effluent disposal and to regulate pollutants such as smoke and air-borne chemicals being released from industry (Sampson, 2000). In some cases, companies are required to obtain permits, certificates, licences and authorisations for activities that impact on the environment. Local government is becoming increasingly authoritative regarding environmental controls therefore obtaining (and retaining) licences and permits is now subject to strict requirements (Sampson, 2000).

No acts or ordinances that are specifically related to pollution control have been passed in KwaZulu-Natal since 1996 but there have been initiatives for the development of further legislation in this area, for example, the proposal for the development of a KwaZulu-Natal waste management policy (Sampson, 2000).

One important group of bylaws regards the disposal of effluent within the DMA. In this area legislation has been passed recently, for example, the Department of Wastewater Management introduced the Sewage Disposal Bylaws in May 1999 (Sampson, 2000). These bylaws prevent the discharge of solid, liquid or gaseous substances, other than storm water, into storm water or natural water systems without a permit (Sewage Disposal Bylaws MN27, 1999). In addition, they determine the quality and types of effluent that can be discharged, providing the criteria for these permits (Sewage Disposal Bylaws MN27, 1999).

Rather than simply policing effluent and waste activities, the Metro does assist businesses to avoid the fines and possible imprisonment that are the results of legal infringements. Methods to reduce corporate and personal environmental liability are suggested by the Metro and these are readily available to businesses on the internet or through local government personnel (Sampson, 2000). Furthermore, programmes such as the Local Agenda 21 (LA21) programme provide an enabling climate for environmentally beneficial activities.

The Durban Metropolitan Council has the most advanced LA21 programme in South Africa (Sekhesa et al, 2000). Local Agenda 21 was adopted as a corporate responsibility by the Metro council in 1994 (Sekhesa et al, 2000). The LA21 programme has reached its third phase after the completion of a baseline study of the DMA and the subsequent development of activities for increased care of the environment within the DMA and for the of increase environmental awareness and capacity within the DMA (Metro, 2000). Currently, activities focus on implementing LA21 at an institutional level and providing strategic input for the adoption of LA21 principles in a number of areas within the DMA (Sekhesa et al, 2000).

A host of legislation and policy exists to guide and to regulate the activities of industry so that these activities have a limited impact on the natural environment and local communities. This regulatory context is comprised of international policies, national and local legislation that are influenced by the global trend towards the adoption of the principles of sustainable development.

## **2.4 CONCLUSION**

Waste minimisation is an emerging means of managing waste and pollutants within the industrial sector both internationally and nationally. This chapter has described the concept of waste

minimisation as a systematic approach adopted by industry to reduce the generation of waste at source.

Waste Minimisation Clubs have been formed both internationally and locally as a mechanism for the implementation of this concept and the benefits that can accrue from the adoption of the waste minimisation concept. The international experiences of these clubs have been discussed in this chapter through the example of the Aire and Calder Project in the United Kingdom. The initiation of waste minimisation clubs in South Africa through the Pollution Research Group has been discussed. Currently in the Durban Metropolitan Area, a large project for the development of waste minimisation clubs is underway. The Waste Minimisation Club that is the focus of this particular study (as part of the larger one) is based in the Hammarsdale Industrial Complex, an industrial area which has a proactive attitude to the environment through its industrial conservancy.

Finally, South African clubs have developed in a regulatory context within which industry operates and which encourages waste minimisation. This chapter has discussed the international policies and national and local legislation that aims to introduce the concepts of sustainable development into the everyday practices of industry.

This study of the role of voluntary participatory organisations in sustainable development has taken place within this background of waste minimisation, waste minimisation clubs, and the particularities of locality in terms of the Hammarsdale Industrial Complex and the regulatory context of South Africa.

## CHAPTER THREE

### LITERATURE REVIEW

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#### 3.1 INTRODUCTION

The goal of the chapter is to understand the role of waste minimisation clubs in promoting sustainability. To this end, the chapter provides a review of the literature that offers a conceptual framework for the analysis of the case study. It is proposed here that four bodies of literature are useful for building an understanding of the case study. These incorporate some of the social theories that explain the social transformation of society over the last two decades of the twentieth century.

Firstly, this literature broadly explains characteristics of the postmodern era in terms of the increasingly changeable and global nature of social, economic and political contexts of this era. It is proposed here that an understanding of this broader context is essential in the analysis of waste minimisation clubs.

Secondly, within this postmodern era, the paradigm of sustainable development has emerged as a dominant force in environmental management and in planning and development policies. Sustainable development literature is thus reviewed, focussing on those elements that are relevant to this study.

Thirdly, social theory that explains the global and local rise of civil society since the 1970s is reviewed. It is believed that this social theory provides a conceptual framework for the analysis of the institution of waste minimisation clubs as mechanisms of change in society. Due to the environmental aspects of this study, particular attention is paid to the environmental movement as one of the dominant social movements in contemporary society. One outcome of sustainable development-influenced social movement activity is that of environmental education therefore some insights into environmental education are provided within this chapter.

Finally, it is recognised that although these broader processes play a powerful role in determining social and environmental change, they do so within spatial contexts. In particular, local contexts present a range of contingent factors which result in varying outcomes of global processes at a local level. It is for this reason that the body of literature exploring the role of space and place in societal structures and processes of change is reviewed.



Prior to entering the complexities of sustainable development and social movement theories it is worthwhile contemplating the general, global context in which all local actions occur and by which they are increasingly influenced – this is the post modern context.

## **3.2 THE POSTMODERN CONTEXT**

### **3.2.1 Introduction**

It is argued by many that the changes occurring throughout the societies of the globe are bringing a new form of society into being, these new forms of society are described as being ‘postmodern’ or ‘late capitalist’ (Garner, 1996). These emerging forms of society will be discussed below.

### **3.2.2 Characteristics of Society in the Postmodern Era**

There are a number of changes occurring within systems of production and the economy. There has been a decline of the Fordist capitalist models of production as mass production and skilled labour have declined in favour of multi-skilling and contract labour (Soja, 1995). Changes in the labour market have occurred concurrently with increases in the size and contribution of the service sector and the explosion of communication and computer technology (Soja, 1995). The market place is becoming increasingly global so that global labour markets are strengthening and capital is less fixed to physical space (Szerzynsky, 1998). The number and strength of multinational corporations has grown, resulting in increased cross-border economic activity and the reduction of the economic sovereignty of the nation-state.

The globalisation of culture is occurring with the development of a multicultural, incorporative culture. A global culture is emerging because of trends within the global media, international markets for goods and services and the mixing of cultures in a global system of relatively porous boundaries. Alongside the internationalisation of this culture of consumption, the less powerful cultural groups have begun to assert their identity in an effort to gain recognition and to prevent the loss of identity in an increasingly global culture (Scott, 1990). This has led to the rise of multicultural societies. In this case, changes in the postmodern can be seen as contradictory since as local cultural empowerment occurs a global, more uniform culture is emerging. It is with this contradiction in mind that Garner (1996, 98) states that “the concept of the postmodern does not suggest that the societies of the future will be clones of the modern European and North American societies, but much more complex mixes of several traditions, formed in a clash of western, Modern ideologies and revitalised indigenous culture”.

A further change that is seen to be indicative of postmodern society is the change in the roles of governments and the increasing devolution of power to the grass roots (Scott and Oelofse, 1998). Garner (1996, 378) believes that “at the end of the 20<sup>th</sup> century the liberal and liberal democratic

model of states and societies has again become a leading global model...this has lead... to the expansion of the function of civil societies ...The state is relatively limited in its functions, while a large and often heterogeneous civil society is the site of private economic, cultural and personal practices". Thus, in the postmodern context, the power of the state is becoming increasingly localised. Civil society is being asked (and is itself demanding) to take part in decision-making and there is increasing participatory activity (Friedman, 1998).

Within this emerging and adaptable postmodern context has arisen the paradigm of sustainable development. The following section outlines the concepts contained within the sustainable development paradigm.

### **3.3 SUSTAINABLE DEVELOPMENT**

#### **3.3.1 Introduction**

This section introduces the concept of sustainable development, discussing the principles and key elements of this paradigm. In addition, it introduces the strategy of Local Agenda 21 for the implementation of these principles. It is not the intention of this section to present an exhaustive review of sustainable development literature but to use these concepts as a framework for the understanding of the waste minimisation clubs.

#### **3.3.2 Definitions and Principles**

Sustainable development is a development approach that takes into consideration the condition of the globe and its people and attempts to improve these conditions in both the short and long term, allowing for vastly differing localised systems of politics, culture and economics and especially considering local biophysical characteristics (Patel, 2000)

The ideology of sustainable development was developed over the last decades of the twentieth century. This occurred as thinking on environmental management and development began to merge into a single paradigm. A number of global fora responded to the growing global concern for the environment and provided a critique of previous development approaches and practices. Amongst other events and publications, the United Nations Conference on the Human Environment in 1972, the publication of the 'World Conservation Strategy' in 1980 and the Brundtland Report in 1987, and the many discussions and strategies emanating from the United Nations Conference for Environment and Development in 1992, spurred on the emergence of the sustainable development paradigm in which development and environment are viewed in conjunction with one another (Adams, 1990).

Many definitions of sustainable development exist (Kirkby et al, 1995), providing a wide net in which many divergent ideologies and opinions can be caught. This flexibility of definition enables widespread and unprescribed action that aims towards the achievement of a balance between the demands of human activity and the required conditions for the ongoing health of natural systems (Lele, 1991). The most commonly used and accepted definition of sustainable development is that of the Brundtland Commission of 1987, which states that sustainable development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Kirkby et al, 1995, 1).

Stemming from the Brundtland definition, the following nine principles of sustainable development have been developed:

1. Respect and care for the community of life
2. Improvement of the quality of life
3. Conservation of the Earth’s vitality and diversity
4. Minimisation of the depletion of non-renewable resources
5. Keeping within the Earth’s carrying capacity
6. Changing of personal attitudes and practices
7. Enabling of communities to care for their own environments
8. Provision of a national framework for integrating development and conservation
9. Creation of a global alliance (Yeld, 1993, 7).

These principles endeavour to incorporate the four key elements of sustainable development while making them more concrete. They point towards a multi-faceted and dynamic approach that can move societies towards a future of sustainability.

Rather than being viewed as an instant cure, sustainable development should be understood “as a pathway leading in the right direction” (van der Merwe and van der Merwe, 1999, 4). The emphasis on futurity and sustainability renders sustainable development a normative approach. Sustainable development should be viewed as an holistic process that incorporates four key elements; futurity, environment, equity and public participation (Cooper, 1995 cited in Sowman, 1999).

Futurity should be understood as the aims of sustainable development to provide a stable environment for future generations (Lele, 1991). Sustainable development provides for making changes in the present but it argues that while changes are made, their impact on biophysical and social systems in the future should be considered.

The public participation element of sustainable development indicates the desire for increased participation by civil society in attempts to improve their own welfare and that of their immediate (and distant) environments. Sharp (1995, 310) argues that “people’s rights and responsibilities form the crux of any discussion of sustainability”. Sustainable development determines that changes should be made “in accordance with criteria which take account of the needs of others and which protect the planet and future generations” (Sharp, 1995, 310). Sharp (1995) believes that by using these sustainable development criteria people at all levels of power should be able to improve their lives. The role of civil society and participatory actions for sustainability will be further discussed in sections 3.4 and 3.5.

As evident in Figure Three, ideals of equity form a cornerstone of sustainable development. The Brundtland Report argues that the “catastrophe of environmental and development could be averted through sustainable development within a framework of equity” (Kirkby et al, 1995, 7). Sustainable development has evolved to incorporate four types of equity. Firstly, *intergenerational equity* argues that the actions of people today should not limit the opportunities and choices of future generations (Kirkby et al, 1995). *Intragenerational equity* demands that societies take greater care to address the underlying causes of social injustices in the present between different communities and groups in society (Kirkby et al, 1995). *Geographical equity* is also known as ‘transfrontier responsibility’ and contends that local policy and practices should be developed so as to address global problems as well as local problems. Finally, *procedural equity* argues that transparency and fair treatment should be ensured through the development and use of regulatory and participatory systems (Sowman, 1999). These are ideals that have been largely influential in many programmes that work towards achieving sustainable development as they address socio-environmental problems and other conflict situations. The ideas of equity held in sustainable development thinking can be linked to the ideas of citizenship and social movements that will be discussed in section 3.4.

It should be recognised that sustainable development is by no means a fully accepted ideology. Many question whether it is simply yet another phase in development theory and others argue that its broad set of meanings and principles cover so much that they cannot help but ‘result in so little’ (Beckerman, 1994; Lele, 1991). But despite the ongoing debate, sustainable development has been widely adopted by governments, local communities and environmentalists in an effort to address the complex needs of the prevention of further environmental degradation and to address the problems that abound in the ‘social-economic-political-environmental’ system.

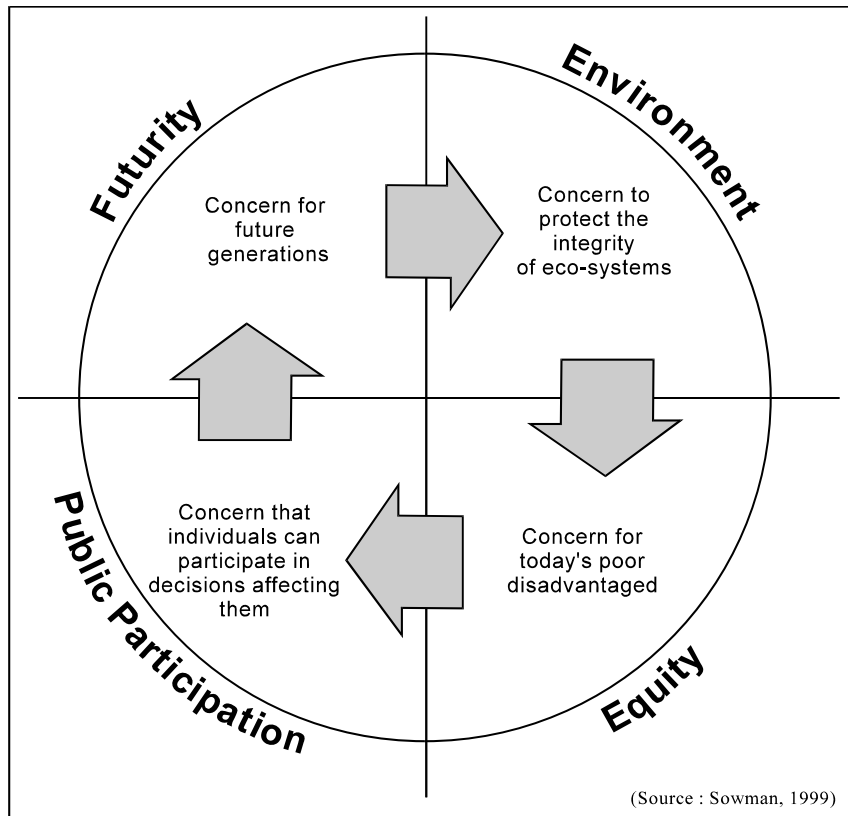


Figure 3 : The principles underlying sustainable development  
The flexibility of sustainable development allows it to be used effectively in localised areas with their specific characteristics of place. In an effort to facilitate sustainable development at this local level, Local Agenda 21 was developed at UNCED in 1992.

### 3.3.3 Agenda 21 and Local Agenda 21

Agenda 21, formulated during the Rio Summit in 1992, is a broad action programme for sustainable development (Kirkby et al, 1995). Chapter 28 of Agenda 21 is commonly known as Local Agenda 21 (UNCED,1992). This chapter narrows the focus of the global action plan of Agenda 21 to the local authority level since this is the level at which most problems and potential solutions occur (UNCED, 1992).

Local Agenda 21 aims for the creation of dialogue between individuals, local organisations, private enterprise and local authorities as a means for the movement towards sustainable development. Local Agenda 21 seeks the development of processes of information and experience sharing, and for “mutual technical assistance” (UNCED, 1992, 234). This programme argues for the building of capacity amongst all groups at the local level (UNCED, 1992).

Chapter 30 of Agenda 21 (entitled strengthening the role of business and industry) encourages business and industry to participate in Agenda 21 and encourages responsible and efficient operation processes. Cleaner production and environmental management are priorities on the agenda of Agenda 21 for industry and business (UNCED, 1992).

Agenda 21 recognises the roles of communities and non-governmental organisations (NGOs) and motivates for the strengthening of NGOs and the formation of partnerships to achieve sustainable development (UNCED, 1992). The links between sustainability and civil society will be elaborated on in section 3.5.

Thus sustainable development is proposed to provide a mechanism for the prevention of further biophysical and human welfare decline across the globe, enabling people to become involved in improving conditions in the unique and localised spaces in which they live through the principles of equity, futurity and participation and environment.

Cook (1995, 294) states that “within organisations, individuals become more powerful when they grow in the subjective sense of feeling able to do things hitherto out of reach; when they develop the ability to do things which were not previously within their competence; and when doors of opportunity, which were previously closed, swing open to allow them access to information, influence and opportunity”. Thus, one way in which societal groups can apply the principles and ideals of sustainable development, using the guidance of Agenda 21, is through the formation of community groups, clubs and activist organisations. The following section addresses the phenomena of civil society and social movements in our contemporary, postmodern context.

Understanding of some of the basic principles and mechanisms of the sustainable development paradigm is crucial for the assessment of the role of the waste minimisation club in sustainable development. This section has provided a framework of sustainable development concepts from which analysis of the case study is possible.

### **3.4 CIVIL SOCIETY AND SOCIAL MOVEMENT THEORIES**

#### **3.4.1 Introduction**

The following section discusses the growing role of civil society in local level governance, the characteristics of social movements, especially, ‘new social movements’, and briefly discusses the role of so called professionals within these movements.

Since the study aims to assess the role of voluntary and participatory organisations in sustainability, it is deemed necessary to review the above-mentioned concepts as a means of understanding both the social and political climate in which waste minimisation clubs can create change and the characteristics of these organisations as they strive to improve current conditions.

In addition, voluntary social movement organisations often involve the input of paid professionals. This in turn influences the mechanisms of change created by these organisations and it is believed that a review of these concepts are important for revealing the many dimensions of the case study.

### **3.4.2 Civil Society**

Civil society as a concept has a fluid meaning but at the core it can be considered as “those social organisations, associations and institutions that exist beyond the sphere of direct supervision and control by the state” (Friedman, 1998, 21). Civil society covers the spectrum from conservative institutions such as the family and neighbourhood to the radical sphere of political mobilisation (Friedman, 1998). Recently the discourse of civil society has begun to include ideas of participatory democracy and social justice.

A distinction needs to be made between organised and mobilised civil society. Organised civil society is understood as being the basic elements that result in a social formation – institutions such as households, churches etc (Friedman, 1998). Mobilisation is political and always occurs around a specific purpose. Friedman (1998, 23) believes that “all social movements may have been seen as mobilisations of certain sectors of civil society.” Thus, movements (mobilised civil society) are not part of the organised structure of civil society rather, they occur due to the internal dynamics of organised civil society and within an unavoidable terrain of struggle (Friedman, 1998).

The Zapatista movement in Mexico displays the characteristics of social movements as discussed by Friedman (1998). In this case, civil society has been organised so that indigenous peoples have been marginalised by the programmes of the Mexican government (Castells, 1997). This has led them to form communal relationships for survival and mutual support (Castells, 1997). The Zapatista movement is formed from a collection of groups of Mexican Indians mobilised around issues “of political reform, Indian rights and social demands” (Castells, 1997, 74). The Zapatista movement emerged and continues to operate in a context where the internal dynamics of civil society have been a combination of marginalisation and a pattern of political crisis and civil protest since the 1970s (Castells, 1997).

According to Friedman (1998, 22), civil society should be viewed as acting within “spheres of action and valued social practices”. Civil society acts in opposition to the corporate economy in an effort to reduce the commodification of social relations that threatens the foundation of civil society. It acts in opposition to the state, defending civil rights and claiming social justice on a terrain of political conflict and struggle” (Friedman, 1998, 22). It is on this terrain that the “public face” of civil society is evident in the parties, clubs and social movements which develop to create change (Friedman, 1998, 22).

Inherent in the discourse of civil society, is the concept of citizenship. This is the idea of belonging to a community or communities and of being responsible to that community while participating actively in the community. Citizenship holds civic duty, tolerance and a sense of solidarity to be vital. In a postmodern society belonging to more than one community is not only possible but probable and citizenship may be “layered” conferring multiple rights and a range of responsibilities (which may or may not conform with each other) (Friedman, 1998).

Civil society occurs within the relatively local spaces of state, region and city. This localisation of civil society exists because “in each local place or region, communities and interest groups respond to issues that are of direct interest to them” (Scott and Oelofse, 1998, 9). These localised, morphous networks have become increasingly possible through enhanced communication and migration (Friedman, 1998). In the emerging ‘global village’ of the postmodern world these localised networks have the potential to become linked into a global network that is less place-orientated.

Mobilised civil society takes the form of a variety of social movements, acting through networks, partnerships and individual organisations. The following section reviews literature related to social movements.

### **3.4.3 Social Movements**

As with sustainable development, there is no precise and totally accepted definition of what constitutes a social movement. This research, therefore, adopts three definitions of social movements in an attempt to gain a broad perspective of these social phenomena.

Scott (1990, 6) argues that a social movement is “a collective actor constituted by individuals who understand themselves to have common interests and, for at least some significant part of their social existence, a common identity”.

Foweraker (1995, 23) states that a social movement should be understood as “a sustained interaction between a specific set of authorities and various spokespersons for a given challenge to those authorities”. He goes on to say that “the social movement must be defined not as a group of any kind, but as a process” (Foweraker, 1995, 23).

Garner (1996, 12) states that a social movement “is constituted by human beings engaged in discourses and practices designed to challenge and change society as they define it. It is formed by people who, over the course of time, are involved in non-institutionalised discourses and practices of change”.



Social movements incorporate both the people who acquiesce with the discourse of a movement and movement organisations (Garner, 1996). Movement organisations include those people who engage in relationships and processes in an active effort to create the changes argued for by the movement discourse. Movements can differ according to the extent to which their “movement organisations are multiple and competing or single and unified” (Garner, 1996, 25).

According to Garner (1996, 56), “the ideology of a movement has to fit in some way” with the existing discourses of the prevailing culture. Thus, with this movement of society into a postmodern era and the rapid change associated with this movement, social movements, too, have adopted new forms and processes. These ‘new social movements’ will be discussed below.

#### **3.4.4 The ‘New’ Social Movements**

Emerging from the changing conditions of society, economy, development, and politics in the postmodern era, a new type of social movement began to emerge in the 1970s and became increasingly dominant in the 1980s (Routledge, 1996). These ‘new social movements’, as argued by Touraine (cited in Scott, 1990, 15) “are both bearers and symptoms of the transition from industrial to post-industrial society” and include activity around issues of gender, race ethnicity, community and the environment, in particular localities (Scott and Oelofse, 1998). From the 1980s, movements began to broaden their focus from political issues to “lifestyle and value issues” (Scott, 1990, 14) thus developing greater concern and involvement in cultural issues than on the economic concerns which previously dominated the focus of modernist social movements (for example, labour issues) (Foweraker, 1995).

The characteristics of new social movements can be generalised to some degree. These movements have a largely cultural character and strive to be primarily social rather than political (Scott, 1990). In the North, emphasis is placed on lifestyle and activities are focussed on attempting to bring about change by changing values and creating alternative lifestyles while in the South these movements tend to focus on gaining “access to economic resources” (Routledge, 1996, 273).

New social movements focus on “limited or single issues” organised around topics that centre on a particular but broader issue – such as ‘environment’ (Scott, 1990, 26; Castells, 1997). Halfmann and Japp (1993) argue that the issues focussed on by new social movements are those which appear to threaten ‘life chances’. In the case of the environment, the threat to a ‘life chance’ could be the specific risks associated with the impacts of a landfill on a community or the dangers associated with a degraded ecosystem.

It is believed that collective action can be generated through a concentration of general anxieties such as those of risk or danger. Social movements can be generated from this concentration of

anxiety (Halfmann and Japp, 1993). Once it is perceived that risks are induced from the outside, individuals are able to mobilise themselves into making changes that aim to reduce the creation of this risk by those ‘others’ (Halfmann and Japp, 1993). Thus mobilisation constitutes the emergence of a social movement.

The way in which social movements attempt to bring about change has altered (Routledge, 1996). New social movements aim to achieve collective results or ‘goods’ that cannot be restricted to a single movement organisation but can be tackled by a network of many different movement organisations (Foweraker, 1995). For example, in attempting to achieve the goal of ‘improved environmental quality’ a vast range of movement organisations from nature conservationists to radical ‘counter-culture’ groups to green political parties create a multi-pronged approach, using differing tactics to achieve a collective goal (Castells, 1997). In addition, rather than focussing solely on protest, new social movements attempt to voice and implement alternative development practices (Routledge, 1996). According to Garner (1996, 101) postmodern visions of movements have become distanced from the idea that a sudden and total transformation of society can and will occur and rather, they “hope that partial, local and continuous changes will add up to a transformation as profound as a revolution”.

Unlike the traditionally accepted organisational structure and motivational systems, new social movements have diverse and varied structures. The typical organisational structure of new social movements is generalised below but it is important to note that this is the guide rather than the rule and movement organisations do vary from these characteristics. Within the context of postmodernism, “social movements are best understood in terms of a continuum stretching from informal network-like associations to formal party-like organisations” (Scott, 1990, 132).

The general organisational characteristics of new social movements (Foweraker, 1995; Scott, 1990; Garner, 1996; Routledge, 1996) are:

1. Organisational structures are non-hierarchical and the movements are usually anti-beaurocratic.
2. Movements structures are “open, spontaneous” and “fluid’ (1995, 43).
3. New social movement organisations form a loosely bound, decentralised network. The activists in new social movements see themselves as holding a position in the networks and collective communities which constitute a social movement. These activists often have international ties in a network of activism but their actions are often local.
4. The movements are characterised by a cycle of alternating periods of high and low activity.
5. The movements are characterised by shifting membership and fluctuating numbers.
6. The movement organisation has a highly participatory nature.
7. Mobilisation occurs around specific, often local, issues
8. These organisations are frequently autonomous from political parties.

In most cases, the characteristics described above follow the pattern of the new civil societal structures – increased participation, increasingly horizontal hierarchies and the emergence of local groupings that form part of an extensive global network (Scott, 1990).

Paid professionals can often be found working within the new social movement organisations. The presence and activities of these individuals can influence the processes and outcomes of the organisation. The role of professionals in social movement organisations is discussed in more detail below.

### **3.4.5 Professionals in Social Movement Organisations**

The use of paid professionals within social movement organisations invariably influences the methods of operation and the outcomes of activities (Kleidman, 1994). This is a factor that therefore, cannot be ignored. This literature is reviewed to provide a conceptual framework for understanding the role of professionals in the waste minimisation clubs because of their potential impact on the functioning of the Hammarsdale Waste Minimisation Club and therefore on the degree of the contribution of the club to sustainable development.

Kleidman (1994) argues that paid professionals can influence social movement organisations (SMOs) through three basic patterns – professionals can inhibit or erode volunteer activism, substitute it, or facilitate it, in varying degrees and usually in some combination of the three effects. The three patterns will be discussed below.

*Inhibition* (sometimes called erosion) occurs when strong professional leaders discourage volunteers from participation in the internal affairs of an organisation such as administration and decision making and when they avoid methods that require “grassroots mobilisation” (Kleidman, 1994, 258). This effectively inhibits volunteer activism within an SMO as the professional(s) play a major, usually controlling, role in the functioning and actions of an SMO.

Reasons behind this inhibition can be the desire of the professional to ensure organisational survival, to minimise opposition by the elite and to maximise “their career chances inside and outside the organisation” (Kleidman, 1994, 258). An additional cause of inhibition may be the role of funders. Often professionals in SMOs are funded by the elite donors who may stipulate how their money is used (Kleidman, 1994). This can lead to alternative strategies being used and the determination of less flexible, more dominant roles for the professionals in a movement organisation (Kleidman, 1994).

The second pattern of the effect of professionals in SMOs is that of *substitution* (Kleidman, 1994). If professionals are more dominant in a SMO then their actions can begin to replace those which could be done (or were previously done) by volunteers. This is not necessarily a negative effect since a small number of professionals can sustain an organisation during periods of limited opportunity (Kleidman, 1994).

In opposition to substitution, a third pattern is that of *facilitation* (Kleidman, 1994). In some cases, professional involvement can encourage or increase volunteer activism within a movement. This can occur incidentally as professionals act to maintain the ideas and goals of the movement during times of lower activity. Facilitation can also happen through direct and deliberate action such as canvassing and recruitment and through the training of volunteers. It is argued that professional involvement in SMOs can encourage greater effectivity of activism as well as extending the longevity of activism (Kleidman, 1994). This can be achieved by volunteer co-ordination, and by the formalisation of the organisational structure.

It should be noted that these three patterns of the roles of professionals are a simplification. It is vital that professionalism and volunteer activism should be seen as multi-dimensional so that their effects can be mixed and varied depending on the roles each play in particular SMOs (Kleidman, 1994).

Thus social movements, with their complex organisation, structure, motivation and actions, play a particular role in civil society, acting to ensure that the demands and (increasing) responsibilities of civil society are met.

The specific social movement in which this study is placed is that of the environmental movement. Elements of this movement are discussed below.

### **3.5 THE ENVIRONMENTAL MOVEMENT: INCORPORATING NEW SOCIAL MOVEMENTS AND SUSTAINABLE DEVELOPMENT**

#### **3.5.1 Introduction**

As was briefly mentioned above, the new social movements take action around particular issues that are features of much broader contexts. One context is that of the environment. The environmental movement is one example of a new social movement. Routledge (1996, 272) argues that current “ecological movements articulate a new kind of struggle over natural resources” themselves rather than previous class-based struggles which took place “in factories and fields”.

This section discusses the ‘green’ movement in general, provides a typology of environmental movements developed by Castells (1997) and details some of the ways in which environmental

movement organisations can contribute to sustainability. Section 3.5.3 discusses a model of the environmental partnerships that act to contribute to the meeting of the movement's goals.

This literature is necessary for providing a means of analysing the role of the waste minimisation club in a broader environmental movement that contributes to sustainable development and to assess the role of participation (in the form of partnerships) in achieving environmental goals.

### **3.5.2 An Overview of the Environmental Movement**

According to Garner, (1996, 349) “the history of the environmental movement is largely one of growth and diversification”. At the outset, the movements aims were largely those of conservation and most activities were carried out by the elite classes (Garner, 1996). Since the severity and range of environmental problems increased over the last decades of the twentieth century, and into the twenty-first century, the movement has grown to include many more people(s) and a diverse range of organisations. Indigenous peoples, communities of the developing world and the disadvantaged are now involved and all nations are influenced by and/or act in the movement in some way (Garner, 1996).

Global activist organisations such as Green Peace have emerged and many initiatives have aimed at combating global environmental problems such as ozone depletion (Castells, 1997). Local issues remain significant though, and many organisations and initiatives function around local environmental issues (Garner, 1996). The focus of the environmental movement has diversified from its narrow, conservation focus to incorporate both ‘green’ and ‘brown’ issues i.e. the biophysical and socio-economic and political issues of sustainable development (Martell, 1994).

Since the environmental movement incorporates many different groups and ideologies there is much that groups can disagree upon. Rather than allowing these differences to fragment the collective power of the movement, a number of central issues exist that bind the movement together. These issues are principles of belief and understanding that most parts of the movement work with (and aim towards) through their chosen method or specific ideology. The common ground of the environmental movement is the belief that:

- ❖ Planetary life is interconnected and forms a fragile web of life that needs to be respected;
- ❖ People need to realise that their actions impact on this ‘web’ and they need to take responsibility for the impacts of their actions. At the same time it is recognised that environmentally sound policies do have a cost and these must be dealt with equitably;
- ❖ “Grass roots democracy” should be emphasised. There is a drive towards increased citizen participation in environmental decision-making, coupled with a mistrust of so called ‘experts’ (341);

- ❖ There is a widespread argument for non-violence in achieving the goals of the movement (Garner, 1996).

Because many different views conglomerate in the environmental movement, many organisations and organisational structures and strategies exist, for example, green political parties and pressure groups (Garner, 1996). Thus, the environmental movement “is not a single unified movement but a set of movements, movement organisations, mobilisations, networks and currents of opinion; it even includes the programmes of institutionalised actors like government regulatory agencies that may come under the influence of movement activists” (Garner, 1996, 343).

Even with the widespread environmental problems, the support base of the movement is frequently shifting and changing (Garner, 1996). This creates problems for sustained activism. According to Garner (1996, 353), “commitment to the environmental movement can wane if a community is no longer directly affected by a specific environmental problem”.

Part of the ideology of the green movement is that of sustainable development - a new way of carrying out economic activity and of ensuring that the quality of the environment (both social and biophysical) is maintained and even improved (Garner 1996). Sustainable development is seen as an alternative to existing structures in a move to make society less destructive (Garner, 1996). Since sustainable development holds that civil society should be involved in the improvement and protection of the planet, it is natural that social movement organisations should become involved in the attainment of these goals. When incorporating sustainable development thinking, environmental movement organisations, or even ‘non-green’ organisations can play a powerful role in the progress (and process) of sustainable development. To this end, Cook (1995, 279) argues that “people are at the heart of the quest for sustainability, both as the means by which development activities are carried out, and as the reason why development happens in the first place”.

It is important to note that sustainable development does not view the ‘environment’ purely in terms of its biophysical sense. In sustainable development terms, ‘environment’ incorporates both biophysical components and social, economic and political human aspects, and additionally including the interactions and dynamics between all these aspects (Lele, 1991). By widening the focus of environmental issues in this way, many more voluntary associations and social movement organisations can become (and find themselves) involved in the drive towards sustainability and environmental defence (Szerszynski, 1997).

Szerszynski (1997) argues that any type of civic or movement organisation can contribute to sustainability in a multitude of ways. Firstly, organisations can act in defence of the environment.

This direct action can prevent further damage from occurring or it can result in improvements to persistent conditions which are unsatisfactory (Szerszynski, 1997).

Secondly, voluntary associational activity can be central in the shifting of perceptions and attitudes throughout society. Szerszynski (1997) argues that for the achievement of sustainability there is a great need for a cultural change through out society – a paradigm shift. If increasingly high levels of public participation and voluntary activism exist then increased societal “trust and public-mindedness” should develop so that greater steps can be taken to achieve sustainability (Szerszynski, 1997, 149). Szerszynski (1997, 151) feels that “because of its natural rootedness in public concerns and enthusiasms, associational activity is much better placed than the bureaucratic mode of social organisation to generate environmental and quality of life objectives” that will result in ‘on the ground’ sustainability.

Thirdly, participation in voluntary associations can cause “human flourishing”, create a sense of community, citizenship and personal empowerment (Szerszynski, 1997, 151). Remembering that sustainable development should be seen as a process, it is fitting that this empowerment and self fulfilment should occur as a result of enacting the process rather than simply materialising at the end of a process when some product goals have been achieved. Acting as a part of mobilised civil society can contribute towards the ‘quality of life’ which sustainable development aspires to. It is important to realise that “voluntary associations can help deliver the sustainable society; they can help create its cultural precondition; but they are also already part of it” (Szerszynski, 1997, 158).

With the strong influence of Local Agenda 21 principles and the drive towards sustainability, partnerships are an increasingly common mechanism used in the environmental movement to tackle local issues. These partnerships are discussed below.

### **3.5.3 Environmental Partnerships**

This section discusses a generalised model of the lifecycle of an environmental partnership and introduces four types of environmental partnership that can develop, depending on the particular conditions surrounding each localised issue. These partnerships for the environment are one way in which civil society, government and industry can work together to improve environmental standards and to contribute to sustainable development. In the context of this study, this literature is potentially important because it provides a means of understanding how different stakeholders can act through a partnership to form a voluntary participatory organisation which can contribute towards sustainable development.

#### The lifecycle of an environmental partnership

As part of social movement activity environmental partnerships have a cyclical process of initiation, activity and then closure or renewal. They move through phases of greater or lesser activity and they often need to reassess goals and aims in a process of renewal, prior to further activity. Long and Arnold (1995) describe this process in their 'partnership lifecycle model' (see

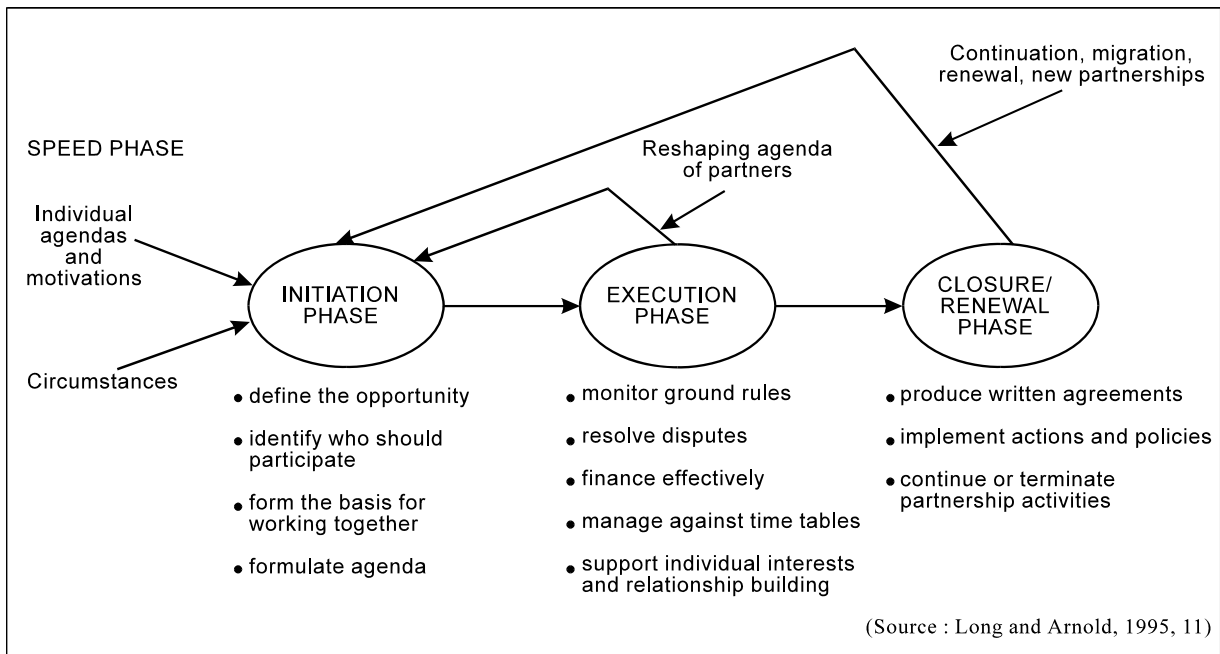


Figure 4 : Partnership Lifecycle Model.

Figure Four).

During the 'seed phase' of the partnership lifecycle, ideas are formulated and a champion party brings the idea of partnership formation and its benefits to all prospective partners and other stakeholders in an attempt to create commitment to the idea of beginning a partnership (Long and Arnold, 1995). If circumstances are conducive to the formation of a partnership then these can act as a catalyst for the partnership formation.

The 'initiation phase' encompasses much discussion amongst partners. During this phase the initial meetings of participants occur and discussions regarding potential approaches and relative stances of partners occur. Decisions are made regarding the goals, methods and actions of the partnership and a constitution or 'agreement of co-operation' is developed (Long and Arnold, 1995).

Following the initiation phase is the 'execution phase' where there is a greater focus on "substance" rather than "process" issues (Long and Arnold, 1995). Investigation into the problems and the production of alternative action plans/solutions occurs. Data is collected and shared as part of this process and much brainstorming by participants occurs. Experts are brought in to fill in gaps in experience or information in the partnership (Long and Arnold, 1995). In this phase it is necessary to negotiate any conflicts which may emerge or exist. Before moving on to the next



phase, it is important to review the original process and to adapt this if necessary (Long and Arnold, 1995).

The subsequent phase in the partnership lifecycle is that of 'closure or renewal' (Long and Arnold, 1995). This phase incorporates the major actions of the partnership including the possibility of written agreements, and the implementation of planned actions and/or policies. In this phase, once all planned activities have been carried out, partners must decide whether to end the partnership, continue with the partnership in its existing form or whether to adapt the partnership before moving forward (Long and Arnold, 1995).

In addition to the general lifecycle of an environmental partnership, Long and Arnold (1995) describe four typical environmental partnerships that can develop, dependant on the local circumstances out of which they arise.

#### An Environmental Partnerships Map

Long and Arnold (1995) have developed an 'environmental partnerships map' with which to understand environmental partnerships more fully (see Figure Five). This map uses two parameters of 1) the level of conflict amongst partners and 2) the degree of core relevance of the partnership's goals to each partner's mission (Long and Arnold, 1995). Each parameter uses a continuum from high to low levels of relevancy and conflict to create a map of four types of environmental partnership (Long and Arnold, 1995). It is possible that these parameters could be used to evaluate any partnership but in this case the goals of the partnership are explicitly related to an environmental issue (Long and Arnold, 1995).

High conflict levels are indicated by public battles and legal action between partners while, on the other end of the scale, low conflict levels can be characterised by parties who have little knowledge of each other or "that compete in the same context but not in the environmental arena" (Long and Arnold, 1995, 59). In terms of core relevance, high relevance is understood as a situation where all parties feel that the partnership is a process of either life or death and each party feels deeply involved in the partnership. Low relevance occurs when little importance is placed on the partnership (Long and Arnold, 1995). In the context of low relevance, it often occurs that one party feels that an issue is important while the others believe it to be relatively unimportant to their organizations. In this case, parties will provide assistance to the most concerned party as long as this does not demand too many resources. Intermediately, moderate relevancy suggests that parties view an issue as important, although not critical, to their organisations (Long and Arnold, 1995).

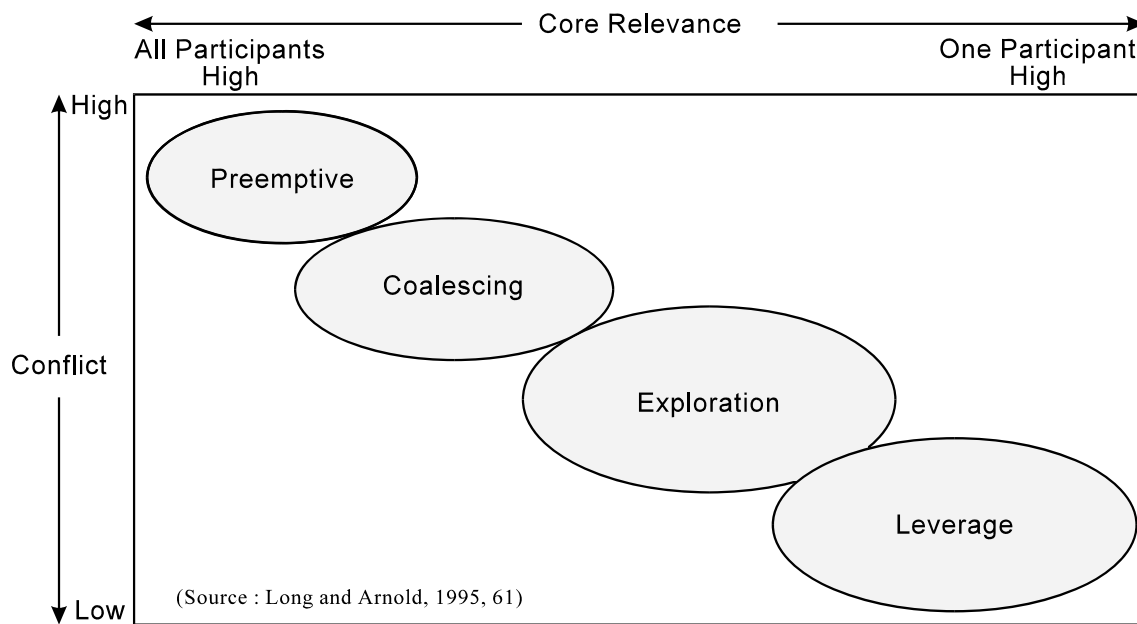


Figure 5 : An Environmental Partnerships Map.

As evident in Figure Five the four types of partnership that emerge from a combination of the above mentioned parameters are: preemptive partnerships, coalescing partnerships, exploration partnerships and leverage partnerships.

Preemptive partnerships have, at least initially, constrained opportunities due to the high level of conflict amongst partners. These partnerships attempt to defuse a conflict-ridden situation or to preempt a potentially hostile situation (Long and Arnold, 1995). Long and Arnold (1995, 64) describe a preemptive partnership as being “a proactive dialogue or project involving traditionally adversarial organisations.” Preemptive partnerships are usually initiated due to external pressure from the public or state or through internal pressure created by continuous conflict. These partnerships usually aim to develop a plan to improve environmental quality that can be supported by all parties. Transparency and a concerted effort to create and maintain procedural equity form a significant feature of a preemptive partnership.

An example of a preemptive partnership is the South Durban Community and Environmental Alliance (SDCEA) which has formed to address the high pollution levels and environmental injustices resulting from apartheid planning which located communities adjacent to heavy industry (Oelofse and Scott, 1999).

Coalescing partnerships are characterised by some degree of disagreement or conflict but the main focus of the partnership is to overcome these differences through the creation of a common vision that all parties can support (Long and Arnold, 1995). In a coalescing partnership, partners depend on each other for the achievement of their goals but may be competing for resources (Long and Arnold, 1995). All or most partners have environmental issues as central to their organisation.

Coalescing partners collaboratively determine a path ahead and organise the role of each partner in this programme. Conflict can occur in regard to *how* to accomplish mutual goals (Long and Arnold, 1995).

The characteristics of a coalescing partnership are evident in the South Coast Marine Pipeline Forum (SCMPF) which has developed to address conflict between industry and communities regarding pollution of the marine environment (Scott, 1999a). This forum has been developed to enable a resolution of the conflict through joint actions that address problem areas (Scott, 1999a). The SCMPF enables all parties to voice concerns and to decide upon actions in an effort to satisfy all parties with attempts to mitigate the impacts of industry on the marine environment (Scott, 1999a).

Exploration partnerships involve little conflict and usually include partners who have not previously worked together. These partnerships attempt to explore and investigate environmental issues that are of mutual concern to the parties (Long and Arnold, 1995). Potential partners identify an environmental problem and seek out others who can assist in solving this problem. There is little conflict amongst partners but rather recognition of the benefits of collaboration. The activity involved in these partnerships mostly includes data collection and corroboration while it is often left to the individual parties to decide how to use this information later. In an explorative partnership “parties invite a business-like professional collaboration to get the job done; when their work is complete, the partnership usually terminates” (Long and Arnold, 1995, 98).

An example of an exploration partnership is the partnership that has formed in Durban between industry and community for monitoring and evaluating the impacts of industrial effluent discharged to the sea (McPherson and Oelofse, 2000). In this case, the resources of dive charters, industry and the University of Natal have been combined to investigate the quality of the marine environment with respect to the disposal of effluent into coastal waters (McPherson and Oelofse, 2000).

Leverage partnerships are more opportunistic than exploration partnerships and are considered “win-win partnerships” (Long and Arnold, 1995, 61). Leverage partnerships “allow each party to make modest investments in environmental improvement in return for a relatively high social, political or financial return” (Long and Arnold, 1995, 61). In this type of partnership most partners are dealing with an environmental issue that is not central to the goals of their organisations and they aim to address the issue as efficiently as possible. Leverage partnerships are initiated by one champion group that provides “administrative capacity” so that other partners can participate with greater ease. Long and Arnold (1995, 116) state that a leverage partnership “involves parties with varying degrees of commitment working together to resolve an environmental problem. By working together, the organisations can leverage modest investment into positive returns.” In

leverage partnerships, partners have a relatively high level of trust and activities are not centred around willingness to compromise but on individual willingness to make a contribution. The purpose of leverage partnerships is to implement 'given' solutions as effectively and efficiently as possible within each unique situation. Much environment-related collaboration between businesses and other organisations have the features of a leverage partnership.

Leverage partnerships are usually formed when one organisation champions a project and convinces others to join in. The champion usually has the environment as a central concern and persuades organisations with less 'core relevance' to participate to their benefit (Long and Arnold, 1995). In the case of leverage partnerships, the better the champion, the more powerful the partnership. Leverage partnerships typically require long 'seed phase' (Figure Four) where much informal discussion occurs as potential partners are persuaded to form a partnership.

Often, leverage partners include companies who join to improve profits, make savings or impact on their markets. Non-profit organisations join when they believe they need collaboration to achieve their goals (Long and Arnold, 1995).

Once a partnership is established, partners rarely seek more than a verbal agreement to proceed and the process of establishing trust (as necessary for a preemptive partnership) is usually brief (Long and Arnold, 1995). Partners that are given greater ownership in this type of partnership often act more effectively, producing better results, than those who feel that the plan is controlled by someone else (Long and Arnold, 1995).

Successful leverage partnerships should provide extensive payback for the partners and this should prevent or delay closure of the partnership, rather leading to self assessment and new paths of action that the dissolution of the partnership (Long and Arnold, 1995). If leverage partnerships do have closure they usually fade away rather than end officially. This slow closure can occur because little is being accomplished by the partnership and partners lose interest; individual organisations fail to find a suitable role for themselves; involvement in the partnership is proving too intensive and too many resources are being required; or the partnership champion leaves or moves to another part of his or her organisation effectively removing the driving (and binding) force from the partnership (Long and Arnold, 1995).

Thus, these partnerships develop due to the needs of unique environmental circumstances and proceed according to methods that best produces the desired results.

Environmental education is one process that occurs within environmental movement organisations and partnerships. Scott and Oelofse (1998, 5) argue that for all "stakeholders have the opportunity

to participate in a more equitable manner, it is proposed that an education and information sharing process is a necessary prerequisite and therefore an integral part of the process” of social movement activity. The following section introduces some elements of environmental education and capacity building that are associated with partnerships and bringing about social change.

### 3.6 ENVIRONMENTAL EDUCATION

#### 3.6.1 Introduction

Fien (1995, xx) argues that “education has an important role to play in motivating and empowering people to participate in environmental improvement and protection”. This is an important function of (and within) the environmental movement and its organisational network. The discussion below addresses the concepts and practices of environmental education as they can (and do) occur in environmental social movements.

Environmental education is not only about ‘saving the rain forest’ or ‘keeping the planet alive’. Instead, environmental education addresses “an extremely wide-ranging and bewildering array of content” that is dynamic and ever changing and has highly complex ‘interrelationships, priority problem causes, impacts and solutions” (Palmer, 1998, 267). It has a holistic purpose of introducing an environmental ethic that makes individuals *want* to ‘save the planet’ while increasing environmental knowledge and developing the skills to solve problems.

The dynamic and complex nature of the knowledge base for environmental education is often a cause of difficulty for those who are attempting to improve their environmental knowledge and skills. In addition, the content of environmental education is highly value-laden, making one person’s knowledge differ from another and causing “one person’s solution to be another’s catastrophe” (Palmer, 1998, 267).

Despite the complexity of agenda and content, environmental education aims to:

- ❖ Raise awareness and sensitivity of groups and individuals to the total environment
- ❖ Assist in the acquiring of knowledge of the environment and its problems
- ❖ Help groups and individuals to acquire an attitude of concern for the environment
- ❖ Teach the skills for identifying and solving environmental problems
- ❖ Provide groups and individuals with the opportunity to be participate in working towards solving environmental problems (Fien, 1990).

Since environmental education can be seen as consisting of many themes and alternative directions by which to reach the varied goals of environmental education, some discussion of the predominate concepts of environmental education is necessary. In the following section the approaches to environmental education called education in, about and for the environment will be discussed.

### 3.6.2 Education In, About and For the Environment

Fien (1996) has identified three approaches to environmental education; these are education *in*, *about* and *for* the environment. Each type has its own purposes, methods and weaknesses. Figure Six indicates the roles of the three education approaches in influencing individual holistic development. Each approach contributes to the development of understanding, skills and attitudes although separate approaches have directed their focus on either the empirical, aesthetic or ethical elements of environmental education (Palmer, 1998).

Education *in* the environment focuses on experiences of nature and ‘environments’ within that particular environment. (In this case, ‘environment’ does not refer only to spaces of pristine nature but also to city and rural areas etc, virtually any place from which a relevant learning activity can take place.) Education in the environment uses the environment itself as a resource for knowledge and skills acquirement (Palmer, 1998). Education in the environment presupposes that experience of a particular environment will cause some level of personal growth. (Fien, 1996). It is argued that education in the environment enables the cultivation of environmental ethics and an awareness of the complexity and fragility of the biosphere through experiences within these environments (Fien, 1996). This increased awareness is hoped to grow into a greater level of concern and respect for the environment amongst learners (Fien, 1996). The experiential learning that takes place through this approach can be used to develop a variety of skills, including, data through observation and the use of measuring instruments as well as stimulating co-operative group work (Fien, 1996).

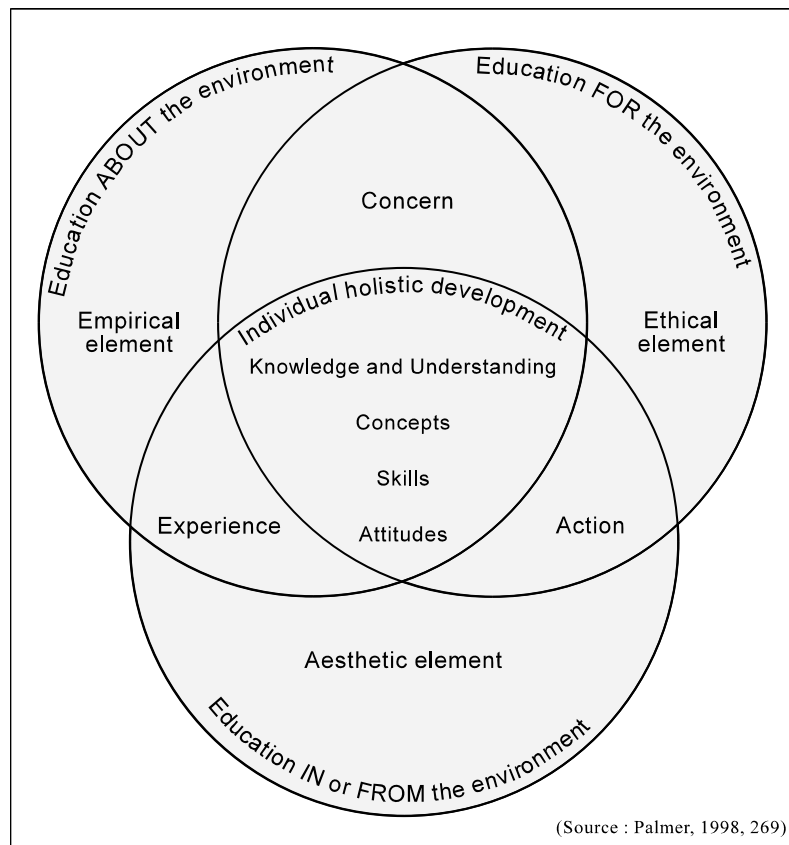


Figure 6 : Education about, in and for the environment.

In order for an environmental ethic to be translated into practice it is necessary for individuals to have a grasp of how the biosphere functions and how humans interact with and impact upon the functioning of the biosphere. Thus, education *about* the environment constitutes the learning of facts regarding how environmental systems work, the impacts of economic and socio-political human actions on these environments and potential solutions to environmental problems (Fien, 1996). Education about the environment facilitates informed decision making, based on factual knowledge and the values cultivated by this knowledge. It is this informed action that can lessen the impact of human civilisation upon the biosphere.

The main weakness of the above-mentioned approaches to environment education is their failure to develop practical skills for the prevention of degradation, to ‘repair’ environmental damage or for sustainable living. In response to the weaknesses of education in and about the environment, education *for* the environment draws on both former approaches and goes a step further as it aims to enable people to act, using their knowledge and values to solve problems within the environment (Fien, 1996). It is thus education for the environment that has the largest impact towards sustainability as it makes possible the actions necessary for sustainability (Fien, 1996).

Education for the environment aims to develop the “motivation and skills necessary to participate in environmental improvement” (Fien, 1996, 2.28). This approach aims to stimulate a willingness

amongst individuals to live in such a way as to limit the impact of their lives on the biosphere. Most importantly, education for the environment enables this willingness to be translated into action through the development of the ability to live according to one's 'new-found' environmental ethic (Fien, 1996).

In addition to the experiences and influences of environmental education, educatees bring to all these approaches formative influences and life experiences that alter their perceptions and cause differing reactions to any material or approach. Figure Seven shows how formative influences form the root of environmental ethics and understanding. These formative influences and experiences then 'feed' into the environmental education process, making the outcomes of environmental education unique for every individual.

### **3.6.3 Environmental Education and Sustainable Development**

It is important to mention that contemporary approaches to environmental education and the environmental movements exist within a framework of sustainable development. 'Education for sustainability' has thus become a focus of environmental education. This process is clearly linked to the principles of sustainable development and aims to assist towards meeting the goals of sustainable development.

Education for sustainability has been defined as "a process which:

- ❖ Enables people to understand the interdependence of all life on this planet, and the repercussions that their actions and decisions may have both now and in the future on resources, on the global community as well as their local one, and on the total environment.
- ❖ Increases people's awareness of the economic, political, social, cultural, technological and environmental forces that foster or impede sustainable development.
- ❖ Develops people's awareness, competence attitudes and values, enabling them to be effectively involved in sustainable development at local, national and international level, and helping them to work towards a more equitable and sustainable future. In particular, it enables people to integrate environmental and economic decision-making.
- ❖ Affirms the validity of the different approaches contributed to environmental education, and development education and the need for the further development and integration of the concepts of sustainability in these and other related cross-disciplinary educational approaches, as well as in established disciplines (Sterling/EDET Group, 1992 cited in Palmer, 1998, 139).



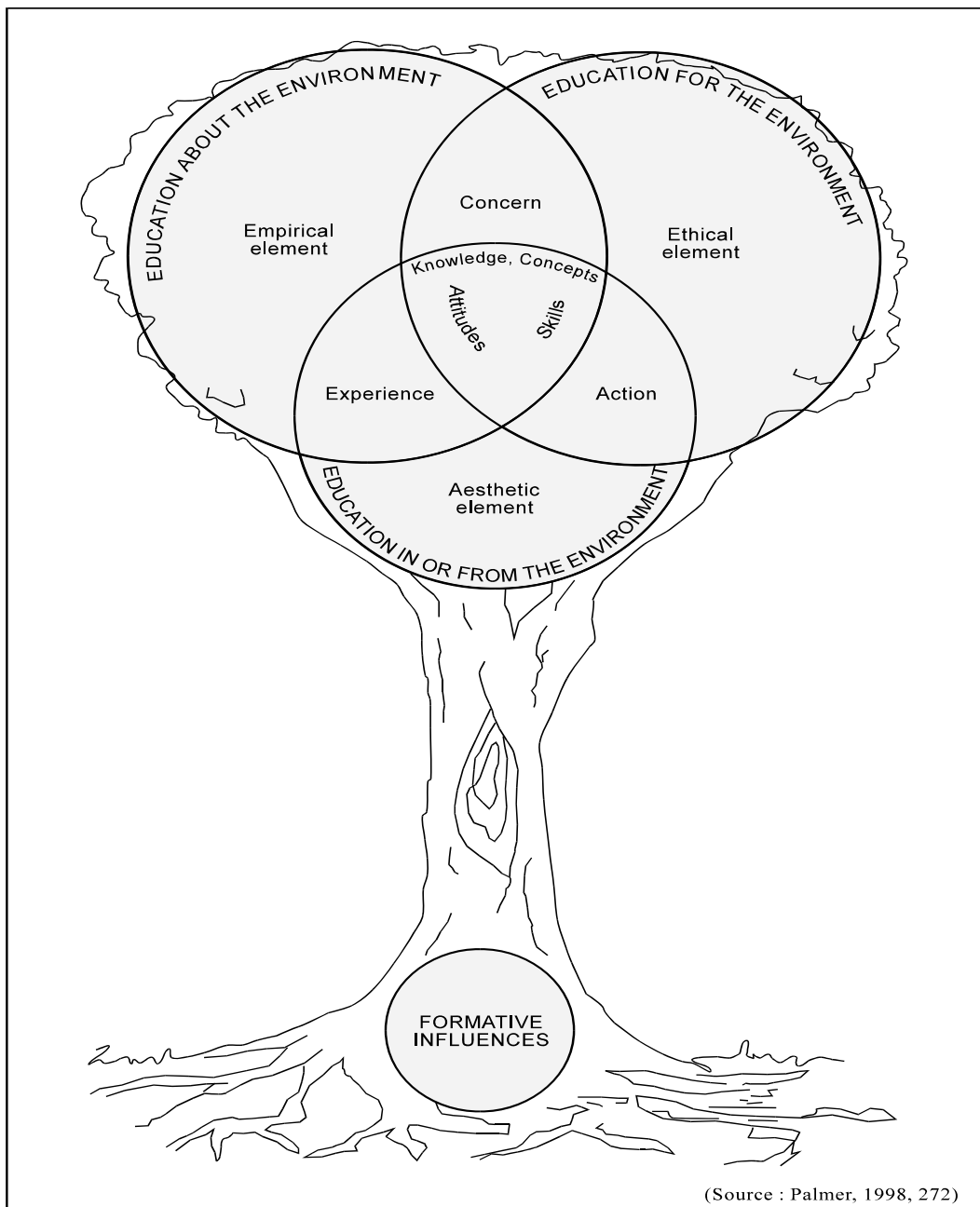


Figure 7 : The role of formative influences in environmental education.

Environmental education for sustainability attempts to provide an integrated view of the environment and argues for the development of skills to implement holistic solutions to environmental problems on a number of spatial levels.

Within the context of this research, environmental education will be taking place in an industrial context and it is useful to gain an insight into the particulars of environmental education within industry as discussed by Camozzi (1994).

### 3.6.4 Environmental Education in Industry

Camozzi (1994) discusses extensively how to develop and carry out environmental education programmes within industry so that these programmes can result in sustainable actions by industry and its employees. The following section is comprised of a list of guidelines for increasing the success of environmental education in industry:

1. Industry must be willing to be involved in environmental education;
2. Educators must gain management trust. In order to build a trusting relationship between the educators and the management of the industry the educators must show an understanding of the existing industrial constraints, for example, a lack of resources, time and the pressure of profitability. Educators and industrial management should participate in constructive dialogue to ensure mutual understanding and a transparent context in which environmental education can take place. A further means of building trust is for the educators to point to their previous successes in other/similar industries;
3. It is useful if education is carried out by educators with a background in adult education and learning as they have special skills that can be used in partnerships within industry;
4. In order for any environmental education programme in industry to be successful, the programme needs to be directly relevant to the needs of that particular industry. The general aims and objectives of environmental education have to be tailored for the specific understandings and processes that occur within a particular industrial context. It is vital that an understanding of the learners exists in order that environmental education is relevant to their interests and needs. Workplace environmental education should be “interactive, highly participatory, designed at relevant literacy levels, fun and engage the learner in problem-solving and critical thinking” (Camozzi, 1994, 14). Practical applications of knowledge are especially required is a change environmental practices is aimed towards.
5. An education programme should be designed to incorporate a follow-up procedure and thus a meaningful evaluation should be conducted after the completion of the programme.
6. The concept of a partnership is important and therefore it is beneficial for educators to be co-operative and non-confrontational (Camozzi, 1994).

Thus within a broader framework of environmental education, environmental education for industry has particular forms which can encourage the successful implementation of education, in, about and for the environment. If this occurs education for sustainability can take place so that industry can lessen its impact on the environment.

In general, environmental education can be viewed as one of many tools used by social movement organisations to motivate volunteers to act within the sphere of environmental issues and then to provide the skills for action in this sphere. In an effort to provide education for sustainability,

environmental educators focus on education *for* the environment that aims to develop both an environmental ethic and the skills to act towards improved environmental quality.

Environmental quality and the implementation of solutions to environmental problems, through individual action or through organisations, is different depending on a number of factors. These factors relate to the particular conditions that exist in specific localities. To this end, the role of locality is discussed in the following section.

### **3.7 SPACES AND PLACES**

#### **3.7.1 Introduction**

Within the context of the postmodern, globally interconnected world, the role of place impacts on the activities of voluntary participatory organisations. This section discusses the effect of global connectedness on the activities of society as well as the significant role of local conditions and locally created meanings in these activities. In addition, place-based struggles over the environment are discussed.

#### **3.7.2 The Global and the Local**

It can be argued that two levels of social, political and economic relationships exist - the global and the local, and these levels interact to form the nature of contemporary society. Society and its social movements exist in a context of interaction between the macro-forces of the global and the impact of local level characteristics of place in which people have their life experiences and where meaning is generated.

Castells (1997, 123) argues that currently, society exists and functions in two 'spaces' - "the space of flows and ...the space of places". The "space of flows" enables social practices to occur between and across physical spaces through the use of telecommunications and information systems (Castells, 1997, 123). This allows society to be uncoupled from physical space. But the "space of places" is where people's interactions and society's institutions are directly linked to physical spaces and are influenced by the characteristics of these spaces (Castells, 1997). In terms of social interactions and meanings, these two enable society to be delinked from physical space while at the same time to be reliant on the relationships between people and the physical spaces in which they act (Castells, 1997).

Within society the "most dominant processes, concentrating power, wealth and information, are organised in the space of flows" but in opposition to this "most human experience, and meaning, are still locally based" (Castells, 1997, 124). An example of this societal phenomenon are the sub-communities of people with comparable interests that have been made possible through interactions

on the Internet. These communities are decoupled from physical space and exist via information flows (Castells, 1997). On the other hand, many communities are formed by people who live in the same physical space, such as a suburban neighbourhood (Friedman, 1998). Friedman (1998, 23) explains that “civil society is lodged within the territorial limits of a state, region, city or neighbourhood but its linkages and networks extend increasingly beyond these boundaries to the rest of the world through electronic media, the migration of kin and friends and associational bonds”.

The ‘space of places’ can be viewed as individual localities in which people live, work and interact with each other. Each of these localities is characterised by a particular set of environmental characteristics and contingent conditions (Scott and Oelofse, 1998, 2). Because of the globalisation of society, global forces impact on individual places. These global forces interact with the local conditions of a place to create a specific outcome. Because of different conditions at the local level, similar global forces (such as the greater economic power and technological expertise of the developed world) which reach a place can have different results.

In addition, similar social movements established and operating in different areas will result in differing outcomes because of these unique characteristics within particular localities (Castells, 1997). Similarly, each place, with its distinctive circumstances, should dictate a plan of action tailored to generate the best possible outcomes from the specific characteristics related to each place. Thus the influence of place becomes apparent in the way in which social movement activity is carried out in specific localities. (Dalby et al, 1997, 103).

Thus society exists within the framework of local, place-connected systems and within a global societal system that is not linked to physical space. These systems interact with each other but the nature of the outcomes of these interactions is dependent largely on the conditions which exist at the level of local spaces in which people live and act.

Owing to the place-based nature of society as it exists in the “space of places”, much social and environmental movement mobilisation occurs when problematic conditions or activities arise at the local level as a result of global forces. The following section discusses some of the issues related to place-based social movement activities, with particular reference to the environmental movement.

### **3.7.3 Place-Based Struggles**

As was discussed in section 5.3, the environmental sphere has been one particular focus of the activities of new social movements. ‘Place’ has a particular role to play when addressing environmental issues because although environmental degradation does have global proportions, many environmental problems do not originate at the global level but have their outcomes at the

local level (Mittleman, 1998). In concordance, Scott and Oelofse (1998, 2) state that “issues of environment and development are intensely local and spatial.” To this end, many struggles over environmental issues take place at the local level and the following section aims to highlight some of the issues associated with social movement activity that is strongly located within ‘place’.

Frequently, social movement organisations involved in sustainable development and environmental struggles prefer to tackle local issues rather than the larger, global issues such as climate change and global poverty (Scott and Oelofse, 1998). Local issues are less daunting to tackle since they are contained and allow for resources and interest to be focussed directly at particular issues (Scott and Oelofse, 1998).

According to Mittelman (1998), most current environmental struggles are localised and deal with specific issues of environmental concern in specific places. One example of this is protest organised by community organisations to oppose the development of a granite quarry in Cape Breton, Nova Scotia (Dalby et al, 1997). Here the environmental struggle revolved around the communities belief that the area proposed for quarrying should be protected as a natural area with importance as a breeding area for birds (Dalby et al, 1997). In this case, the attempt to develop a quarry in the area was due to the influence of global economic imperatives but the local characteristics of the specific place acted to prevent the quarry from being developed (Dalby, et al, 1997).

Social movement activity that attempts to create positive local changes or to prevent local environmental degradation can act to unify the diverse identities of people so that a sense of community is created at the local level. According to Castells, (1997) in situations of conflict, community identity is often defined in terms of a place, the specific character of which is endangered by something ‘Other’. This ‘Other’ is usually the imposition of a ‘dirty space’ such as a landfill site or an industrial plant within the boundaries of a locality ‘owned’ and occupied by a community (Dalby et al, 1997).

In attempting to prevent these dirty installations within a locality, people form a complex means of opposition that is tied to physical space. The methods of protest are not formed solely from a “fear of the unknown, or the outsider but a series of arguments and strategies based on the interconnected nexus of symbolic and practical interests at the local level’ (Dalby et al, 1997, 105). The relationship between the community and the physical space in which it acts plays an important role in opposition arguments. For example, in the case of protest against proposed quarrying in the Isle of Harris, Scotland, communities upheld their right to continue the tradition of crofting in the structure which forms of community are directly connected to the territory in which they live “through deep historical association” (Dalby, 1997, 104).

Global forces have a role to play even within place based struggles. A “policy of parallelism” is evident in environmental movement activity as resistance strategies that have proven successful in one place are replicated in other localities in the hopes of gaining similar success (Mittelman, 1998, 867). The information regarding methods of protest or change by social movement organisations is transferable to other places through the information exchanges made possible by the global interconnectedness that is characteristic of the space of flows.

Thus it is common that actions for the improvement of the environment or for the maintenance of environmental standards are initiated and based in particular places and are fought using arguments and strategies that stem from the relationships between people and the places in which they live.

All social, economic and political activities taking place in society are subject to the influence of the space of flows and the space of places. The role of the character of individual places impacts on how these forces are realised at the local level. In addition, the nature of place and the bonds between communities and places impact on the way in which change occurs within these spaces. This is particularly evident in place-based environmental struggles. The concepts of the spatial nature of society and the role of ‘place’ are important within this research as they play a role in determining how the Hammarsdale Waste Minimisation Club, as organisation which is subject to the global and local forces within society, can contribute to sustainable development.

### 3.8 CONCLUSION

This chapter has introduced four bodies of literature that can be drawn together to form a framework through which the case study of the Hammarsdale Waste Minimisation Club can be analysed and understood. Figure Eight indicates diagrammatically how these bodies of literature can be organised to create a conceptual framework for the study.

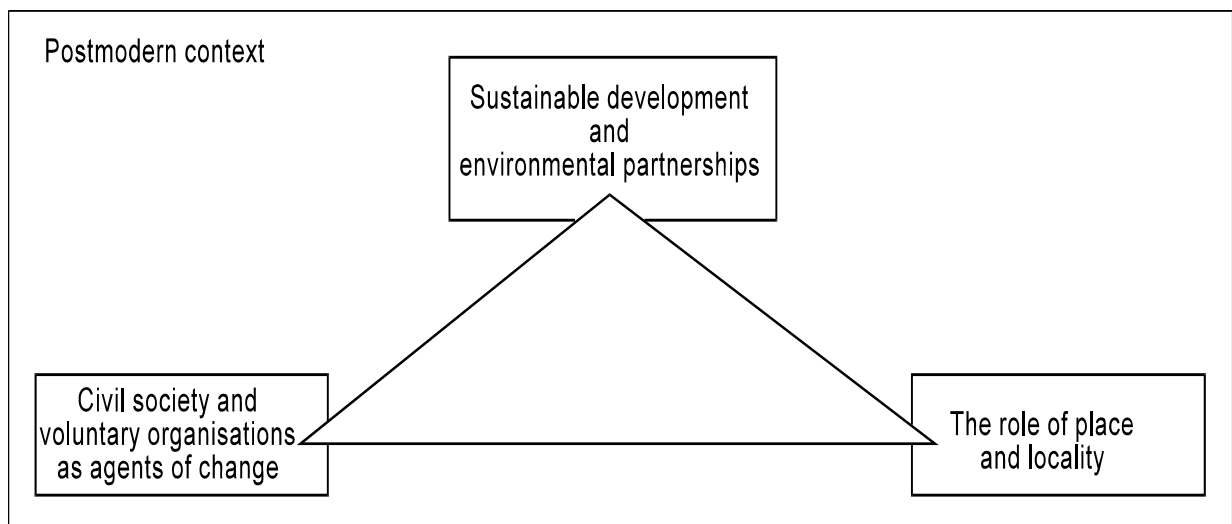


Figure 8 : A conceptual framework for understanding the role of voluntary participatory organisations in sustainable development.

Concepts of postmodernism in relation to the rise of globalised economic systems, the internationalisation of culture and the devolution of political power to the local level have been discussed in this chapter. Because the Hammarsdale Waste Minimisation Club has been formed within the postmodern era, an understanding of the nature of society within this era is useful for the formulation of a complete understanding of the Club as a mechanism for change.

It is crucial for this study that the concepts and principles of sustainable development are understood so that the Hammarsdale Waste Minimisation Club as an organisation can be assessed in terms of the requirements of sustainable development. To this end, it has been recognised in this chapter that, in the postmodern era, previously conflicting theories of environmental conservation and the nature of development have been integrated to form an alternative paradigm identified as sustainable development. As well as the origin of sustainable development, the key principles of this paradigm, issues of equity required for the achievement of sustainability, and the Agenda 21 programme have been discussed. Because of the importance of sustainable development in the meeting of the aims of this study, these concepts form the pinnacle or umbrella of the conceptual framework (see Figure Eight).

A broad spectrum of social theory regarding civil society has been introduced in this chapter. Characteristics of civil society and the 'new social movements' that have arisen to give weight to society's demands have been discussed. In addition, the significant role of professionals within social movements has been introduced. Consideration of this body of literature enables an analysis of the Hammarsdale Waste Minimisation Club as an organisation which aims to create change within society. As such, this social theory plays a key role in the formulation of the conceptual framework for the study (Figure Eight).

The role of civil society, through voluntary environmental organisations, in protecting the quality of the environment can provide significant insights into waste minimisation clubs as social organisations that attempt to limit environmental degradation. The potentially powerful linking of sustainable development theory and social movement actions is examined through the provision of an overview of the environmental movement. In addition, one of the key tools used by this movement, environmental education, has been discussed.

Finally, the role of space in societal structures and the influence of place-based conditions and activities have been introduced in this chapter. These concepts form a cornerstone of the conceptual framework as it is proposed that environmental actions take place in different ways dependant to a large extent on the characteristics of the place in which they occur.

Thus the theoretical framework developed from the discussion of these bodies of literature is an important tool which is applied to the case study in order to gain a deeper understanding of the role of voluntary environmental organisations in sustainable development. The literature reviewed in this chapter has supplied the concepts through which the case study can be reviewed in order to find answers to the questions asked in this study.

The following chapter discusses the specific methodology used to carry out this study, including the review of the primary data in terms of with the conceptual framework, in order to assess the role of voluntary participatory organisation in sustainable development.



## CHAPTER FOUR

### METHODOLOGY

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#### 4.1 INTRODUCTION

The aim of this chapter is to provide a detailed description of the research methods applied in this thesis.

Flowerdew and Martin (1997, 6) argue that “contemporary human geography is characterised by methodological diversity, a plethora of methods and approaches which link in complex ways to underlying philosophical debates”. The methodology of this research is characterised by this diversity, using a range of intensive methods (Sayer, 1984) along with current geographical and social theory to find the answers to the research questions. There is a focus on qualitative empirical data as a means to understanding the role of the Hammarsdale Waste Minimisation Club as a voluntary participatory mechanism contributing to sustainability.

It was felt that intensive methods and qualitative data were the most appropriate means of conducting this research, as the philosophical research questions could not be answered by quantitative, extensive methods. The research questions in this study relate to people, who as social beings voluntarily engage themselves with other people and with the world in which they live (Robinson, 1998). This engagement requires participation, trust and an understanding of the world and its systems. Thus the methods of research aimed to enable the collection of data that captured the social dimension of clubs, including people’s experiences of their involvement in a process of change through interaction. To this end, participant observation and semi-structured interviews were carefully selected as the data collection techniques that would enable the collection of the most appropriate primary data for the study.

The chapter which follows includes a discussion of the sources of primary and secondary data, data sampling, data collection techniques and the method of analysis used in this study in an attempt to answer the research questions.

#### 4.2 DATA SOURCES

Both primary and secondary data has been used in this research. Both types of data were collected from a number of sources.

#### **4.2.1 Secondary Data Sources**

Secondary data was collected for the literature review and description of the background to the study. The literature review included data from journals, books, research papers, case studies and the Internet. This data was necessary for the development of the theoretical framework.

It is recognised that, especially within qualitative studies, there is a need to maintain a close relationship between the philosophical underpinnings of a piece of research and the methodology of the research. As argued by Flowerdew and Martin (1997, 27) "ignorance of your philosophical roots implies a less than full understanding of what you are doing". The initial data collection thus focussed on relevant literature and philosophical writings. A literature review was carried out using printed texts (books, journals, reports, theses, pamphlets etc.) as well as Internet sources.

The review covered the principles of sustainable development as a broad overview, material on waste minimisation, public participation, civil society, voluntary and social organisations and environmental education.

Investigation of the background of waste minimisation clubs, their success in England and the first South African club (The Metal Finishers Waste Minimisation Club in Durban) was carried out through the consideration of case study material and other secondary data generated by these projects. This background investigation was carried out to develop an understanding of previous work and to widen knowledge on these particular types of voluntary organisations.

The literature was used in the formulation of the theoretical review and background chapters. The theoretical review enabled the development of a conceptual framework that has directly informed the selection of the data collection techniques and the subsequent gathering of primary data. The results and conclusions drawn from the primary data were largely informed by the existing theoretical framework.

#### **4.2.2 Primary Data Sources**

Interviews from a range of individuals involved in the Hammarsdale Waste Minimisation Club formed an important source of primary data. Oral evidence from meetings and training workshops of the HWMC contributed to the variety of primary data. Primary documentary sources such as meeting minutes, newsletters and other club correspondence will augment the oral evidence regarding the activities of the Waste Minimisation Club. Oral evidence from the meetings of the Waste Minimisation Club for the Metal Finishing Industry was gathered as a means of obtaining comparative primary material.

A number of techniques were used to facilitate the collection of data. The following section describes the sampling and collection techniques for the gathering of primary data.

### **4.3 DATA SAMPLING**

Initially, the sampling method selected for this study was a random, stratified sample consisting of all individuals who chose to be involved with the HWMC, in whichever capacity they chose. However, it became evident from participation in the club that a stratification that enabled the division of the single group into three smaller groups would be appropriate. These groups consist of the industrial representatives who formed the core membership, the professionals involved in the management and advisory roles of the club and the educators who carried out the specific environmental education programmes. Qualitative interviews were carried out according to this stratification. In total twelve interviews were carried out, including three professionals and nine representatives of member companies. Due to unavoidable circumstances no educators were interviewed. This missing data will be further discussed in section 4.4.2.

### **4.4 PRIMARY DATA COLLECTION TECHNIQUES**

An underlying directive in the development of the methodology of this research is that of hermeneutics. Hermeneutics is “often advocated for qualitative study methodology” (Flowerdew and Martin, 1997, 28). Currently, hermeneutics refers to “the study of interpretation and understanding” (Flowerdew and Martin, 1997, 16) with a key role is given to the human qualities of intentionality, rationality and reflexivity that are ignored by naturalist reasoning (Flowerdew and Martin, 1997, 16).

In his discussion of the use of intensive and extensive research design Sayer (1984) distinguishes between the different types of techniques appropriate for these two types of research design. Each technique of data collection enables a specific type of information to be collected to serve a specific research objective. For the purposes of this research, intensive methods have been used to enable the collection of appropriate data.

Intensive data collection methods take the form of studying individuals within context, using interactive interviews and qualitative methods of analysis (Sayer, 1984). This type of data can provide causal explanations of events and outcomes while enabling an understanding of how a process works in a specific case and what produces change (Sayer, 1984).

Intensive methods of data collection have limitations. Intensive data, due to its specificity, cannot provide easily generalisable data (Sayer, 1984). Since this research takes the form of a case study, it proposes to be place and context specific and the lack of generalisation is not seen as being limiting. Lessons learnt from this specific context may well be relevant in similar circumstances.

Intensive collection techniques have been used here to collect qualitative primary data. It has been argued that these “methods are best used for problems requiring depth of insight and understanding, especially when dealing with explanatory concepts... (thus) qualitative research involves:

1. “‘Seeing through the eyes of...’ or taking the subjects perspectives;
2. Describing the detail of a setting from the perspective of participants;
3. Understanding actions and meanings in their social context;
4. Emphasising time and process;
5. Favouring open and relatively unstructured research designs;
6. An approach in which the formulation and testing of concepts and theories proceeds in conjunction with data collection” (Hakim, 1987, cited in Robinson, 1998, 410)

In this case, the research adheres strongly to the characteristics of qualitative research listed above. The aim of the research is, in its broadest sense to understand the actions of the club and its implication for sustainability. Data collection has continued over time to emphasis the processes of the participatory initiative. The research design has therefore remained open and has been adaptable as the process of data collection has progressed. Finally, data analysis and interpretation has not been confined to the end of the research process but has occurred during the data collection process through the reviewing of activities in term of existing theoretical concepts.

Two techniques of data collection have been used. These are: participant observation and interviews. The different techniques were used in conjunction with each other to enrich the data for the study. The following section discusses both the techniques and process of data collection that has occurred through these methods.

#### **4.4.1 Participant Observation**

Participant observation is defined by Robinson (1998, 422) as “looking, listening, experiencing and recording an observers observations of daily life.” Participant observation formed the basis of primary data collection for this research. This section discusses ways in which participant observation occurred and lists events that were observed.

Participant observation was carried out in order to assess the dynamics of the waste minimisation club, to assess the methods of capacity building within the club and to investigate the barriers and drivers for success in the club.

In many cases participant observation is limited due to a lack of access to communities or events (Flowerdew and Martin, 1997). Participant observation has been possible in this study due to the access gained by the professionals who initiated the club. Association with those professionals who

already had access to relevant industrialists enabled immediate access to the inaugural meeting of the club. The aims of the study and reasons for attending meetings and training sessions were made explicit to all participants at this first meeting. These were readily accepted and led to further acceptance of participant observation of training sessions at individual companies.

According to Gans (1982, cited in Robinson, 1998, 422) the researcher can play one of three possible roles while carrying out participant observation. These roles are that of a total participant; a researcher-participant or a total researcher. A researcher-participant participates closely in events while retaining a distance that enables her to maintain a critical viewpoint for the discernment of patterns and progressions. This is the most common type of participant observation and has been used predominantly for data collection in this study.

As a researcher-participant, the relationship between the researcher and the group under study was open and trusting with the agenda of each party known and accepted. The researcher was able to give advice and assistance at club meetings but was often on the fringes of these meetings due to the technical nature of discussions and club activities.

Observations were carried out from February 1999 to July 2000 at club meetings, training sessions and additional meetings and functions. As evident in Table 1, of the nine club meetings that have been held during this time, three were not attended due to unavoidable circumstances. These three meetings have been incorporated into the database of the study through the use of minutes.

As evident in Table 1, a number of training sessions with club members, shopfloor workers and with the management teams of member companies occurred in addition to club meetings. In the same way as with the club meetings, the proceedings of these sessions and resulting observations were recorded.

Table 1: Meetings and Training Sessions from Which Primary Data was Collected Through Participant Observation.

Date	Type of meeting	Observation level
3 March 1999	Hammarisdale conservancy meeting	Participant observation
9 March 1999	Play Dough Factory – Learning about Waste minimisation	Participation

12 March 1999	Hammarsdale Waste Minimization “Wrap-up” Meeting	Participant observation
12 March 1999	Training Module 1: Introduction to Waste Minimisation and Scoping Audits	Participant observation
19 May 1999	HWMC Meeting	Participant observation
19 May 1999	Training Session Management Training Session for Company Directors and Waste Minimisation Champions	Participant observation
26 May 1999	Hammarsdale Waste Minimisation Club	Non attendance, Minutes
26 May 1999	Training Module 2 and 3 for Club members	Non attendance, Minutes
11 August 1999	Brainstorming: club meeting	Non- attendance
5 October 1999	Buckman Laboratories Shopfloor training	Participant observation
6 October 1999	Coats SA Shopfloor training	Participant observation
7 October 1999	Coats SA management training	Participant observation
17 October 1999	Coats SA shopfloor training	Participant observation
20 October 1999	HWMC Meeting	Participant observation
1 March 2000	HWMC meeting	Participant observation
11 May 2000	deNim training session	Participant observation
12 May 2000	Coates training session	Participant observation
24 May 2000	HWMC meeting	Participant observation
25 July 2000	HWMC meeting	Non attendance, minutes

As suggested by Robinson (1998, 424), part of the observation process entailed keeping a field diary to record each instance of observation. A record of all events attended has been kept along with interpretation notes. These ‘on-the-spot’ observations assisted with later analysis.

Additional documentation such as minutes, training manuals and presentation slides have been collected at these meetings and training sessions to provide additional detail to the observation data and to elaborate on observations.

#### The Waste Minimisation Club for the Metal Finishing Industry

In addition to the participant observation carried out at the activities of the HWMC, participant observation was undertaken at a small number of meetings of the Waste Minimisation Club for the Metal Finishing Industry. Table 2 indicates the meetings of this club at which participant observation took place.

Table 2: Meetings from which comparative primary data was collected through participant observation.

Date	Type of meeting
10 August 1999	Meeting of the Waste Minimisation club for the Metal Finishing Industry
19 October 1999	Meeting of the Waste Minimisation club for the Metal Finishing Industry
21 February 2000	Meeting of the Waste Minimisation club for the Metal Finishing Industry
29 May 2000	Inaugural meeting of the Metal Finishing Association

This data formed comparative information during the process of analysis and acted to enrich understanding of waste minimisation clubs as voluntary participatory organisations.

Flowerdew and Martin (1997, 144) suggest extending participant observation data by using additional, appropriate data gathering methods such as “conducting interviews with key members of the community before, during or after your participant observation work”. In accordance with this, interviews were carried out to supplement the information gained through participant observation. The following section describes the structure and process of interviews in this study.

#### 4.4.2 Interviews

As discussed earlier, the process of participant observation enabled the grouping of those people involved in the club. It was decided that interviews would be used to gather data more specific to each observed group.

Eyles (1988 cited in Flowerdew and Martin, 1997, 111) describes an interview as “a conversation with a purpose”. In this research the interviews were used to gain a greater understanding of the perceptions of those who made up the club, to investigate how the club functions and how the partnerships within the club could evolve.

Interviews were chosen as a further means of data collection as it was felt that interviews were more open-ended than questionnaires and enable the collection of appropriate data for the study. The information required to meet the objectives of the study could not be gained by close-ended, fixed questionnaire-style methods because less controlled, informal interviews allow “respondents to raise issues that the interviewer may not have anticipated” (Flowerdew and Martin, 1997, 111).

It was intended that semi-structured informal interviews would be carried out in all stakeholder groups i.e. the professionals, educators and members. The interview questions were developed prior to the start of the interviewing procedure (see Appendix A for the interview schedules). The same questions were repeated for each person in a group. There was some differentiation amongst questions asked of the three groups of interviewees as some questions related specifically to the activities, goals and interests of each group e.g. some questions were only relevant to the

professionals, and these were only asked in those particular interviews. The replication of questions in each group and often across groups permits some compatibility of responses.

Despite the structured nature of questions, the interviews were informal as there were no set responses required, questions were open-ended and the interviews maintained a high degree of flexibility (Robinson, 1998). Further questions were asked to expand upon or clarify responses to the structured questions or to explore new avenues as they were revealed through the interview process.

A series of twelve interviews was undertaken during the period from the end of May to the end of September 2000. The club had been functioning for over one year by this time and it was felt to be an optimal time towards the end of the research period for the gathering of intensive data from the sample groups. The extensive period of time over which interviews were conducted was due to the difficulty in securing appointments with busy industrialists who were reluctant to give up their time. During this period, interviews were carried out with the club representative for each of the nine member companies as well as with three of the professionals within the club.

Problems arose with the professional and educator groups. The nature of their involvement in the HWMC and their distance from the study area limited the access of the researcher to these groups making the collection of data problematic.

During the period of data collection one of the professionals and the three educators with whom interviews needed to be conducted were located in other South African cities or were overseas. When it became apparent that interviews with these individuals would not be possible it was decided that, in order to gather this data, the interview questions should be arranged to form an open-ended questionnaire. This questionnaire could be emailed and returned after being filled in by the recipient. It was recognised that questionnaires do limit the freedom of the respondents to elaborate on points brought up but it was felt that this data would still be equivalently useful and comparable to the responses made during interviews.

These questionnaires were sent off and attempts were made to get the responses returned over a period from June to October 2000. Numerous excuses were given and in some cases no responses to any attempts were given and it was then decided that it should be accepted that this data would remain missing from the study.

It is important to note that the interviews themselves did not form the sole technique of data collection but formed one part of a multi-method approach (Flowerdew and Martin, 1997,112). This was particularly the case with the educators as extensive participant observation had been



carried out during the training of employees of member companies by this group. An informal discussion did take place with one educator during participant observation of the capacity building programme. In terms of the professional group, three of four professionals were interviewed and the individual from whom no interview or questionnaire data could be obtained did take part in informal discussions during the period of participant observation. In addition, failure of these individuals to carry out an expressed willingness to provide data should be accepted as data within itself.

Flowerdew and Martin (1997, 73) contend that “primary data collection must be part of an integrated process which begins with the underlying research questions, is influenced by an understanding of previous work and is designed with specific analysis plans in mind”. This premise has been the foundation of the development of the data collection process, as described above, enabling effective analysis of relevant data. The following section discusses the process of data analysis.

#### **4.5 DATA ANALYSIS AND INTERPRETATION**

The data gathered from primary sources was used as the basis for a qualitative analysis of the waste minimisation club.

Dey (1993 cited in Robinson, 1998, 410) suggests that “an analysis of qualitative data can involve reading, annotating, creating categories and organising information with respect to a theoretical framework so that greater understanding of events and actions is generated”. The analysis of interview and questionnaire data has been carried out by a thorough investigation of the many pieces of data and the subsequent categorisation of data into various themes.

Originally, the objectives of the study formed the themes around which data analysis began and data was organised under these objectives. Arrangement of interview data and participant observations according to the objectives of the study always keeping in mind the ultimate aim of the study. The objectives were viewed as pieces of a puzzle that ultimately fitted together to reveal a ‘picture’ from which explanations could be drawn. These themes shifted and changed through an iterative process of data review. As data revealed patterns, for purposes of clarity, the themes were reshuffled to produce a ‘clearer picture’. Themes formed from the objectives of the study were linked together and new themes emerged from continual investigation of the primary data.

Through this iterative process of data reorganisation, it emerged that the contribution of the Hammarsdale Waste Minimisation Club to sustainable development could be assessed according to two overarching themes. The individual themes generated from the objectives could be organised

under these two broader themes to provide significant answers to the questions generated through the aims of this research.

Robinson (1998, 431) argues that analysis of interviews “can involve assessing the respondents views against an initial theory or invoking certain constructs that can be understood more clearly through consideration of an interview”. To this end, existing theories have been critically applied to the primary data to facilitate the meeting of research objectives.

During the process of data categorisation the theoretical framework guided the search for trends within the data so that data could be effectively categorised into the existing ‘objective’ themes or could be arranged to reveal previously unidentified patterns. The existing theoretical framework largely informed the interpretation of the data once it was organised to that the significance of patterns and trends within the themes could be established and explained.

In certain cases, the way in which people stated their opinions and beliefs within the context of the interviewing procedure was viewed as important. Some textual and discourse analysis has been carried out as a means of interpreting the interview data and enriching the analysis of the primary data.

Once the data had been gathered and analysed, conclusions were formulated. The presentation of these conclusions has been carefully carried out to provide an overview of the results of analysis without the loss of the richness of the qualitative data itself. Because the directives of the aims of the study, and its limited size, it has been impossible to present all the details of the Hammarsdale Waste Minimisation Club as an organisation. An attempt has been made to find a balance between the provision of details and the presentation of trends that are more generalised. In cases where there has been much commonality amongst individuals only one or two quotes are given in the text to indicate a particular trend but where dissent or interesting alternative perspectives exist, more detail has been provided for a more thorough discussion.

Throughout the process of analysis and interpretation, the subjectivity of the process has been recognised. The following section introduces these issues.

#### **4.5.1 Subjectivity Issues**

It is recognised that “qualitative...information is...‘constructed’ by researchers, insofar as research by human geographers is an interactive and creative process that is never entirely neutral nor objective” (Robinson, 1998, 12). Awareness of the inevitability of subjectivity has caused the researcher to pay particular attention to preventing as much bias as possible. An attempt was made

not to ask leading questions during the interviewing process and to step back and retain some objectivity during the analysis stages.

It is recognised that a researcher “should always be suspicious...of why you understand what you understand within the contingent, intersubjective, time-spaces of your fieldwork”. In accordance with this, careful attention was paid to the process of data organisation and level of subjectivity regarding the reasoning behind conclusions drawn from the primary data (Flowerdew and Martin, 1997, 140).

#### **4.6 CONCLUSION**

The methodology adopted for this study has required the use of both primary and secondary data sources. Secondary data has been collected through a literature review. Primary data has been collected through two techniques, namely through participant observation and through the use of semi-structured, open-ended interviews. A stratified sampling method was used to select the groups of people who took part in the interviewing process. Interview and participant observation data has been augmented by primary documentation generated through the activities of the HWMC.

Rigorous analysis of the primary data has been carried out through categorisation of data into themes. Interpretation of these themes has been carried out with strong reference to the theoretical framework developed through the literature review.

Successful collection and analysis of data is essential for the aims and objectives of the project to be met. The variety of methods used and the integrated manner of data collection enabled the assembling of relevant primary and secondary data. Rigorous analysis of this data allowed for a detailed investigation of the role of the HWMC, as a voluntary participatory organisation, towards sustainability.

The following chapters detail the outcomes of this data collection and analysis process.

## **CHAPTER FIVE**

### **THE HAMMARSDALE WASTE MINIMISATION CLUB AND ITS ROLE IN SUSTAINABLE DEVELOPMENT**

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#### **5.1 INTRODUCTION**

This chapter discusses the ways in which the Hammarsdale Waste Minimisation Club (HWMC), as a voluntary participatory organisation, contributes to sustainable development.

The chapter is organised according to two themes. The first theme is that of the organisation of the HWMC, including the membership, the hierarchical nature of the Club and the ways in which the activities of the Club are organised. The second theme addresses the activities of the Club, such as the implementation of waste minimisation and capacity building efforts. These themes occur simultaneously and can be viewed in combination to determine the contribution of the HWMC to sustainable development.

The first theme is divided into two sections. Section 5.2 discusses the HWMC as an organisation, identifying the key role-players and the variety of ways in which they interact to form the structure of the Club and to carry out its various activities. Section 5.3 investigates the ways in which the Club plays a role in a number of broader contexts. These include the role of the Club in the official decision-making processes of local government, the prospect of the Club becoming institutionalised and the situation of the Club within the broader environmental movement that exists globally.

The second theme is divided into three sections. Section 5.4 discusses the capacity building programme that has been an important part of the activities of the HWMC. Section 5.5 introduces the changes that have been made within member companies regarding their policy and their manufacturing processes. In turn, section 5.6 reveals the barriers and motivators that play a significant role in determining the rate and extent to which waste minimisation is implemented in member companies.

Finally, section 5.7 concludes the chapter by drawing these two themes together to review how the HWMC contributes to sustainable development at the present time. The possible limitations of the organisation in its contribution to sustainable development are also discussed.

#### **5.2 THE HWMC AS AN ORGANISATION**

### **5.2.1 Introduction**

The Hammarsdale Waste Minimisation Club consists of a number of key role-players. These role-players (discussed in section 5.2.2) interact to create the organisational structure of the HWMC, direct the way activities are carried out and determine other general characteristics of the HWMC as a voluntary, participatory organisation.

The following sections discuss these issues in an effort to present an understanding of the HWMC as an organisation.

### **5.2.2 Role- Players in the HWMC**

The HWMC is made up of five role-player groups. This section introduces these role-player groups as a pretext to understanding how they interact to form the organisation of the HWMC.

The classification of these groups has been possible through participant observation of the HWMC meetings from March 1999 to June 2000.

A key group within the HWMC is that of the ‘professionals’. This group consists of three representatives of the Pollution Research Group from the University of Natal Durban and a consultant from Enviros-March (a consultancy experienced in waste minimisation) in the United Kingdom. Some members of the Pollution Research Group involved in the Club are engaging in the process of waste minimisation implementation to gather data for their post-graduate degrees (Maharaj, 21/7/2000).

The second group within the Club is that of the members themselves. Member companies are all within the Hammarsdale industrial area. (Appendix B illustrates the close proximity of these member companies to each other in this relatively isolated industrial area.) HWMC members are, for the most part, involved in various aspects of the textile sector (Table three). Those member companies that are not involved in textiles are a chicken abattoir and a chemical manufacturer (Table three). Each of the nine member companies is represented by one or two of its employees (HWMC Meeting, 12/3/1999). This representative is termed a ‘project champion’ because they ‘champion’ waste minimisation projects within their company (Enviros-March, 1999).

The third key role-players within the HWMC is the group of environmental educators. This group consists of the three consultants from Kagiso-COWI (a Danish consultancy based in Johannesburg) who play the role of environmental educators within the Club.

Table Three: The Member Companies and their Industrial Sector (Source: Maharaj, 1999; participant observation 1999-2000)

<b>Company Name</b>	<b>Industrial Sector</b>
Buckman Laboratories	Chemical manufacturing sector
Coats SA	Textile Sector (thread production)
Coastal Textiles	Textile Sector (fabric production)
Dano Textiles	Textile Sector (fabric production)
DeNim	Textile Sector (denim production)
Dyeco	Textile Sector (fabric production)
Gelvenor Textiles	Textile Sector (parachute and specialist fabric production)
Rainbow Chickens	Food production (chicken processing plant)
Lotus 2000	Textile Sector (acrylic yarn and carpet production)

The Hammarsdale Industrial Conservancy forms the fourth role-player in relation to the HWMC. The Hammarsdale Industrial Conservancy includes a number of companies who are also HWMC members and it is believed that many of the companies that are most active in the Hammarsdale Industrial Conservancy belong to the HWMC (Holdsworth, 2/6/2000). The Hammarsdale Industrial Conservancy has the additional membership of representatives from the KZNNCS, Durban Metro and Umgeni Water.

Regulatory bodies have a place in the activities of the HWMC. A number of service providers and government departments, for example, Umgeni Water and DWAF, are linked to the HWMC and collectively, these bodies form the fifth group of role-players.

### **5.2.3 Funding of the Hammarsdale Waste Minimisation Club**

It is important to note that the professional group brings with them the funding for the Club. The funding is a research grant from the Water Research Commission (WRC). Each professional is paid for their involvement in the project by the funding. Like the professionals, the educators are also paid for the time they spend carrying out capacity building (Pedersen, pers comm.).

The demands of the funders themselves are not inhibiting (Kleidman, 1994) as their demands are largely set out by the details of the research contract which is agreed on by all parties at the outset of the project (Buckley, 12/9/2000). The extent of the funding, though, has directed the amount of time the professionals and the educators have been able to spend as part of the HWMC. Budgetary limits caused the withdrawal of one professional in May 2000 (25/5/2000).

Funding for comprehensive and fully focused involvement of the professional group in the Club will end at the end of 2000 (Barclay 15/8/2000). Alternative funding is available for a further two years. This will enable the professionals to be available to the HWMC in an advisory capacity only

(Barclay 15/8/2000). The withdrawal of direct leadership of the HWMC has some implications for the sustainability of the Club itself. This will be further discussed in sections 5.2.8 and 5.2.11.

#### 5.2.4 The Organisational Structure of the Hammarsdale Waste Minimisation Club

The five role-player groups have specific characteristics within the context of the Club. Their characteristics and the way they interact have created the particular organisational structure of the HWMC (see Figure Nine).

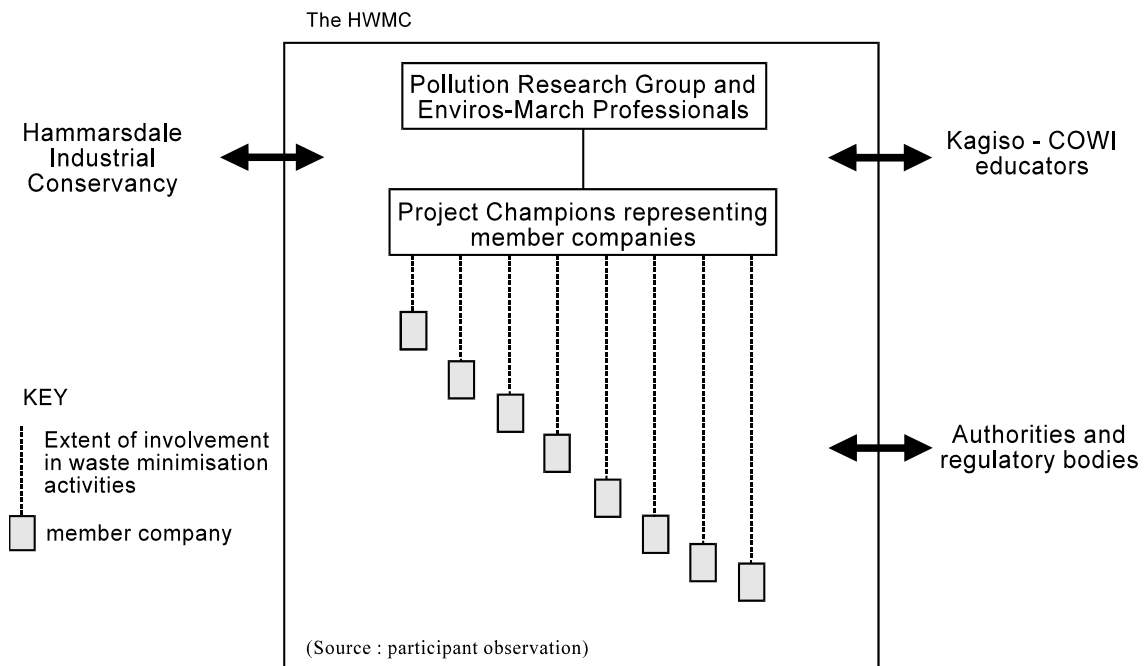


Figure 9 : The organisational structure of the HWMC.

It is common in the postmodern era for social movement organisations to have a non-hierarchical structure (Garner, 1996) but the HWMC has a hierarchical structural organisation. As is evident in Figure Nine the professionals form the higher level in the hierarchy of the Club with the project champions below them (Barclay, 15/8/2000). Leadership has become mainly associated with the professionals. This group were the instigators of the formation of the Club and play the role of drivers, pushing the waste minimisation process forward (HIC Meeting, 3/3/1999). Club members rely on them for expert assistance in waste minimisation and process engineering. This group also carries out administration. The professionals require information from members about their progress for their own research. This is understood and accepted by the members as being part of the activities of the Club (HIC Meeting, 3/3/1999; HWMC Meeting, 12/3/1999). The professionals and their research goals affect the role of the Club as a conduit for waste minimisation as they lead the activities of the Club.

A hierarchy has emerged amongst the member companies as waste minimisation activities have begun to generate success. According to Maharaj (21/6/2000), "Those sites who have made the

most (reported) savings and implemented the waste minimisation programmes to the fullest are generally most active in the Club activities and seem to be at the forefront of Club activities.” Therefore those member companies which are highest in the hierarchy are those that have had the most success with waste minimisation and are most proactive. Although this hierarchy does not impact on the co-operative and participatory nature of proceedings, some companies are held up as examples of good practice by other members and by the professionals. It is these members to which other members aspire and to which they are more likely to turn to when they are in need of assistance with waste minimisation.

The professionals originally proposed that members should form project teams in each company that would be primarily responsible for waste minimisation on each site. The project teams therefore exist at the lowest level of the hierarchy, within the member companies. On the project team level, few companies have teams organised specifically around waste minimisation issues. In some cases no project teams have been organised (Black, 3/8/2000) and in other member companies waste minimisation has been integrated with the existing responsibilities of individual employees (Coulard, 16/8/2000; Winn, 16/7/2000)

Although the educators are positioned quite high within the structure of the organisation, in some ways this group acts separately as they carry out a function that is not seen as central to the Clubs activities of implementing waste minimisation practices in the manufacturing process. The educators do not attend the regular Club meetings although they were present at earlier meetings of the HWMC (HWMC Meeting, 12/3/1999). Usually the educators visit individual companies to carry out training for the management and shop floor employees of member companies.

It was agreed by the Hammarsdale Industrial Conservancy members, professionals and HWMC members that structurally, the Hammarsdale Industrial Conservancy should form the umbrella body for the waste minimisation Club (HIC Meeting, 3/3/1999). Although many potential benefits of a strong partnership between the Hammarsdale Industrial Conservancy and the HWMC exist, the actions of each organisation are not well integrated. Only two of seven Club meetings have been held in conjunction with the Hammarsdale Industrial Conservancy, one of these being the inaugural meeting of the HWMC (HIC Meeting, 3/3/1999; 25/7/2000). The Club is largely autonomous, although waste minimisation reports are given at the meetings of the Hammarsdale Industrial Conservancy and the waste minimisation activities are seen as adding to the other environmental actions taking place in Hammarsdale under the Hammarsdale Industrial Conservancy (Naicker, 31/5/2000). One of the members of the HWMC is the chairman of the Hammarsdale Industrial Conservancy, providing a link which has the potential to be expanded upon (Naicker, 31/5/2000). Due to the lack of integration of these two organisations, the HIC is viewed as playing an external role in relation to the Club, although this relationship has the potential to be further developed.



In a similar way to the HIC, the regulatory bodies play an external role in the HWMC but do feed into its activities. According to Friedman (1998), this is common for movement organisations as in the context of decentralising governance, voluntary organisations prefer to remain largely autonomous from the political arena. In this case, organisations and government departments such as Umgeni Water and the Department of Water Affairs and Forestry are aware of the activities of the HWMC and have played a marginal role in information sharing during the Club meetings. These partners are welcome to attend each meeting of the Club but often only attend when invited to speak on a particular issue or to 'look in' on the Club. For example, an Umgeni Water representative has given a lecture on pollution limits and the colouration of effluents (HWMC Meeting, 20/10/1999).

It is interesting to note that the structural organisation of the HWMC has not been exactly as was planned by the professionals at the outset of the Club (see Appendix C for the preplanned structure). It is likely that the relationships formed within the Club and the informal nature of activities has resulted in the flexibility of the planned structure so that a new form has emerged. This is common in new social movement organisations as they attempt to remain flexible and spontaneous so that they are able to adapt to the changing condition of society and to the demands placed upon them (Foweraker, 1995).

It is within this structure that partnerships and relationships amongst role-players are formed, that activities of the Club take place and contributions to sustainable development can be made.

#### **5.2.5 The Constitution of the Hammarsdale Waste Minimisation Club**

It is important to note that the structural organisation of the HWMC, membership of the Club and the roles of each group have not been formalised as no constitution has been developed for the Club.

The Club exists through a verbal agreement (HIC Meeting, 3/3/1999). It appears that for this reason no constitution or formalised code of practice was developed. The lack of a constitution means that members are not formally bound to the HWMC, therefore any waste minimisation successes and continued commitment to the Club are totally voluntary.

Although the Waste Minimisation Club for the Metal Finishing Industry has no constitution, it does have a 'certificate of commitment' which members sign to show their commitment to active participation within the meetings of the Club and to the strategic implementation of waste minimisation within their company (Waste Minimisation Club for the Metal Finishing Industry meeting, 10/8/1999). This formalises membership and commitment, creating a more established

'space' for the sharing of information and waste minimisation implementation than has been developed in the HWMC.

Sowman (1999) identifies procedural equity as a necessary element for the achievement of sustainable development. In order to achieve procedural equity, those who are effected by decisions should be included in the formal processes of decision-making and organisations should act with transparency and fairness so that processes and activities can be equitable (Scott and Oelofse, 1998).

Although the Club has been functioning without a constitution, the lack of formal procedures of decision-making within the Club and the failure to formally designate particular leaders with specified roles within the organisation does reduce the degree of procedural equity. Without formalised operating procedures, a space is open for the manipulation of the agenda by personal motives. It has been noted by four of the project champions that the Club requires a committed leader to encourage continued activity (Colorossi, 16/8/2000; Kennedy, 29/9/2000; Satharia, 2/8/2000; Black, 3/8/2000). The lack of formalised leadership through the non-existence of a constitution and a specified election process thus weakens the organisation.

This weakness within the organisation of the HWMC restricts the contribution of the Club to sustainable development because it limits the procedural equity that is a requirement for sustainability and because it calls into question the sustainability of the organisation itself. This is because sustainable development relies on the formation of structures which contribute to sustainable development through their structures as well as through their actions (Szerszynski, 1997).

By comparison, the activities of the Club contribute to the improvement of environmental quality. The following section introduces these issues.

### **5.2.6 Meetings and Activities of the Hammarsdale Waste Minimisation Club**

Activities of the Club occur within the existing structures of the Club. Club meetings occur approximately every three months, and they usually last from half a morning to a full morning depending on whether training is included on the agenda. The role-players interact to carry out the various activities of the HWMC both at meetings and between. Black (3/8/2000), an industrial representative, explains how the HWMC operates,

“Well the way that the Club is functioning at the moment is that we are meeting as a Club to focus on the concepts and to get some input from outside people as to what its all about and what could be done and then the individual champions are taking it back into their

companies. They are trying to set up teams to look at waste minimisation costs and ways that they can set up different projects in their companies. Then taking that information and feeding it back into the Club as an information exchange and hopefully in that process picking up some ideas and picking up some other projects that they can get involved in. Because we've got a lot of similar things here we can share them, and the I think too, just as an area of motivation, you see other people doing things and then you realise you can tackle that. I think that kind of cycle is the way the Club works”.

This description is typical of the project champions as they focus on the information-sharing processes of the Club as a means of carrying out successful waste minimisation in individual companies.

The professionals organise, run and control Club meetings, for example, setting the agenda and acting as chairperson (Barclay, 15/8/2000). In each member company, project champions attempt to implement waste minimisation with assistance from the professionals. Firstly a waste audit is conducted on site (Enviros-March, 1999a). This enables identification of waste minimisation opportunities and develops a baseline from which improvements can be measured (Enviros-March, 1999a). Secondly, project champions are responsible for the implementation of waste minimisation solutions according to the priorities and financial ability of their company (Maharaj, 21/6/2000). Thirdly, monitoring of changes and targeting for further improvements occurs in member companies. This process is also lead by the project champion (Enviros-March, 1999a).

Participant observation has revealed that the above-mentioned steps towards on-site implementation of waste minimisation measures are carried out with intense assistance from the professionals. Significant use is made of the previous waste minimisation experiences of the professionals and extensive advice is given during the identification of waste minimisation opportunities and regarding processes of the implementation of solutions and monitoring and targeting (Maharaj, 21/7/2000).

At Club meetings, project champions report and share progress, successes and failures regarding the process of implementing waste minimisation within their companies (HWMC meetings, 19/5/1999, 6/3/2000). At times, the project champions divulge the financial rewards of these actions, if any have accrued (HWMC meeting, 1/3/2000). As project champions report on their activities information sharing occurs to encourage increased success and further implementation of waste minimisation solutions.

The high levels of interaction and sharing that occur to generate the activities of the Club are indicative of an organisation with a highly participatory nature. This is conducive to the patterns of

activity of organisations that work within the sphere of the environmental movement (Garner, 1996). The achievement of sustainable development relies on participation and interaction between environmental stakeholders (Sowman, 1999). It appears that the participatory nature of the HWMC facilitates some contribution to sustainable development.

The implementation of waste minimisation in member companies is a process-oriented activity of the Club. These activities are discussed in greater detail in section 5.5. In addition to these processes, a programme of capacity building has been a primary activity of the Club. This programme is one of environmental education and aims to build skills and to motivate project champions and member companies to carry out waste minimisation. A detailed analysis of the capacity building programme is provided in section 5.3.

It is significant that these activities for the increased efficiency of industry take place in the context of a 'club' rather than another form of organisation. The effects of this notion of a 'club' are discussed in the following section.

#### **5.2.7 The Notion of a 'Club'**

It should be noted that this grouping of industries for waste minimisation is called a 'Club'. Maharaj (21/6/2000) believes that the grouping is called a Club because:

“The intention is to foster relationships between members to overcome suspicion, make them more comfortable exchanging ideas and experiences and to promote interaction so that they could all work towards a common goal of reducing the combined environmental impact of their industrial activities. The Club also creates a sense of belonging and exclusivity so that the companies are motivated towards the overall goals of waste minimisation. A company will feel more comfortable applying concepts and waste minimisation programmes if similar companies in the area are doing the same with benefits arising from this activity.”

Barclay (15/8/2000) reports that “the term 'club' also implies exclusive membership and this Club was formed for an exclusive number of companies”. In order for the relationships upon which the Club's success depends to be formed, a level of informality needed to be achieved. This informality was assisted by the notion of being part of a 'Club' (Barclay, 15/8/2000).

The term 'Club' also has connotations of voluntary actions and the idea of collectivity, teamwork and mutual support. This notion has been upheld by Lewis (2/8/2000) when she states that the voluntary nature of involvement in the Club has been a positive experience:

“I have appreciated primarily the fact that you were never punitive, because one can often feel that one isn’t getting compliance and one isn’t getting the results that you would like to have... It’s a big initiative, it costs from your side a lot of financial input (and) a lot of personal commitment and people can use emotional blackmail. You never did that and ... if you had used emotional blackmail I probably wouldn’t have come...That non-confrontational approach is probably more successful in industry as a confrontational approach would be.”

Coultard’s (16/8/2000) statement outlines the characteristics of a ‘Club’:

“Maybe if there is one company who is battling the other guys can get together and say how can we help you? Try to push the guy along. If he is not pulling his weight and he is recognised as being the odd one out I don’t think that person would enjoy that situation, you’re the odd one out, you’re not pulling your weight, (but) if everybody is willing to help, they would be more willing to make a concerted effort”.

It therefore seems that members feel a sense of belonging and responsibility to assist and support other members of the waste minimisation club. The voluntary nature of participation is also valued.

Szerszynski (1997, 151) argues that developing a sense of belonging through interaction and support can create the notion of community and citizenship that results in “human flourishing”. This active participation, in a ‘community’ can play a role in improving the quality of life, which is the ultimate aim of sustainable development. Thus the shared identity and collective action through the ‘Club’ can enable members of the Club to play a role in sustainable development.

To this end, a number of relationships have been formed through participation in the HWMC. The following section details these relationships and their role in the achievement of sustainable development.

### **5.2.8 Relationships within the Hammarsdale Waste Minimisation Club**

The interactions of role-players through the meetings and activities of the Club have lead to the development of a number of relationships. These relationships and described below.

Relationships have developed amongst the members themselves through the activities of the HWMC. These relationships assist in achieving the goals of waste minimisation as members assist each other with implementing solutions and are encouraged by each other’s successes. Some relationships did exist prior to the formation of the HWMC, especially through the Hammarsdale Industrial Conservancy (Black, 3/8/2000). Members do feel that these relationships have become more concrete than before and many feel that they can request assistance from any other member if necessary (Holdsworth, 2/6/2000).

Holdsworth (2/6/2000) explained his relationships with other member companies', "Well I think we share more information and I know if their champion needs help in another company we've shared information and we come to assist". A further example of these relationships was provided by Black (3/8/2000) when he discussed the relationships between his company and other member companies:

"We have a very good working relationship as far as that (waste minimisation) goes, (an example is) George Winn up at Dano - stopping and talking and I asked him some questions. Kevin Holdsworth at Gelvenor, we have a discussion that goes on, so there is a nice relationship that opens up. I think people would be quite willing to share quite a lot of information. Its funny, we sell products to Dano and we have meetings on other issues and people are almost fighting each other but on this level we can sit and discuss".

It is notable that the strongest relationships have been formed between those member companies in similar sectors while companies with differing production processes have less in-depth involvement with other Club members. This is likely because companies in similar sectors are more able to assist each other as they experience similar problems and have generally applicable waste minimisation solutions (Lewis, 2/9/2000). Lewis (2/9/2000), representing Rainbow Chickens, argues that:

"Because the industries have been very different there has not been a real change to our relationship because I was attending the Hammarsdale Industrial Conservancy anyway and we were all committed to the conservancy ...and we are all obviously environmentally conscious. If we had been similar industries we would have had more interaction, if we had been textile as well, we would have had more interaction but our problems are so different there was no real reason for us to become more involved".

Most relationships between Club members and regulatory bodies predate the formation of Club. The Club uses these existing relationships and has strengthened them. Coultard (16/8/2000) expresses one example of this:

"We have built up a good relationship with Umgeni Water, we are always speaking to them about our levels and trying to monitor it. Basically I had met the guy from Umgeni (Water), Dave Gallagher, before we started going to the Waste Minimisation Club but after the meetings of the Club you sit down and chat with the guy and ask him about ideas. Its made it (our relationship) stronger".

Thus the form of these relationships has changed. Representatives of industry (member companies and their employees) now know people rather than simply identifying 'enemy' organisations. This change is evident in Kennedy's (29/9/2000) statement:

"Our engineer here has a far better relationship with Durban Waste and Water than he had before because he now understands (why we need controls) whereas before they (the regulators) used to pitch up here and he used to (hate it)...now when they come he talks to them...That came about by talking to him about this sort of thing (waste minimisation), putting it into practice and going to the meetings".

An indicator of the improved nature of relationships between the authorities and Club members is the changed atmosphere in the discussions with authorities. Six out of twelve (50%) of the people interviewed in this study believe that are more open and conducive to constructive discussion between industry and regulatory bodies. For example:

“The first few meetings we had, there was a definite air of conflict but the air of confrontation has faded, down to perhaps a particular individual who is still got particular problems. The general atmosphere is far more open” (Black, 3/8/2000).

The relationship between members and professionals has remained hierarchical. To a degree, the professionals have provided ‘facilitation’ (Kleidman, 1994) as they have carried out training for the volunteer members of the Club and actively encouraged the implementation of waste minimisation through their role as drivers (Barclay 15/8/2000). This role can be viewed in a positive light as facilitation has sustained both waste minimisation activity and the organisation of the Club itself. Unfortunately, though, the role played by the professionals in the HWMC has had the effect of substitution (Kleidman, 1994). The driving role of the professionals has led to their domination of activities in the Club. They have carried out functions in the HWMC that could have been carried out by the volunteer members themselves. For example, the arrangement and chairing of Club meetings and carrying out waste audits for various member companies even after training has been completed (Maharaj, 21/6/2000).

Through the position of the professionals and their activities in the HWMC, a relationship of dependency has developed between the professionals and the volunteer member companies. This dependency is evident in many comments made by the members that the Club needs the Pollution Research Group to remain involved and driving the process. Colorrosi’s (16/8/2000) statement is typical of these concerns,

“You see, you need somebody there to prompt it and give guidance, I think you definitely need that, as soon as you take that away, that expertise from the guys at the university and ways of treating and combating and getting around certain things, its important for them to be there for the guys to achieve their goals, that input is needed.”

This dependency can be viewed as a potential weakness of the Club as it indicates a level of reliance on the professionals for the continuation of waste minimisation. In terms of sustainability, the withdrawal of the professionals in the future may cause a decline in the interactions between other role-players, thus reducing the sense of community and possibly limiting the extent of practical activities that contribute to sustainable development.

In general, good relationships have been formed between project champions in their efforts to implement waste minimisation. The attempt to achieve a common goal has built a sense of community amongst industries by galvanising existing relationships and redirecting their focus. In addition, relationships have been forged between members and regulatory authorities so that attitudes to compliance with legislation have been altered.

All these relationships are non-conflictual and take the form of partnerships that work towards the meeting of common goals, despite previously limited or 'rocky' relationships (Black, 3/8/2000). These partnerships enable the industrial community in the Hammarsdale Area to care for the local environment through the sharing of resources and knowledge that improves industrial practice, thus reducing the impact of industrial practices on the environment.

As mentioned previously, it is possible that these relationships can facilitate changes in personal attitudes and practices. One example of this is the change in relationship between an engineer at one member company and the representatives of regulatory bodies facilitated by interaction at HWMC meetings (Kennedy, 29/9/2000). In this case, a conflictual relationship has become amicable, leading to better discussions, a more positive approach to compliance with regulations and an enthusiasm regarding the reduction of waste (Kennedy, 29/9/2000).

Thus the relationships formed between the role-players in the HWMC play a complex role in strengthening and weakening the role of the Club in sustainable development. The increased discussion, higher levels of tolerance and the mutual support created by these relationships advances the role of the Club in sustainability but the dependency of one group on another for motivation and leadership limits the potential of this organisation to contribute to sustainable development over the long term.

Relationships formed in the context of the HWMC can be viewed in terms of partnerships for the environment. The following section reviews characteristics of the HWMC, including the relationships within the Club, in terms of a leverage partnership for the environment.

### **5.2.9 The Hammarsdale Waste Minimisation Club as a Leverage Partnership**

As discussed in Chapter Three, Long and Arnold (1995) have developed an environmental partnerships map that derives four types of environmental partnership through the use of two parameters of conflict and core relevance. The following section demonstrates some ways in which the HWMC fulfils the characteristics of a leverage partnership for the environment.



Data for this section has been obtained through participant observation of a number of HWMC meetings and management training sessions from March 1999 to June 2000. Where data has been obtained from other sources it will be referenced accordingly.

Typical of a leverage partnership for the environment, the HWMC was initiated by one champion group. The Pollution Research Group along with Enviros-March encouraged the other organisations to form the Club and then provided strong administration support and championed the waste minimisation activities of each member. As is usually the case with leverage partnerships, the HWMC can be viewed as collaboration between business and other organisations. Industry forms the main focus of the Club while the partnerships include academic institutions, consultants and regulators. As in most leverage partnerships, the champion group (the Pollution Research Group and Enviros-March) has a greater concern for the environment than the other Club members for whom the environment has less relevance. However, environmental issues are not central to the key stakeholders of the HWMC. The key partners are academic institutions, consultancies and industries that have research, profit and production respectively as their main agenda rather than environmental care and sustainability.

As a leverage partnership for the environment allows each party to make modest investments in environment for a relatively high social, political and financial return, the HWMC involves the members of the Club achieving a high financial return for modest changes in their processes of production and waste management. Increased environmental quality results from attempts to achieve these high financial returns although not aimed at explicitly.

Typically, the Club members have varying levels of commitment, and there is a strong focus on barriers to success as voiced during the discussions at Club meetings (20/10/1999). The professionals and educators have a greater vested interest and are thus more committed to the partnership (while their funding continues).

From November 1998 to March 1999 discussions took place with a view to forming the HWMC and even after agreement had been reached much discussion took place before any successful waste minimisation took place. This is typical of leverage partnerships, as they require a long phase of interaction prior to the realisation of relationships through action (Long and Arnold, 1995). Leverage partnerships display a high level of trust between partners. It is evident through the observed co-operation and ready use of expert advice that good relationships exist within the HWMC, especially between Club members themselves and between members and the professionals. Long and Arnold (1995) argue that in leverage partnerships, activities centre on the willingness of partners to make a contribution rather than on compromise. Within the HWMC there was little waste minimisation activity for the first six months after the partnership was formed. This

was due to a lack of support by the top management of member companies. Once this willingness to contribute became stronger, member companies were able to begin waste minimisation activities and significant progress has been made, "I think that over the years they have built up a relationship and they see that we are there to help, it's changed" (Barclay, 5/8/2000).

The purpose of a leverage partnership is to implement 'given' solutions as effectively and efficiently as possible (Long and Arnold, 1995). This occurs within the HWMC as the waste minimisation solutions and the use of new process engineering technology which is adapted to suit the situation and needs of each member is implemented (see Appendix E).

Through the nature of the partners, the characteristics of the relationships formed in the partnerships and the ways in which activities take place, the HWMC can be seen as a good example of a leverage partnership.

This environmental partnership is thus one way in which environmental awareness and sustainable practice is being generated through the HWMC. According to Long and Arnold (1995), the nature of this type of partnership for the environment is such that the partnership is usually short-term. The paybacks of a leverage partnership extend the life of the partnership but once these rewards end or it becomes too difficult to achieve rewards the partnership is likely to fade away (Long and Arnold, 1995). Therefore once it becomes difficult to achieve further waste minimisation successes with little initial outlay of effort or finances, it is possible that the partnership for waste minimisation will disintegrate. The fact that the Club is a leverage partnership may indicate that the contribution of the HWMC to sustainable development may only occur in the short term.

In addition to the nature of the Club as a leverage partnership, the current strength of the organisation and the level of activity taking place through the HWMC plays a role in determining the contribution of the Club to sustainable development. These issues are discussed below.

#### **5.2.10 Issues of Dependence and the Future of the Hammarsdale Waste Minimisation Club as an Organisation**

In the experience of the United Kingdom, waste minimisation activity through the mechanism of a club is sustained only for a few years (CEST, 1995). These international experiences indicate that the life span of a club is closely related to the length of the involvement of outside drivers (Buckley, 13/9/2000). The nature of the Club as an organisation and the strength of the HWMC play a vital role in determining the contribution of the Club to sustainable development. Therefore it is important to discuss the current status of the Club as an organisation.

The relationships between role-players, the way in which activities occur within the Club and the opinions of the professionals and members alike call into question the extent to which waste minimisation action is self-motivated. Furthermore, the long-term future of the organisation is addressed.

Club members and professionals believe that it is unlikely that the Club would have formed if not for the outside stimulus from the professionals. Significantly, seven out of ten project champions interviewed were certain that the Club would not have been formed without the motivation from the University of Natal, while two were uncertain and only one project champion felt the club could have developed independently, possibly through the Hammarisdale Industrial Conservancy. Kennedy's (29/9/2000) comments are representative of project champions as they feel they would have tackled waste management in a slow and piece-meal fashion, possibly as part of the functions of the Hammarisdale Industrial Conservancy or as a management practice, but would not have formed a body to concentrate on systematically implementing waste minimisation:

“(In) my personal opinion, no, I really don't (think the Club would have formed independently). We were jogging along as the HIC, then we were invited into this meeting and things progressed from there. If we hadn't been invited to the meeting and we hadn't heard of it, I don't think it would have (formed).”

It appears that the Club is strongly driven from the outside by the professionals. Although participation in the Club is voluntary it does require a 'push' from the outside. As stated by Black (3/8/2000), “I think the most important part of the Club is somebody who consistently arranges meetings, takes minutes (and) feeds back”. That is the basic requirement.” Therefore, volunteerism does not extend to independence and self-motivation.

This need for a driver limits the contribution of the Club to sustainability as it means that the members themselves are less able to care independently for their environment. The activities for waste minimisation and capacity building that make the most contribution to sustainable development are dependent on the leadership and motivation of the professionals.

There is some doubt over the future of the HWMC and its waste minimisation activities if the Club does not continue to have a driver. Barclay (15/8/2000), the project manager for the Club and a main driver of waste minimisation activity worries about the future of waste minimisation without a driver for the Club:

“I don't know, maybe I am being pessimistic but I feel that in a years time that it's not going to be such a big priority again, because we are here and we push them and every three months we are there... it keeps people aware and (it keeps waste minimisation) in the top of their minds. I have a feeling that if they don't have somebody reminding them (waste minimisation) might start slipping down the ladder of priorities again”.

This need for a driver has implications regarding the voluntary nature of the Club, as member companies are willing to involve themselves in waste minimisation but have a high level of dependency on the professionals for the maintenance of interest and motivation.

Interviews reveal a difference in opinion as to how well the Club is currently functioning. Three respondents (including two professionals) believe that the Club is functioning better than when it was initially formed. This is due to regular attendance of project champions at meetings and the successful implementation of waste minimisation measures within production processes (Barclay, 15/8/2000). Other respondents feel that although the Club continues to function well, there has been a recent decline in the enthusiasm of members and fewer new waste minimisation solutions being investigated (Coulter, 16/8/2000; Naicker, 31/5/2000).

Participant observation (1999-2000) reveals a potential explanation for this conflict of opinion. Currently, attendance at meetings by project champions has increased and member companies are regularly represented at club meetings. Paradoxically, even though attendance has improved, there is currently a decline in the amount of waste minimisation being implemented within member companies.

Scott (1990) argues that voluntary organisations in the postmodern era are characterised by alternating periods of high and low activity. Thus it may be that the activities of the HWMC adhere to the characteristic fluctuations of many new social movement organisations. Alternatively, this current decline in activity could indicate a weakness of the Club which could result in a potentially short life-span.

### The Future of the HWMC

It is important to note that the organisational structure of the HWMC is likely to change from the end of 2000 as the professionals remove themselves from the top of the organisational structure to become external role-players in an advisory role. If these strong drivers of the project and the funding are withdrawn there remains the question of what will happen to the remaining internal and external partnerships associated with the HWMC.

There are emerging signs that less waste minimisation implementation and capacity building will occur once the professionals withdraw. Coulter (16/8/2000) argues that since the consultant from Enviro-March withdrew, after the use of funding allocated for his involvement, enthusiasm amongst project champions has declined:

“I think that since Enviros-March has moved out...things have slowed down a lot. I think they were a big factor of the Club, David (the Enviros-March Consultant) always came across as energetic and bubbling and I think that encouraged us. Now that he is not there, things have slowed down”.

As was previously mentioned, the Club's members are dependent on outside motivation and leadership. Thus it is unlikely that the HWMC will not continue independently of the professionals. Interviews with Club members have revealed that all members believe that the Club will change in some way once the professionals withdraw. Some believe that the Club will dissolve completely (Winn, 16/7/2000) while others believe that the Club will continue, although in a different form (Naicker, 31/5/2000).

The possibility of the disintegration of the Club in the future indicates that although it can currently contribute to sustainable development as a voluntary participatory organisation, this may not be continued over a long period of time.

An alternative existence of the HWMC is viewed as being its absorption into the Hammarsdale Industrial Conservancy since the Conservancy is a partnership which is formalised, more established, has a greater support base and is run by the partners themselves (Holdsworth, 2/6/2000). In this scenario, waste minimisation would become an additional focus of the Hammarsdale Industrial Conservancy with members of the Hammarsdale Industrial Conservancy carrying out waste minimisation on a voluntary and more independent basis (Naicker, 31/5/2000). This possibility has been made more probable through the recent adoption of waste minimisation as an additional goal of the Hammarsdale Industrial Conservancy (Barclay, 13/8/2000).

This alternative existence of the Club will allow the Club's activities to continue, thus facilitating an ongoing contribution of the member companies towards sustainable development outside of the context of a voluntary participatory organisation.

The Club, with key role-players and activities, is located in the specific context of the industrialised space of Hammarsdale. The role of place in the HWMC is addressed below.

#### **5.2.11 The Role of Place**

As discussed in Chapter Two, waste minimisation clubs can be place-based or sector-specific. The HWMC is a combination of these. Although it is based in a particular place i.e. Hammarsdale, it is composed of a majority of textile companies. It appears though, that place does play a particular role in facilitating the success of the Club.

Interviews revealed that members feel strongly that the Club should be place-based. This is indicated in two ways. Firstly, six out of the nine project champions interviewed believe that if the Club had been based outside of their locality they would not have attended or would have infrequently attended Club meetings. Coultard's (16/8/2000) statement was typical of this belief, "I don't think we would have gone to every meeting, maybe one or two to get ideas - its an advantage to being close here". According to Winn (16/7/2000) since limited time to devote to waste minimisation is available, the short distances to meeting venues within the area has been essential for ensuring meeting attendance and therefore the operation of the Club.

Secondly, a number of Club members reason that the problems with which the Club deals are strongly related to the area in which members are located. Holdsworth (2/6/2000) stated:

"If you are going to share information then it is more appropriate in the area where you are working because ... you're in Hammarsdale, sharing the same problems. People are more willing to get involved and say well we are going to benefit so we will make the effort. So the Club must be within a place".

The industrial nature of the area, the close proximity of rivers and a dam and the imposition of the same effluent and pollution tariffs which are related to the local waste water treatment works are specific to the place (Kennedy, 29/9/2000). Thus, functioning in a common space enables companies from different sectors to find common solutions for the improvement of environmental quality of their area. This is in accordance with the concepts put forward by Dalby et al (1998) that 'struggles' to protect the natural environment occur through the response of organisations to local environmental conditions and due to the recognition of people based in a particular place that they are responsible for the quality of local ecosystems.

The HWMC is an organisation that is based in a particular place and it acts to improve the environmental quality in this locality. This focus on the maintenance and upgrading of environmental quality in a particular place is in line with the concept of geographical equity, which aims to prevent the unfair loading of environmentally degrading practices in certain areas (Scott and Oelofse, 1998). In addition, the potential to create a network of these organisations to address similar issues in a range of places can address a further aim of geographical equity which argues that practices for sustainable development should address sustainability at a local level and at a national and global level (Scott and Oelofse, 1998).

The possibility of the HWMC being absorbed into the Hammarsdale Industrial Conservancy has been mentioned in section 5.2.10. It is fortuitous that the club was formed in an area where an active conservancy exists and it is notable that there is a large similarity between the members of the two organisations. It could be said that members of the Club, having already been sensitised to

environmental issues through the Hammarsdale Industrial Conservancy, were open to the formation of an organisation specifically focussed on waste minimisation activities. Thus it seems that it is the nature of this locality, with these pre-existing environmental partnerships, that has provided the 'fertile ground' for the extension of these partnerships, through the motivation by the professionals, into a specific organisation for waste minimisation.

Because of this local context, it is not unexpected that with the withdrawal of the professionals and their resources will result in the resumption of the status quo such that waste minimisation activities will be included within the bounds of the previous set of environmental partnerships. Due to the particular characteristics of this Hammarsdale, the Club has a chance of contributing to sustainability even if it fails to exist as specific voluntary participatory organisation in the long term. In a different place with alternative characteristics is this would not have happened.

Thus the characteristics of Hammarsdale, as a place, have played a role in encouraging activity towards the improvement of environmental quality and potentially in determining the long-term contribution of the HWMC to sustainable development.

In addition to playing a role in sustainable development at the local level, the HWMC can be viewed as existing in a broader context. The role of the Club in this context is discussed in the following section.

### **5.3 THE ROLE OF THE HWMC IN A BROADER CONTEXT**

#### **5.3.1 Introduction**

One way in which to view how the Hammarsdale Waste Minimisation Club is organised is through an examination of the role of the Club plays in a broader context. This section addresses three ways in which the Club can be seen as interacting with a broader sphere of activity that contributes to sustainable development. One possibility for interaction on a broader level is the prospective institutionalisation of the Club into government (section 5.3.2). In addition, the participation of the Club in the decision-making processes of local government is addressed in section 5.3.3. Finally, the role of the Club in a broader environmental context is reviewed in section 5.3.4.

#### **5.3.2 The Prospect of Institutionalisation**

In emerging integrated pollution and waste management strategies at the level of national government, waste minimisation Clubs are viewed as a prospective means of achieving the goals of sound and holistic waste management in industry (Buckley, 13/9/2000). The prospect of the institutionalisation of the Club was discussed with project champions.

A common response to this suggestion was negative and five Club members argued for the maintenance of the voluntary nature of the Club by voicing the many benefits of a non-institutionalised organisation. For example, when questioned as to whether making the Club a compulsory organisation would be beneficial Kennedy (29/9/2000) responded,

“I don’t know if it would be a good thing, you tend to find when things are legislated and you are forced to do it, a lot of people tend to dig their heels in and they then do the bare minimum. If you look at how things are with my company for example, we will go ahead and do it, but if it was legislated, they will go ahead and say what is the bare minimum we have to do to stay legal and they’ll do that and nothing else. Because it’s a voluntary thing where you are not pressurised by legislation they might go further... You might find that if it is legislated they will say “This is what we have to do and why bother going to meetings?” I really think it should be left the way it is - as a voluntary organisation, you can do it at your own speed”.

Alternatively, three Club members felt that although institutionalisation of the Club may reduce the positive impacts of the voluntary nature of the Club it may increase participation by forcing more companies to be involved, thus broadening the membership base. This view is expressed by Naicker (31/5/2000): “Yes and no. Yes, people look at in a more serious light...No, because it will sometimes be looked at as someone coming after you with a big stick”.

One member saw the greater involvement of the authorities in the HWMC in a different light and suggested that government introduce waste minimisation Clubs as a ‘code of practice’ to enable industry to reach compliance with pollution and waste management legislation (Lewis, 2/8/2000).

It appears that with the large and increasing amount of legal requirements currently placed on industry in South Africa, few member companies feel that being ‘forced’ to take part in the HWMC concept would be positive and they prefer to remain proactive volunteers able to implement waste minimisation at their own pace.

Thus there is a strong feeling amongst role-players that their involvement in waste minimisation activities should remain voluntary. This increases the importance of the Club as a voluntary participatory organisation as it provides a mechanism for the involvement of industry in the improvement of the quality of the natural environment without provoking the negative attitudes experienced towards the growing governmental demands for the ‘greening’ of industry.

Although, preferring to remain autonomous from government, the HWMC can participate in the decision-making processes of local government. The following section examines the level of participation in local government decision-making regarding environmental management.

### **5.3.3 Participation in Decision-Making Processes**



Through its activities, the HWMC interacts with external partners such as the local authorities and service-providers. To date, this interaction has been for the purposes of information-sharing as members attempt to achieve clarity on newly introduced tariffs and pollution control measures (HWMC meeting, 20/10/1999).

Participant observation has revealed that as yet, the Club has not been involved in participation for environmental decision-making or addressing conflict areas, as many other participatory organisations are presently engaged in, in South African (HWMC meetings, 20/10/1999; 1/3/2000). High levels of trust exist between members, therefore participation does not operate to resolve internal conflict but rather enables discussion around shared practices and creates a 'space' for negotiation with other organisations (HWMC meetings, 19/5/1999; 24/5/2000).

Project champions are optimistic that the relationships that have been formed or strengthened through the Club will enable them to have a greater role in negotiating future tariffs with the authorities or with the phasing in of new regulations. This belief is indicated by Black (2/8/2000):

"I'm sure that if we had to approach the regulatory authorities and say, 'these are our issues and there is a whole lot of us here and we've all got similar ideas on it' they would be far more willing to listen than they may have been before because they can see they we are actually working at doing something about it".

In turn, Collarossi (16/8/2000) reiterated this understanding amongst members when he stated:

"I think the Club would have a certain amount to persuade or to discuss certain levels and things like that or a phasing in of certain levels and things like that. It would give us more power than if we approached the government as a single company, definitely. Rather than being a lone voice in the wilderness, we need to be a group".

It seems highly likely that the HWMC could engage in a more environmental decision-making form of participation. The Waste Minimisation Club for the Metal Finishing Industry, for example, has been highly influential in negotiating pollution targets and effluent by-laws - "The Metal Finishing Club have sat down with the Metro and virtually rewritten the bylaws" (Buckley, 13/9/2000).

Thus the proactive activities of the Club and the unified identity provided through membership of the Club could enable members to participate in institutionalised environmental management in their local area. This enables a contribution to sustainable development through the meeting of the Brundtland Principle which states that steps towards sustainable development should enable "communities to care for their own environments" (Yeld, 1993, 7). In addition, public participation itself is viewed as a mechanism of sustainable development, allowing for procedural equity and the involvement of communities in making decisions which affect them (Sowman, 1999).

In addition to involving themselves in local-level governance, the HWMC can participate in the environmental movement as it occurs on a much larger scale.

#### **5.3.4 Participating in a Broader Environmental Movement**

As an organisation aiming to improve waste management, and thus improving industrial efficiency, the HWMC can play a role in the broader movement that aims to improve environmental quality. The role of the Club in this movement is addressed below.

Winn (16/7/2000) believes that there is a global movement for the improvement of industrial standards in terms of the environment:

“There is a worldwide push for people to be aware that their industrial activities must not allow the environment to suffer. When I was a young student studying in Manchester, if you had ever fallen into any of those rivers you would have died because that was the way the textile industry has been. Now if you go around those same spots today they are sparkling clean. I see this whole worldwide situation is growing and gathering momentum and I think it is absolutely right”.

The Club is viewed by all respondents (100%) interviewed as participating in a broader (extending to global) environmental movement. The Club is seen as making a contribution to local environmental quality and in this way contributing to the improvement of environmental sustainability. The ability of these companies to improve industrial efficiency is seen as contributing to a global movement.

These relationships have the potential to expand and grow so that a network of organisations can be developed. In this case, the sharing of expertise and ideas may spread more broadly, increasing the success of waste minimisation and therefore having a greater environmental impact. On a much larger scale, the possibility of linking with other waste minimisation organisations could lead to the creation of a global alliance, which is listed as a principle for sustainable development (Yeld, 1993).

Holdsworth (2/7/2000) encouraged the possibility of the formation of a waste minimisation network:

"There are differences between the clubs but if they moved to different provinces, then they could get together every year and they could have certain speakers etc and shared knowledge and it could become a bigger thing”.

A network of this kind could include successful clubs and waste minimisation organisations from around the world, for example, the Indian Waste Minimisation Circles and New Zealand's Target Zero project (National Productivity Council, 1998; Ministry for the Environment, 1998).

One way for the HWMC to become involved with this broader environmental movement is through the link with the Hammarsdale Industrial Conservancy: The partnership with the Hammarsdale Industrial Conservancy is seen as a positive step towards the establishment of additional partnerships with local government, service providers and industry. It is believed that the activities of the HWMC compliment the Hammarsdale Industrial Conservancy goals of improved environmental practice in the Hammarsdale area and can contribute towards the meeting of this goal (Holdsworth, 2/6/2000). A further advantage of the link between the Hammarsdale Industrial Conservancy and the HWMC is that the Hammarsdale Industrial Conservancy provides an established forum for discussion and partnerships between companies who belong to the HWMC and those who do not (Naicker, 31/5/2000), enabling the creation of a network for the care of the environment.

The Club's position regarding the Hammarsdale Industrial Conservancy is important. The relationship between the HWMC and the Hammarsdale Industrial Conservancy is a co-operative, voluntary partnership that acts specifically for the benefit of the local environment. As discussed previously, this relationship creates an opening for the future of the contribution of the HWMC to sustainable development. This formalised organisation links the Club to a much broader environmental movement and assists in raising environmental awareness.

Thus the HWMC can widen its sphere of activities to encompass a broader, more participatory context to contribute to local environmental management and to contribute to sustainable development through a widespread network of waste minimisation organisations.

Thus the ways in which the Hammarsdale Waste Minimisation Club has been organised influences the role of the Club in sustainable development. The participatory nature of the Club enables a significant contribution to sustainable development while the levels of dependency on the professionals and the need for motivation and the lack of a constitution limits the role of the Club in sustainable development. The local context in which the Club has been formed influences the way in which activities take place and provides a possible avenue for future waste minimisation activity.

The following sections discuss the second theme addressed in this chapter – the activities of the HWMC. These sections address the capacity building programme carried out within the Club, the implementation of waste minimisation in member companies and the barriers and motivators which

impact of the level of success of waste minimisation implementation. Furthermore, the ways in which the activities of the Club facilitate sustainable development are examined.

## **5.4 CAPACITY BUILDING FACILITATED BY THE HWMC**

### **5.4.1 Introduction**

Capacity building has been taking place in the HWMC in a number of ways. The project champions have received formal training, expert advice and intensive assistance from the professionals. Furthermore, discussion and sharing between members and hands-on experiences and experimentation with waste minimisation practices has enhanced capacity. In addition, shop floor and management training has been carried out by the educators.

Through the variety of methods greater environmental awareness has been generated, knowledge and ability regarding waste minimisation has been improved and to some degree a greater environmental ethic has developed. The way in which capacity building occurred and the subsequent improvements in capacity will be discussed in the following section.

### **5.4.2 Shopfloor and Management Training by Kagiso-COWI**

This section provides details of the capacity building sessions provided to shopfloor employees and management of three member companies. The content of capacity building sessions and the method of education of each group is discussed.

On site shopfloor training was provided by Kagiso-COWI for each of the member companies who chose to carry out training. Buckman Laboratories, Coats SA and DeNim were the only member companies to carry out shopfloor training although it was funded by DANCED and thus free for members to use (table four). These companies and an additional two companies, Gelvenor Textiles and Dano Textiles have carried out management capacity building sessions (table four). These member companies did extensive training with their management and shopfloor staff and almost all shopfloor staff were trained, along with human resources and training staff who were also trained so that they can continue with training in this area in the future (Training sessions, 8/9/1999, 7/10/1999, 6/10/1999).

Camozzi (1994) recommends that, any capacity building carried out in an industrial context should be relevant to the needs of industry. To this end, the capacity building sessions provided by the Club were made possible after initial meetings with project champions and staff trainers at each of these member companies (Pedersen, pers comm). The initial meetings were carried out in June/July 1999 and enabled the development of a core structure for the environmental education sessions that

was suited to the general needs of the members and could be adapted to suit the alternative interests and roles of both management and shopfloor workers (Pedersen, pers comm).

Table Four: Details of Shopfloor and Management Capacity Building Sessions (Source: participant observation, 1999-2000)

<b>Date</b>	<b>Duration</b>	<b>Company</b>	<b>Target Audience</b>
19/5/1999	4 hours	Buckman Laboratories, Coates SA, Gelvenor Textiles	Representatives of Management Staff
7/9/1999	4 hours	Buckman Laboratories	Shopfloor Staff
8/9/1999	3 hours	Coates SA	Management Staff
21/9/1999	4.5 hours	Buckman Laboratories	Shopfloor Staff
5/10/1999	4.5 hours	Buckman Laboratories	Shopfloor Staff
6/10/1999	4 hours	Coates SA	Shopfloor Staff
7/10/1999	2 hours	Gelvenor Textiles	Management Staff
7/10/1999	1 hour	Dano Textiles	Management Staff
17/10/1999	4 hours	Coats SA	Shopfloor Staff
10/5/2000	1.5 hours	DeNim	Management Staff
11/5/2000	4 hours (am)	DeNim	Shopfloor Staff
12/5/2000	4 hours (pm)	DeNim	Shopfloor Staff

### Content

Shopfloor and management training covered similar topics but there was emphasis placed on different areas, depending on which 'level' of staff was attending a session. Sessions for management staff were usually much shorter than shopfloor sessions and material was covered more quickly and content was less detailed to accommodate the difference in length.

Core subject material was developed after consultation with the project champions and the training staff of member companies (Pedersen, pers comm). The subject material for the capacity building sessions included material on general environmental issues, such as definitions of the environment, global and local environmental problems and personal responsibility for environmental care. The South African environmental and legal context, with a strong emphasis on the National Environmental Management Act (NEMA) of 1998 has been dealt with (Training sessions, 7/9/1999, 6/10/1999). Furthermore, issues regarding waste generation and disposal and the concepts of waste minimisation were strongly emphasised. The training manual, detailing the general topics discussed, is available in Appendix D.

With the shopfloor training, the introduction of waste minimisation topics then lead on to practical issues such as generating waste minimisation ideas and how these could be put in place on the

factory floor. Methods of monitoring progress, targeting further steps in waste minimisation and the communication of ideas and successes were heavily stressed (21/9/1999, 11/5/2000). In the management training sessions, government policy and the legal implications of NEMA and the financial implications of waste minimisation were stressed rather than the practical means of implementing waste minimisation (Training session, 8/9/1999).

It is worth mentioning that in one management education session soon after the inauguration of the Club, the issue of sustainability was introduced (Training session, 19/5/1999). The concepts of sustainability and the idea of 'cradle to grave' responsibility of producers were emphasized. Managers were encouraged to be proactive and to recognise the potential contribution they could make in lessening the environmental impact of industry (Training session, 19/5/1999).

Shopfloor capacity building sessions focussed on increased skill development, explaining why waste minimisation should be carried out and encouraging employees to become involved in waste minimisation. Management capacity building covered some issues of motivation and facts about the national environmental context but was far less skills-based and more theoretical than shopfloor capacity building (Training session, 8/9/1999).

#### Shopfloor capacity building

The non-confrontational nature of the presentation of material and the participatory method of discussion played a vital role in ensuring that meaningful discussion took place in capacity building sessions.

Discussion and the gathering of ideas from the shopfloor workers formed the main method of education. In order to facilitate trust amongst participants and to encourage the generation of ideas most of the education sessions focused upon the gathering of ideas from the workers and then the prioritisation of these ideas. The prioritisation process then lead to the determination of a small number of goals that the attendees could begin to tackle on the shop floor immediately. It is important to note that although the 'leaders' guide the process of building capacity, once the initial information dissemination has taken place, the process is wholly dependant on the suggestions, comments and discussion of the shopfloor workers attending the session. For example, employees were asked to brainstorm the problems and dangers within their factory. The workers then prioritised these ideas and the most highly prioritised problems were then the foundation for the introduction of possible waste minimisation solutions. These solutions were also introduced by the employees themselves (Training session, 12/5/2000). The possibility of the application of these ideas in daily practices is encouraged and advanced through the attention paid directly to the specific environment in which workers operate (Camozzi, 1994).

The interactive nature of the capacity building sessions that have been guided by the understandings of workers are in line with the guidelines provided by Camozzi (1994). By encouraging active participation in the environmental education process, greater understanding will be generated and shopfloor workers are more likely to relate any knowledge gained to their everyday work environment. In many cases, the concentration on discussion and minimal reliance on written material addresses the literacy levels of workers, enabling them to feel comfortable and to encourage participation (Camozzi, 1994).

Where necessary in the shopfloor sessions more than one language was used to accommodate people with different language preferences. Mixing of English and Zulu was common. The language(s) used in a session focussed directly on the audience – where a largely Zulu-speaking class assembled less formal English was used and much use was made of the Zulu-speaking trainer (6/10/1999). In addition, there was an attempt to minimise jargon and to explain concepts as simply as possible, to facilitate greater understanding (Camozzi, 1994). This enabled participants to express their ideas clearly and aimed to build up a sense of mutual respect amongst all participants. In terms of practical outcomes and direct results on the shopfloor, this sense of respect and extensive sharing of ideas was productive and possible since the concepts were expressed in the mother tongue. These educational methods led to a potentially high level of sustainability of the waste minimisation practices on the floor as understanding and the uninhibited generation of ideas was made possible.

At a number of sessions a company trainer took part in and observed the capacity building process (Training sessions, 6/10/1999, 12/5/2000). This was in line with the goal of training ‘in-house’ trainers so that waste minimisation capacity building can be continued once external trainers are withdrawn. The attendance of company training staff at education sessions is ideal for the spreading of waste minimisation practices throughout the factory. This prevents environmental education from being confined to the small groups that the Club has been able to train.

#### Management Capacity Building

The management sessions were attended by a broad spectrum of the management staff of those companies who elected to have capacity building. This provided a solid base of informed individuals from which the project of waste minimisation could move forward.

Environmental education for management staff of member companies was carried out in a slightly different manner to the shopfloor education sessions. The aims of management sessions have been to clarify the concepts and value of waste minimisation, to garner management support and to explain the capacity building programme for shopfloor workers (Training session, 8/9/1999). Educators aimed to gain the trust of management through the distribution of information (Camozzi,

1994). This would facilitate more widespread shopfloor capacity building and motivate greater support for project champions.

Management education sessions took a more hierarchical form which is suited to the literacy levels of management (Camozzi, 1994). The Kagiso-COWI consultants lead the sessions and introduced the material with less discussion and interaction which took place in the shopfloor sessions (Training session, 8/9/1999). An element of discussion was introduced once all material was presented. All attendees were encouraged to ask questions and each participant was required to contribute their opinions and comments (Training session, 8/9/1999). For the most part, questions and comments in these sessions related to the new legal context that makes the prevention of environmental damage the responsibility of all companies and factories. Discussions extended to the logistics of the shopfloor training with the goal of making the concerns and opinions of management become part of the planning for future shopfloor training.

In addition to the capacity building provided by the educator group, technical training was provided by the professionals. The following section discusses this form of capacity building within the HWMC.

#### **5.4.3 Training by Professionals**

Training was provided by the professionals during the meetings of the Club. Seven modules were carried out by Enviros-march consultant David Mercer. In these sessions project champions were the focus of a skills development programme for waste minimisation. These sessions covered topics such as waste minimisation concepts, data gathering for waste audits, identification of waste minimisation opportunities, energy and steam conservation, compressed air, monitoring and targeting of waste minimisation actions and finally, sustaining a waste minimisation programme (Enviros-March, 1999, 1999a, 1999b, 1999c, 1999d, 2000, 2000a).

Similar to the capacity building provided by Kagiso-COWI, these sessions took the form of an initial introduction of concepts, followed by an effort to develop the skills needed to carry out waste minimisation. This was done using examples of hypothetical case studies of differing industrial contexts (HWMC meetings, 19/5/1999, 20/10/1999). Through this process, project champions could develop skills in understanding the more technical requirements and practical procedures of putting a waste minimisation programme in place. This use of practical applications of concepts is in line with recommendations made by Camozzi (1994) to ensure the success of environmental education in industry.



The final module of training, entitled 'sustaining the programme', placed emphasis on motivating and enabling companies to continue with their waste minimisation process in the long term (Enviros-March, 2000a).

In addition to the formal capacity building provided by the educators and the professionals, informal capacity building has taken place. Section 5.3.5 discusses the informal capacity building process.

#### **5.4.5 Informal Capacity Building Processes**

Less formal means of capacity building has taken place as project champions and factory workers on all levels have gained practical knowledge through the actual implementation of waste minimisation in the member companies and through the sharing of information.

On-site advice and assistance by the professionals in carrying out waste audits, identifying opportunities for waste minimisation, implementing changes and monitoring progress has also built some capacity to do waste minimisation although in some cases there has been a heavy reliance on the professionals to 'do the job'. Coultard (16/8/2000) provides an example of these on-site interactions when he shared his experiences:

"We have received ideas, especially from Chris Fennemore on how we can save with effluent flow meters and things like that and also from Chris Buckley, especially on our, we were looking at a caustic recovery plant and he came here and gave us some ideas on how we can reuse our caustic before we reclaim it, send it down through different processes and that helped a lot".

The final means of capacity building is through the sharing of information between members. This has occurred in every meeting of the Club as well as through interaction outside of meetings when members consult with each other for assistance and advice (participant observation, 1999-2000). This has not occurred with all members as some are less 'gregarious' than others (Winn, 16/7/2000). Coultard (16/8/2000) explains that: "we are more aware of other companies' ways of doing things...and just from sitting around chatting to the guys and finding out what they do and how they do it." Winn (16/7/2000) reiterated this statement when he described how project champions are able to exchange ideas and thereby learn from each other:

"It is an opportunity for people to swap ideas. We have tended to concentrate on things like water and effluent and coal and the big things, I was intrigued to discover one of the people reporting that they had found a way to replace rolling their cloth onto cardboard cores which is expensive, with some reusable plastic they have found. Now, that interested me because that is something that we would never have considered. So I think it is a very good opportunity for people to swap ideas without necessarily giving away any trade secrets, that's how I see it. Its an opportunity for the cross pollination if ideas".

These methods of capacity building have aimed to increase environmental awareness and to develop skills for the implementation of waste minimisation. The success of the capacity building programme is examined in the following section.

#### **5.4.6 The Success of Capacity Building**

One of the key elements of sustainability is the enabling of communities to care for their own environments (Yeld, 1993). One way for the HWMC to contribute more effectively to sustainability is to build capacity for sustainable industrial action. Capacity building in the Club should be to the level of education *for* the environment – this is education which creates the motivation and develops the skills for participation and action in environmental improvement (Fien, 1994).

All capacity building carried out through HWMC activities has the potential to create high levels of motivation, skills for waste minimisation and the long-term improvement of environmental standards in member companies. Capacity building has had a number of results. Firstly, awareness of environment-related issues has been raised. Secondly, knowledge of waste minimisation and the skills to implement waste minimisation have been developed. Thirdly, the growth of an environmental ethic is evident in an increased sense of responsibility towards the environment and an enthusiasm to prevent degradation. The following section reviews these impacts of the capacity building programme and in so doing, examines the success of the capacity building programme.

Three project champions feel that they have been given a view of the global environmental context. Black (3/8/2000) was enthusiastic about being informed of the broader context of environment:

“The kind of information we were given as to exactly what the current state of affairs is, what resources have been taken out, its very nice to know, talking about the bigger picture which you don’t always hear on a day to day basis because you are working in the factory. You know about your own energy consumption...the concept of a footprint, just how much each person is using, that was exciting stuff. It heightened my awareness of the bigger picture and... it heightened the awareness of people as to just what a big player industry is”.

Included in this greater awareness of broader environmental contacts is a growing interest by project champions in their local surroundings and the impact of industrial waste on local ecosystems, for example the toxicity of waste dumped into these ecosystems (Colorossi, 16/8/2000).

Prior to the capacity building programme the lack of knowledge of environmental legislation was substantial amongst shopfloor and management staff of member companies. This is evident in comments made by Naicker (31/5/2000):

“Most of them were clueless about the legislation effects and what are the consequences with not complying with legislation as well as opportunities to comply and some of them didn’t even know which authorities to contact for either different situations”.

Awareness of national environmental legislation and the rights and responsibilities of industry in terms of the environment has been raised through the inclusion of environmental legislation as one of the main focus points of capacity building in the member companies (Coulard, 16/8/2000, see Appendix D). In capacity building sessions with both management and shopfloor employees, this topic caused much interest, heated discussion and brought forth the most questions (participant observation), indicating high level of interest and a recognition of the importance of environmental legislation in industry.

Shopfloor employees, for example, were acutely interested in their right not to carry out work which would harm the environment. After initial disbelief, lengthy discussions between educators and employees enabled the workers to accept their right and to recognise both their responsibility towards the environment and not to abuse this right (DeNim shopfloor capacity building, 11/5/2000).

Palmer (1998) argues that education for sustainability should create an awareness of the interconnected nature of planetary life and generate an understanding of how human activity has repercussions in the natural environment. Thus the raising of awareness of the broader environmental context and the role of industry in this context is a step towards enabling Club members to act in a sustainable manner.

Palmer (1998) believes that raised environmental awareness should enable the involvement of individuals in sustainable practice. To this end, understanding of waste minimisation itself has been expanded. This has facilitated increased waste minimisation activity which is environmentally-beneficial. The growth of understanding of waste minimisation is evident in the following statements, which are representative of comments made by project champions:

“What I thought, before the Club started, waste minimisation was basically looking at your end product, looking down pipe and saying well, that's where we are going to try and reduce it. Obviously, waste minimisation is not just looking at end pipe, it's looking at processes and trying to reduce wastage at source. I think it's important that people understand this because in most places are if you talk about waste minimisation, people say well, we monitor what we are putting out, we know how much solid wastes we dump every day but that’s not really the main issue behind the waste minimisation Club. It actually trying to reduce the wastage at source. The amount of chemicals you used, the amount of water used - it all happens in the process “ Holdsworth (2/6/2000).

“Before when you talked about a waste product to my mind it was rubbish it was something you were going to discard but there are all sorts of other areas in this which have come up ...previously in terms of waste management you didn't really think about that. All you would think about is how can I manage it without getting into trouble with the department of environment and that sort of thing. It covers a far broader range that I had thought about” (Kennedy, 29/9/2000).

In addition to the increases in knowledge, practical skills for waste minimisation have been developed. This is evident especially through the comments made by project champions and through the progression of capacity building sessions with shopfloor workers. Like other project champions, Naicker (31/5/2000) is positive about the technical skills that he has learnt through membership of the Club:

“The actual technique, especially with identification, calculations, world norms and where you could use it. As I said before you would have the ammunition to go up to top management and say, take for instance putting in a meter, the payback and doing the calculations and things like this, scientifically done. Those were the good points that came out of being in the Club.”

Although technical capacity for sustainable development has been developed, these skills will not be used if the willingness and motivation to act are not developed (Fien, 1995). In the case of the HWMC, this willingness to act was pre-existent in that waste limitation was seen as part of general management practices and is further indicated through the willingness of companies to become members of the Club. The ISO14000 accreditation of some member companies and the high level of membership of the Hammarsdale Industrial Conservancy by Club members can also be seen as indicators of the existence of a pre-existing environmental ethic amongst member companies. Winn (16/7/2000) indicates how an environmental ethic in terms of waste management was in place in his factory prior to membership of the club:

“I knew...I suppose every manager knows the big black hole in the factory floor always has been the waste that you generate... So from the day that I walked into this industry as a youngster, I have worked under so many sets of managers who have always watched all forms of waste very carefully ...I see it as part of my management process and it will continue that way”.

In addition, Lewis (2/8/2000) claims that she has been involved in other environmentally-beneficial activities for a number of years, “I've been involved in recycling with a lot of the development work I have done in the past, so reducing waste and recycling have always been a major passion for myself”. This ‘passionate’ involvement with recycling is indicative of the perceptions of project champions that the environment is important as well as showing the level of responsibility that some project champions feel for the care of their environment.

Szerszynski (1997) argues that if the activities of a voluntary organisation shift attitudes to the environment then the organisation is making a contribution to sustainable development. The capacity building which has occurred through the Club did act to increase this existent sense of responsibility for the environment and generated a greater sense of importance of environmental considerations (Satharia, 2/8/2000, Colorossi, 16/8/2000).

In particular, a comparison of statements by Kennedy, (29/9/2000) shows how an existing attitude to the environment has been altered:

“Before, I was dealing previously with the environment, we were looking at things like smoke stacks making sure that you weren’t polluting because we have a coal fired boiler here, and also treating your effluent to make sure that what you were putting into the river, you were complying with the requirements of the municipality or whoever the authority was. That your pH was at the right level, and you were trying to remove colourant and that sort of thing”.

This quote shows how consideration of the environment was not through personal concern but through a need to avoid the consequences of non-compliance with legal standards. The following quote by Kennedy (29/9/2000) indicates the impact of way the professional capacity building was able to alter perspectives:

“Just an example, we take water for granted, in this country and we shouldn’t. Leaking taps - after the first meeting - I came back here and I was absolutely appalled at the amount of water we wasted just with leaking taps in change rooms toilets those sort of places. If nothing else we have got that sorted out”.

Despite the apparent overall success of capacity building, some limits to the impact of capacity building are evident. In assessing the impact of capacity building on members, it is important to note the role of previous influences that feed into the environmental education process (Palmer, 1998). In some cases, project champions who were involved in the capacity building process had a previous understanding of waste minimisation. In addition, the existence of an environmental ethic among members has been discussed above. This existing knowledge limits the amount of change which could be brought about through capacity building.

Black’s (3/8/2000) sentiments reveal that the impact of training has potentially been less than it would have been if there had been no previous knowledge of waste minimisation:

“Just in normal routine management of the company, there is always the attempt to cut down on waste, particularly those things that are noticeable. Water usage, electricity usage hasn’t been high profile because its been fairly cheap and its because times have also been a bit tight that people have said “hang on, here’s another avenue where we can perhaps save some money and at the same time make a contribution to the environment”.

So I don't think of it as "wow, here's something new", I had heard of it before but its kind of focussed it and brought our attention back to these issues".

It is noteworthy that the above-mentioned capacity building has been wholly focused on enabling Club members to carry out successful waste minimisation. Capacity building for the maintenance of the Club as a voluntary participatory organisation and of the partnerships inherent in the Club is virtually non-existent. The only experience gained about how the Club is run and managed has been by attending Club meetings. This is due to the administrative and management dominance of the professionals (participant observation, March 1999-May 2000) and reluctance on the part of members to take a leadership role (Colorossi, 16/8/2000; Winn, 16/7/2000).

The capacity building in the HWMC intended to build both the will and the capacity of individuals to carry out waste minimisation throughout various levels in the companies. It is important to note, though, that only a minority of member companies have received all training available. It is recognised by project champions that capacity building in the companies should continue to increase the success of the activities of the HWMC (Black, 3/8/2000; Holdsworth, 2/6/2000).

The lack of capacity building in some member companies has limited the changes that can be brought about through the Club's activities and therefore limits the extent to which the Club can contribute to sustainability as fewer changes in attitudes and practices have occurred than what may have been possible. Because so few of the member companies have carried out management and shopfloor training the ability of this industrial community to care for its own environment has been limited.

Overall, the capacity building programme of the HWMC, carried out through a variety of methods, has had widespread impacts that have resulted in the increase of capacity of project champions, and the management and shopfloor employees of member companies. These individuals are now better equipped to carry out waste minimisation and to act responsibly to care of the environment.

The capacity building programme has built skills for implementing waste minimisation as well as raising general awareness of the environment and the impact of industrial activities on environmental quality. A greater sense of personal responsibility for the environment has been developed. This is in line with the principle of sustainable development which argues for the changing of personal attitudes and practices (Yeld, 1993). The skills developed through the Club can be viewed as 'enabling communities to care for their own environment' (Yeld, 1993). Thus the actions taken in the HWMC to build capacity so that individuals are able to contribute to sustainable development have meant that the Club does contribute to sustainable development.

Although capacity building is an important activity in the HWMC, the primary goal of the HWMC is the implementation of waste minimisation. The following section discusses the changes made to the policy and practice of member companies as waste minimisation is implemented.

## **5.5 CHANGES TAKING PLACE IN MEMBER COMPANIES**

### **5.5.1 Introduction**

In addition to the capacity building programme, the Club has caused a number of changes to occur in member companies. This section discusses the range of changes which have been made to the policies and practice of member companies as they attempt to implement waste minimisation solutions that can result in financial savings and in an improved environmental quality.

Section 5.5.2 discusses the limited policy changes that have been made while section 5.5.3 explains the range of changes made in the production practices of member companies.

### **5.5.2 Policy Changes**

In general, member companies have made few formal policy changes. Often the waste minimisation approach has fed existing policies and these policies have been strengthened rather than altered. In some cases formal policy changes have not occurred because of insufficient interest and motivation by upper management in member companies. Where policy changes have occurred they are seldom formally recognised as such and become accepted practice beliefs.

Coastal Textiles, a less-established member company that is in the process of drawing up and implementing their policies, has included waste minimisation in the environmental policy. Colarossi (16/8/2000) states that “we are a new company...we have drawn it (the environmental policy) up so it (waste minimisation) has just advanced like that...being at this younger stage we can actually grow into that”. Thus waste minimisation has been introduced as part of the formal operation policy of the company.

In five of the member companies, waste minimisation feeds an existing programme of integrated and sophisticated waste management. This is due to the existence in these companies of an environmental policy and due to the requirements of ISO 14000, in the case of companies that have ISO 14000 certification. (Bell (1998) describes ISO 14000 as a set of environmental and process efficiency standards developed by the International Standards Organisation to provide a uniform system for evaluating industry). These existing environmental policies include efforts to reduce pollution through process efficiency that can be viewed as a means towards waste minimisation (Buckman Laboratories, 16/12/1994; Gelvenor Textiles, 1/12/1998). This situation is consistent with the experiences of waste minimisation clubs in the United Kingdom (CEST, 1995).

In these cases, the Club's approach to waste minimisation has strengthened the existing policy. Two good examples of this are Buckman Laboratories and Coats SA. Both companies are ISO14000 accredited and have environmental policies. In the case of Coats SA, their Group Environmental Management (GEM) policy provides a framework for the introduction of waste minimisation:

"I've got the GEM to hook it onto, to go with it... because we are doing exactly that, looking at energy, water, effluent and it is part of that...The way that it has worked here is that it has really fed an existing programme. Like a tributary from a river, it has given it a bit of input that has helped it grow wider" (Black, 3/8/2000).

Similarly, Naicker (31/5/2000) defended a lack of change in policy documents by stating, "It was already in our policy so we didn't really have to change it because we have got ISO 14000 as well, so it actually fitted right in with our programme".

It seems that although there have been few formal changes to policy, waste minimisation has moved higher up the agenda in many factories as awareness of the concepts of waste minimisation has been raised. Kennedy (29/9/2000) claimed, "I wouldn't say that it has been put in writing...but there's a far better awareness of our waste etc. in terms of trying to prevent it, trying to reduce it". This claim was substantiated by Lewis (2/8/2000) who believes that the main policy impact of the Club on policy has been awareness raising which could lead to policy changes in the future:

"From before, safety and health and environment... there's been minimal realisation of the input those areas have for production, for profit. So it has highlighted the issue and the significance of it which was non-existent...the awareness was present at certain levels who were aware of the legal changes but it wasn't owned by anybody in management whereas I think that the constant...input and feedback has developed an awareness which has certainly peaked...So it has sensitized people at every level of the need for it, which wasn't there before".

It remains, though, that this growing sense of the importance of waste minimisation has not been translated into formal company policy changes. Project champions feel that this lack of formal change is due to the lack of ownership of waste minimisation at the upper levels of management even though managers are aware of the concepts and support membership of the Club. This conflict is evident in Black's (3/8/2000) statement:

"If you are talking to me about waste minimisation, I know what's going on. If you went to my boss and spoke to him, he would say, "yes I know about waste minimisation, Malcolm's going to start the team". If you questioned him any further than that he probably wouldn't know. If you went to the MD, he would say "I beg your pardon, refresh my memory, what are you talking about?" because that hasn't really become part of the talk... Five years ago some of the management team would have said, let's not waste our time but none of them would say that today so there's been a shift of management in the



last five years and I think waste minimisation is something that through me, has a way of making it happen.”

Thus, few formal changes have been made to the policies of member companies. Awareness of waste minimisation has been raised in these companies through membership of the Club and it is possible that changes will be made in the future as waste minimisation becomes common practice.

Despite a lack of formal policy changes, waste minimisation is being implemented in member companies. The following section describes the types of changes that have been occurring in the member companies as waste minimisation has been implemented.

### **5.5.3 Practice Changes**

There have been many changes in the practices of companies. For the most part these changes have taken the form of improved housekeeping or process changes, including equipment and raw material changes. In some cases companies have begun to review their products and processes in a different light. This section highlights the types of changes made in member companies which are improved housekeeping, changes to processes of production and equipment, investigation of new methods of production and changes in the responsibilities of employees. (A company specific inventory of process changes and the results of these changes is available in Appendix E).

‘Improved housekeeping’ is one of the simpler methods of achieving waste minimisation (Mercer, pers comm). Member companies have achieved reduced wastage by implementing better housekeeping methods, for example, by ensuring that factories have no water leakage from pipes and taps and by making sure that equipment is well serviced and operating correctly so that processes run more efficiently (participant observation, common goal 2/200). These methods enable companies to make savings as they reduce their use of basic utilities such as water and electricity. Little financial input is required to make these changes and the financial returns are usually immediate and long-term if maintenance of the plant is kept up (participant observation, second meeting).

In addition to improvements in housekeeping, changes have been made to the processes themselves and the equipment used in production. These changes include the replacement of one raw material with another more efficient or less toxic material, the recycling of water through a variety of processes within a production line, and the reuse of heat in different areas of production. In some cases inefficient equipment has been replaced with new equipment’ for example coal boilers have been replaced with electro-boilers (Winn, 16/7/2000) or one practice has been replaced with another, for example, the winding of thread onto to longer-lasting plastic cones rather than easily damaged cardboard cones (HWMC meeting 1/3/2000).

Interviews and observation of HWMC meetings reveal that the monitoring of raw materials usage, the use of utilities, process efficiency and the measurement of the quality and amount of waste generated by production have become standard procedures amongst almost all members. Some member companies, such as Coats SA, have developed good monitoring systems using software developed specifically for waste minimisation by industrialists while others have installed meters in specific areas of their plants for the monitoring of water, electricity and effluent quality (HWMC meeting, 20/10/1999).

Reductions in the use of natural resources, energy and raw materials have an impact on the general quality of the environment as they save water and energy and reduce the amounts of waste released into rivers or disposed of in landfills (Kirkby et al, 1995). Efficient resource use is being introduced through good housekeeping, effective use of available technology and the monitoring of processes. These environmentally beneficial spin-offs of cost effective waste minimisation measures enable industry to become increasingly resource-efficient and less polluting. They are therefore a measure of the impact of the Club on sustainability.

In an effort to integrate waste minimisation into everyday production, two member companies changes have been made in the accountability for waste minimisation. According to Coultard (16/8/2000) in DeNim “job functions have been changed to incorporate waste areas” so that workers who are responsible for certain areas or production processes are responsible not only for production activities but also for the minimisation of waste in these areas. In Dano, where waste minimisation was part of company practice before the Club was established, responsibility for waste minimisation has moved from being a management concern to being the responsibility of all employees. Winn (16/7/2000) states that:

“Before I belonged to the Club this was a matter that was expected to be handled by management. Our weaving manager as part of his job is responsible for the waste that he generates and it’s his responsibility to see to it that the waste is kept to a minimum. Now what we have in the company is a situation where we’ve got teams of people that are also making it their responsibility, its not only the weaving manager who is looking at waste, it’s the weaver, it’s the loom tuner, it’s the operator on the floor who is having to make an input to see to it that all forms of waste are minimised.

One member company has adopted an alternative route. Gelvenor Textiles is in the process of drawing up a ‘waste minimisation manual’ to outline responsibilities and procedures so that waste minimisation can be implemented systematically throughout the factory (Holdsworth, 2/6/2000). In this way, waste minimisation has been integrated into existing ISO 14000 procedures and will be introduced in a format that is recognisable and user-friendly. This will assist with the implementation of waste minimisation throughout the factory.

The increased ownership and responsibility of company employees for waste minimisation increases the success of changes in production processes as more employees attempt to improve production efficiency. Techniques of waste minimisation will become increasingly understood through experience and waste minimisation is likely to become part of normal operating procedures. These factors are likely to ensure the longevity of waste minimisation practices in member companies ensuring a positive long-term impact on the local environmental quality.

In some cases, in-depth investigation of waste minimisation opportunities and a review of production as been introduced as part of the activities in companies. These investigations deal with assessments for expensive plant modifications for which cost recovery through reduced waste costs will take some time. At Coastal Textiles measurements of the current status of waste efficiency have been completed and a cost analysis is currently underway for several plant modifications that will lead to improved waste management (Colarossi, 16/8/2000). DeNim has carried out investigations regarding the introduction of a caustic recovery plant that would reduce the amount of caustic soda released as waste (Coulard, 16/8/2000). Buckman Laboratories have carried out investigation of alternative raw materials from which to produce their chemical products and they have revised their analysis of products to include a review of their lifecycle from cradle to grave (Naicker, 31/5/2000). These investigative procedures have the potential to improve waste minimisation practices in companies, thus further reducing their impact on the environment.

Thus, there have been many instances of changes in the production processes of member companies while further changes are planned for the future. The successful implementation of waste minimisation strategies has significant impacts on the environment. Waste minimisation implementation has resulted in an increase in the efficiency of production within member companies. This leads to a reduction in the use of raw materials in the production process and the production of less waste. The decrease in the amount of waste results in fewer disposal costs and less waste released into ecosystems for disposal in rivers etc. These activities of the HWMC enable the organisation to contribute to the meeting of three principles of sustainable development, namely:

- ❖ Conservation of the Earth's vitality and diversity,
- ❖ Minimisation of the depletion of non-renewable resources and
- ❖ Keeping within the Earth's carrying capacity (Yeld, 1993).

As evident in sections 5.4.2 and 5.4.3, although there have been few official policy changes, but a host of practice changes have been implemented, with investigations into future changes ongoing. These changes improve the efficiency of industry in Hammarsdale, thus lessening its impact on the local environment.

The current degree of waste minimisation changes and the potential for future success is influenced by a number of motivators and barriers. These are discussed below.

## **5.6 BARRIERS AND MOTIVATORS TOWARDS INCREASED WASTE MINIMISATION THROUGH THE CLUB**

### **5.6.1 Introduction**

As indicated in the previous section, waste minimisation has been implemented to some degree in member companies. Further successes are reliant on continuation of the waste minimisation process. Section 5.5.2 discusses the barriers which could prevent or limit future successes while the motivating factors which can encourage the continuation of waste minimisation through the mechanism of the HWMC and discussed in section 5.5.3.

### **5.6.2 Barriers**

There are a number of barriers to waste minimisation exist. These barriers limit the implementation of waste minimisation in member companies at present and will play a significant role in the extent of future successes. The main barriers are a lack of finances, time pressure, the size of companies and a lack of human resources.

Through the interviewing process, all project champions, listed finance as one of the primary factors which hinders the implementation of waste minimisation. A lack of financial resources limits the extent of changes that can be made on the factory floor and it also slows down the rate at which changes can be made. For example, Satharia (2/8/2000) argues that "having to do things according to your financial budget does slow things down." In addition, the current economic context in which the member companies operate, places pressure on companies to maintain profitability and to limit non-essential expenditure (Kennedy, 29/9/2000). With these day to day financial pressures waste minimisation falls lower on the agenda. This is evident in the statement by Winn (16/7/2000):

"Because I am finding, and my colleagues around me are in the same boat, that the textile industry is in some sort of a crisis. That crisis has been getting sharper over the last 5-6 years. Very few textile companies are making any money worth speaking about...The day to day pressures on directors of textile companies are becoming so enormous that this although this is important, there are other things that are 10 times more important, like product development, new markets, looking for exports, negotiating wages with the union, negotiating better productivity."

In one member company in particular the financial pressure has lead to the creation of other barriers that has prevented the company from making headway with waste minimisation, even though they belong to the Club. Lewis (2/8/2000) explained the frustrated attempts towards waste minimisation at Rainbow Chicken:

“Possibly one of the reasons we haven’t been successful is because of our continual retrenchment in departments. So many of the areas where we were looking at direct ways of waste management, we had people who moved, over 9 months we’ve had something like 4 managers that have changed, so its very difficult to get ownership when you have got people changing”.

Financial constraints have meant the prioritization of other issues, immense pressure on workers, including the project champion, so that there is little capacity for adding waste minimisation into daily work. A reduction in staff numbers and a high turnover rate of management staff has meant that there is little ownership of waste minimisation and the shelving of plans before they are implemented (Lewis, 2/8/2000).

Another barrier is identified as the time pressure placed on project champions. Six out of nine (67%) project champions felt that they did not have sufficient time to attend all Club meetings while the need to carry out other tasks during the working day means that less time is spent implementing waste minimisation than would be preferred. One particular problem is that project champions also play the role of company representative at the Hammarsdale Industrial Conservancy (Naicker, 31/5/2000). When the meetings of the Club and the conservancy are not scheduled together, time constraints become a significant barrier as it is difficult for individuals to devote time to both meetings (Colorossi, 16/8/2000). In addition, the lack of time that management has spent on waste minimisation has meant that waste minimisation has been implemented at a much slower rate (Maharaj, 6/2000).

Table five shows the high numbers of employees at member companies. The smallest company has approximately 130 employees and two companies have in the region of 200 employees. The majority of companies have between 450 and 600 employees with the largest company employing 800 people. The large size of the member companies has been recognised as a significant barrier because with large companies there is a level of inertia that is difficult to overcome in order to introduce new programmes, activities and altered methods of production.

Table Five: The size of member companies in terms of employees (source: interview responses)

<b>Member Company</b>	<b>Number of Employees on Site</b>
Buckman Laboratories	132
Dyeco	200
Coastal Textiles	220
Coats SA	475
Dano	520
Gelvenor Textiles	544

Lotus 2000	560
DeNim	800
Rainbow Chickens	2000 people in KwaZulu-Natal

Because of the larger size of the HWMC companies, the companies have a strongly hierarchical structure. Most of the HWMC project champions are at the middle management level of the companies which impacts on their decision-making power and slows down the implementation as proposals for changes have to be approved by higher levels of management (Black, 3/8/2000). This size barrier is comparative to the Waste Minimisation Club for Metal Finishers where the majority of project champions own the company they represent and thus have direct control of finances and decision-making. In addition, they have much smaller staff numbers, ensuring that waste minimisation progress is rapid (Barclay, 15/8/2000).

A further barrier is a lack of human resources. In most cases, waste minimisation is an add-on function to the daily work requirements of the project champions. This limits the time and attention that is placed on the implementation of waste minimisation. Holdsworth (2/6/2000) commented on this barrier to waste minimisation:

"One of the big constraints is getting it is an add on function which most of the champions have other functions, obviously I am the quality assurance manager, quality is supposed to be my main function then ISO 14000 was added and now waste minimisation and so it is all these add-ons and to really make a success of any new convention one has to give enough time to the project to make it a success. The project champion has to take quite a lot of ownership of it and has to drive it, unfortunately if the project champion is so busy with other functions you find that we have bursts and then we stop and nothing happens".

In addition some companies have disseminated little of the responsibility for waste minimisation. For example, Coats SA where the project champion shoulders all or most responsibility for waste minimisation, slowing down the rate of implementation.

One project champion believes that a significant barrier at some levels is that of worker apathy:

"In some areas, apathy (and) lack of interest from some people (is a barrier). I think half my battle is won (now) that I've got the engineer on my side. He is all for this and says we should do it... But maybe lower down, at the worker level, it is a losing battle. It is continual uphill battle in terms of apathy but I have to say at this stage it is not only in terms of this project, in terms of safety you have this continual battle to comply or do something" (Kennedy, 29/9/2000).

It is interesting to note that one Hammarsdale company, that was initially represented at Club meetings but later chose to remain outside the Club, believes that it can carry out waste

minimisation independently. As discussed by King (19/7/2000) the company management were unconvinced that belonging to the Club was worthwhile:

“Because we believe that we are doing a very good job, a very efficient effective job of waste minimisation. And we don’t believe that the time spent on honing our skills would be worth (it), would equate to the time away from the job, producing what we do best.”

In this case an attitude of independence has meant that the company has not received any of the benefits of the Club. If there is a prevalence of this belief, this may prevent the growth of membership of the HWMC, limiting the future growth of waste minimisation in the Hammarsdale area.

Waste minimisation in member companies could be limited in the future if there is a collapse of the Club or its membership. Project champions feel that there is a strong need for the Club to be driven by one person or organisation and they believe that if this driver is withdrawn then the Club could collapse resulting in a drop in the level of waste minimisation in companies as motivation, assistance and fresh input would be reduced (Winn, 13/7/2000; Kennedy, 29/9/2000). In another scenario, if companies become discouraged by a lack of success this may cause them to withdraw from the Club and to stop carrying out waste minimisation systematically (Naicker, 31/5/2000).

Although this section points to the barriers that limit successes in waste minimisation there are a number of important motivators that drive companies to continue to implement waste minimisation. These motivators are discussed below.

### **5.6.3 Motivators**

This section discusses a range of motivating factors that encourage companies to implement waste minimisation presently and which will play a role in the achievement of future successes.

The potential of making significant cost savings is a major motivating factor. Any measures which can positively effect ‘the bottom line’ are seen as being useful (Winn, 16/7/2000). The quick return on simple waste minimisation techniques such as good housekeeping, is highly motivational for members and encourages them to take further steps towards implementing waste minimisation.

Interviews with several project champions reveal that the success of waste minimisation measures that have already been implemented is regarded as a strong motivation for further waste minimisation activity. There is a general belief that ‘success breed success’ (Barclay, 15/8/2000). A statement made by Naicker (31/5/2000) is representative of the sentiments of many project champions and the group of professionals, “I think just showing where the costs are incurred and

how savings can be made... Definitely, the success of the Club always has a good knock-on effect.”

Project champions see the continuation of information dissemination and the future availability of training opportunities as a motivation for the continuation of waste minimisation. For example, Kennedy (29/9/2000) suggested:

"Maybe if there are other areas where they can do some training? ...I don't know if there are other areas that they haven't covered yet...but I will need to refresh myself and go for training".

While, Black (3/8/2000) felt that more shopfloor education should encourage waste minimisation activity:

"If the people on the shopfloor can start hearing the concepts and start learning it they are going to then run with the projects that get put in place. We have a project on the go at the moment with waste, specifically raw material waste and its been a big campaign for three of four years now of reducing any waste that's cut off. That can be controlled mainly by the shopfloor workers, so if they can... get the message that this actually a waste of not only raw materials, (but) the extra energy that's put in and all the rest of it, it will make waste minimisation very much a part of working here".

With improved technical knowledge and ability, further opportunities of waste minimisation can be identified and implemented while knowledge of the successes of other companies and waste minimisation clubs encourages further attempts towards achieving greater production efficiency.

Regulatory pressure is becoming an increasingly strong motivator (Barclay, 15/8/2000). Growing legal pressure at the national level has required industry to pay attention to the environmental implications of their production processes. Compliance with new national legislation is necessary if stricter penalties are to be avoided. Waste minimisation is viewed as being one route to achieving legal compliance (Barclay, 15/8/2000; Coultard, 16/8/2000). In addition, it is believed that if there is a significant change in government policy in the future, such as considerably higher tariffs for effluent and waste disposal, waste minimisation will become a much stronger focus of production activities as efficiency would have to be radically raised above present standards (Kennedy, 29/9/2000).

The global market and international environmental standards also play a motivational role. King (19/7/2000) observed that many of the companies who have joined the waste minimisation Club “have outside bosses and linkages to overseas”. Most member companies do have links to the global market either because they are branches or subsidiaries of companies based in the developed world or because they export their products to foreign clients. These links require member



companies to comply with the higher environmental standards dictated by developed countries such as the USA and the United Kingdom (Black, 3/8/2000). For example:

"We've got very definite policy as to what goes on. We've got a lot of common quality standards, we've got group standards and in fact its moving very much towards that where all the standards are set at head office and with today's environmental policy, we get audited once every year ad the policies are set at a group level".

This places pressure on member companies to reduce their environmental impacts and they see the waste minimisation club as a means to achieving this compliance with the demands of the global economic arena.

The Club itself and the relationships formed through the Club are seen as a motivator. Coultard (16/8/2000) enthused about the encouragement received when belonging to the Club:

Definitely it's good. In the past nothing was happening towards waste minimisation savings and things like that and as soon as the Club came up and I started going to the meetings it becomes a challenge let me see how much I can save... it helps a lot".

Satharia (2/8/2000) reiterated this when expressed the encouragement of attending meetings, "you tend to put it one side if you don't have these meetings now and again you tend to just forget about it. By attending these things it's away in the back of your mind that you've got to do it this way".

Upkeep of the co-ordination of the Club and the organisation of regular meetings is seen as encouraging the continuation of waste minimisation in the future (Kennedy, 29/9/2000; Satharia, 2/8/2000). In addition, the growth of Club membership is seen as motivating companies to continue as new ideas and additional successes will be generated as new members implement waste minimisation (Naicker, 31/5/2000).

Although possibly not recognised directly by the project champions as a motivating factor, proximity and accessibility have played a role in encouraging membership of the Club and therefore of waste minimisation activities. Members attend the Club meetings because the venues are located close to member companies. Project champions have claimed that if the HWMC meetings were held further away they would not attend or would attend infrequently (Coultard, 16/8/2000; Winn, 16/7/2000).

It is suggested that diversification of the goals of the Club will encourage co-operative activity in the long run but in this case, the aims of the Club will be much more broadly based than they are currently. Buckley (13/9/2000), a professional, views the Club as:

“Promoting world class manufacturing in the country so we can take up different issues. (With) textiles we ...could have an eco-label Club. The (waste minimisation) Club must expand into the customers and raw material providers. The other area (of diversification) is where the Club becomes a co-regulatory organisation where they (members) move beyond compliance. Training ... with the advent of the Skills Development Act, (and) how they can meet their requirements, getting shopfloor training for their workers. ...There are a whole lot of issues that can be brought into the Clubs in time...You try to introduce all these other things so 'waste minimisation' might be what they (members) call it (the Club) initially but it might become a bench-marking or industrial efficiency Club or circle.”

In this case the Club is seen as a starting point rather than a means to the particular end of waste minimisation implementation. This is a view that has not been expressed by any of the members.

The above-mentioned motivators compete with the negating effects of the barriers to waste minimisation. This creates a dynamic context in which waste minimisation progresses at varying rates, and will do so for an undetermined length of time, dependant on the interplay between encouraging and discouraging factors.

It is important to note that barriers and motivators for waste minimisation are not direct barriers to sustainable development even though they impact on the amount of contribution the HWMC makes to sustainable development because they either limit or increase the activities of the Club.

## 5.7 CONCLUSION

The HWMC can contribute to sustainable development in two ways. This chapter has discussed these issues through the use of two themes. The first theme addressed the way in which the Club is organised while the second theme focussed on the activities of the Club.

Activities of the HWMC form a substantial part of how the Club can contribute to sustainable development. The main activity of the HWMC is the implementation of waste minimisation in member companies. Companies involved in the Club are proactively looking to improve environmental performance by increasing savings and decreasing the cost of production.

A number of motivators such as increased training, the increase of regulatory pressure and the encouragement of previous success with waste minimisation can act to increase the activities of the Club. In contrast, barriers to waste minimisation such as time and human resource constraints, the current economic situation and the possible loss of leadership can decrease the contribution of the Club to sustainability as activities decline.

An important activity of the Hammarsdale Waste Minimisation Club has been the programme of capacity building. Formal capacity building provided for shopfloor and management staff of member companies and for project champions has been successful. The capacity building that has occurred in the Club can be considered as education for sustainability as it has increased environmental awareness, has resulted in the development of a sense of responsibility for the quality of the natural environment and has provided skills with which to implement environmentally-beneficial industrial activity. The capacity building programme has contributed to enabling this small 'community' to care for its own environment (Yeld, 1993).

Unfortunately many of the member companies have not made use of the availability of capacity building for management and shopfloor workers. This has limited the impact of capacity building in the Club and serves to lower the changes that would have been possible in developing the motivation and skills for the implementation of waste minimisation.

Szerszynski (1997) argues that voluntary organisations should act in defence of the environment. Both waste minimisation activities and the capacity building which has taken place indicates a defence of the environment, defending it from the negative effects of industrial waste and the inefficient use of resources.

Collectively, these activities which enable the HWMC to limit the impact of industry on the local environment can make some contribution to the 'improvement of the quality of life' which is a requirement for the achievement of sustainable development (Yeld, 1993). Furthermore, it is possible that these small steps towards integrating environmentally-beneficial practices into industry can contribute to the goal of sustainable development of changing practices so that the activities of society remain within the Earth's carrying capacity (Yeld, 1993).

Thus the activities of the HWMC contribute significantly to the introduction of sustainable development at the local level. The form of the Club and its organisational processes also play a role in how the Club contributes to sustainability.

The Club has a high level of voluntary participation in the activities of waste minimisation implementation and capacity building. The participation of role-players in waste minimisation and their potential role in the decision-making processes of local government enables the organisation to contribute to the achievement of procedural equity which is a cornerstone of sustainable development (Sowman, 1999).

The relationships and interaction that have occurred through the organisation of the Club enables the development of a sense of community that can contribute to the improvement of the quality of

life in the Hammarsdale area. In addition the potential participation of the Club in the development of a broader network creates the possibility of contributing to sustainable industrial activity on a larger scale.

In contrast other characteristics of the organisation of the HWMC play a role in mitigating the contribution of the Club to sustainable development.

It has been indicated in this chapter that the nature of the relationship between the Club members and the professionals is highly dependent. It is recognised by all role-players that there is a need for a driver to facilitate the continuation of waste minimisation through the Club. The implications of the withdrawal of the professionals in this leadership capacity hold the possibility that the Club as an organisation may disintegrate. This disintegration could lead to a drop in activities carried out in member companies that contribute to sustainable development. This notion is supported by the recognition of some project champions that the Club is currently experiencing a decline in activity.

As discussed in this chapter, the HWMC can be viewed as a good example of a leverage partnership. The characteristics of a leverage partnership that the Club shows may reduce the role of the Club in sustainable development. Leverage partnerships are recognised as having a short life-span characterised by the formation of loosely bound partnerships that work for the mutual benefit of all involved (Long and Arnold, 1995). If the barriers to waste minimisation become overwhelming and it becomes difficult to implement waste minimisation then it is likely that companies will reduce their involvement in waste minimisation and with the Club. In addition, the short life span of a leverage partnership may indicate that the Club will contribute to sustainable development only for a short time.

In order for the HWMC to contribute significantly to sustainable development both the organisation and its activities need to be sustainable. For the most part, the way in which the Club is organised has a limiting effect on its contribution to sustainable development. It is put forward here that this is because there has been a large focus on activities and 'doing' for sustainability rather than a focus on the form of the organisation itself. This prioritization of activities limits the contribution of the Club to sustainability in the long-term because the structure of the HWMC has not been developed in such a way that it will be sustainable. The unsustainability of the organisation acts to limit the contribution of its activities to sustainability because these will diminish once the motivational source of action is lost and it is likely that the organisation will disintegrate completely.

It is possible that the HWMC has set in place the skills and motivation for sustainable development activities to an extent that these will continue even if the Club itself dissolves. This chapter has

introduced the possibility that in the absence of the driver group of professionals, the waste minimisation activities of the Club will be absorbed as one of the goals of the Hammarsdale Industrial Conservancy. Absorption of the Club into the Hammarsdale Industrial Conservancy would not mean the conclusion of waste minimisation activities that contribute to sustainability, as they would progress through the avenue of the Conservancy. In this scenario the HWMC, as a voluntary participatory organisation, has played the role of laying the foundations of independent activity for sustainable development rather than facilitating this activity in an ongoing capacity.

## CHAPTER SIX

### CONCLUSIONS AND RECOMMENDATIONS

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#### 6.1 INTRODUCTION

This study has used the Hammarsdale Waste Minimisation Club as a case study for the assessment of the role of voluntary participatory organisations in sustainable development. This chapter summarises the main findings of this research and provides a list of recommendations developed through these findings. These recommendations aim to provide guidance that will enable the HWMC to continue to act in the interests of the environment and to provide similar voluntary participatory organisations with guidelines that will assist these organisations to make significant and long-term contributions to sustainable development.

#### 6.2 THE AIM AND METHOD OF THE STUDY RECAPPED

As discussed earlier the main aim of this research has been to assess the role of voluntary participatory organisations in sustainable development. In order to achieve this aim, a case study of the Hammarsdale Waste Minimisation Club has been carried out.

Primary data for the study was collected from early in 1999 until mid 2000 through a process of participant observation at meetings of the Club and at a variety of capacity building activities. In addition, semi-structured informal interviews were carried out with representatives of the role-player groups within the Club. This data, along with supporting documentation and information gained through informal discussions with a small number of stakeholders, has been qualitatively analysed and interpreted through the identification of patterns within the data and through the use of the conceptual framework developed in Chapter Three.

The following section summarises the main findings to come out of this process of research and provides recommendations that have emerged through the outcomes of the study.

#### 6.3 FINDINGS AND RECOMMENDATIONS

This section summarises the main findings that are addressed in Chapter Five. Furthermore a number of recommendations have been made to facilitate the development of enduring voluntary participatory organisations that contribute to sustainable development in the short and long term.

Many of these recommendations stem directly from specific findings and thus rather than separating a recommendation from its source, the recommendations given here have been integrated with the summary of the findings.

It has been found that the activities of a voluntary participatory organisation can contribute to sustainable development. In addition, it is evident that the organisation of the structure and way in which activities occur in these organisations plays a significant role in determining its contribution to sustainable development. To this end many of the following recommendations address the issue of organisational structure.

Analysis of the data has revealed that a number of relationships have been formed amongst role-players in the Club. Constructive and supportive relationships amongst industry, the group of professionals, regulators and with the Hammarsdale Industrial Conservancy have been formed through the HWMC. These relationships facilitate action for sustainable development and enable individuals to be involved in the care of the natural environment. Due to the hierarchy within the structure of the HWMC, members have come to rely heavily on the professionals for leadership of the organisation and guidance in the implementation of waste minimisation. This dependency limits the role of the HWMC in sustainable development because it creates a weakness in the organisation's structure and lessens the ability of the industry-based members to care independently for their local environment.

It is important that the structure of voluntary participatory organisations, and the ways in which activities are carried out, attempt to prevent the dependency of volunteers on outside parties. Organisations should be developed through self-motivation and a willingness to create change or they should become self-motivated through the development of the will and the skills to create change. This can occur through a carefully designed process of capacity building and through the encouragement of volunteer participation and leadership of the organisation by the members and initial drivers. Internal motivation can facilitate independent action and can ensure that activity for sustainable development continues over a longer period than if the source of motivation for activity comes from the outside and can be withdrawn.

It has been asserted that Club members rely on a designated individual to carry out the administrative and organisational functions of the Club. It is evident from this study that there is a need for a permanent driver that is dedicated to the organisation of Club activities and functions to encourage waste minimisation in a variety of ways. The process of designating leadership should be included in the constitution and should be managed by the members themselves rather than left to an outside party.

It is notable that the HWMC is a voluntary participatory organisation that does not have a constitution. This further weakens the organisation. The HWMC needs a formalised constitution with which to guide future management and which would formalise and bind the partnerships of the HWMC so that administrative and leadership needs of the organisation can be fulfilled by volunteer members or an independent party. In addition, a formalised structure stemming from a constitution can guide the reorganisation of the Club in the future so that it can adapt to changes while continuing to contribute to sustainable development.

It is recognised that it is highly likely that changes will be made to the Club once the professionals, as the drivers of the Club, withdraw at the end of 2000. Because of the links between the HWMC and the Hammarsdale Industrial Conservancy, the Club may be subsumed by the Conservancy and will hopefully continue its activities through this alternative channel. Thus one voluntary participatory organisation will be absorbed into the functions of a more established voluntary participatory organisation with a more concrete structure and internal motivation.

For the HWMC to continue independently without the leadership of the professionals, there should have been less initial dominance by the professionals during the progression of waste minimisation activities and club meetings. In effect, the procedures should have been put in place to allow for a gradual increase of ownership and management by the club members in preparation for withdrawal of their direct involvement.

Within the HWMC, the long-term success of waste minimisation activity requires greater ownership by employees in the individual member companies and should not be left to the sole responsibility of the champion. Ownership of the implementation of waste minimisation, especially by top management, can serve to facilitate greater success and greatly improved production efficiency that will contribute to long-term sustainability in the industrial sector.

Analysis of participant observation data revealed that the organisational characteristics of the HWMC show it to be a leverage partnership for the environment. This partnership facilitates the merging of diverse partners in a common environmental purpose. The characteristics of this partnership are such that the partnership can be short lived. This further indicates that the HWMC may not contribute to sustainable development as an independent voluntary participatory organisation in the long-term.

It has been noted that although the organisation of the HWMC has resulted in a combination of sector-based and place-based activity for sustainable development. The role of Hammarsdale as a place with specific characteristics has been influential in determining the role of the Club in sustainable development. Members of the HWMC have accepted that local environmental problems and their solutions are linked directly to the characteristics of their locality. Although on



one level the combination of industrial sectors limits the exchange of information, this place-based nature of the Club has facilitated activities that positively affect the local natural ecosystems much more than if activities had been limited to only one sector (thus allowing other sectors in the same locality to continue to damage their environment). In addition, the previous existence of the Hammarsdale Industrial Conservancy has provided a sound base for environmentally-beneficial activities such as waste minimisation, as well as providing an alternative means for the continuation of waste minimisation and capacity building should the HWMC degenerate. It is therefore recommended that voluntary activities attempt to link their activities to a specific place, addressing the needs of that locality in an effort to create a sustainable space that can be linked to other organisations in that area and subsequently to other areas to create a broad spatial pattern of sustainability.

It is apparent that the Hammarsdale Waste Minimisation Club can operate in a broader sphere than it does currently. The Club can increase its role in sustainable development by participating in the decision-making process of local government. This would promote procedural equity with the regulatory system. In addition Club members believe that the formation of a network of waste minimisation organisations will facilitate greater success, thus increasing the efficiency of industry. In order to encourage activity in the long term and to link the Club to other organisations involved in sustainable development, individual voluntary participatory organisations could be embedded in a more formalised and widespread movement, such as the world-wide Local Agenda 21 programme, or linked with other organisations that form part of the environmental movement.

A considerable amount of environmental education has taken place in the HWMC. Capacity building has taken place through formal training sessions with management and shopfloor staff of member companies, through training provided by professionals at meetings of the Club and through informal communications. This has resulted in the generation of a greater concern for the impacts of industry on the environment as well as skills to reduce this impact through waste minimisation. It is important that voluntary participatory organisations introduce education for the environmental into their activities. In this way, volunteers who are willing to participate in the organisation's activities are able to develop their skills and to appreciate their individual responsibilities, thus enabling the organisation to make a greater contribution to sustainable development.

By creating a greater environmental ethic and enabling people to act for the environment, the capacity building programme has enabled the organisation to contribute significantly to sustainable development. Even if the HWMC were to disintegrate or if the individuals involved in the Club were to move from their present employers, capacity building through the HWMC would have equipped them to act in a sustainable manner in other contexts. Thus the appropriate and successful

capacity building prompted through the Club can enable this voluntary participatory organisation to contribute to sustainable development even if it no longer exists because members will be equipped to contribute to sustainable development independently.

Finally, this research has revealed that membership of the HWMC has facilitated the extensive implementation of waste minimisation solutions with the industrial process of member companies. This has resulted in increased process efficiency that lessens the use of raw materials and utilities as well as reducing the amount of waste that has to be disposed. These activities and the resultant integration of environmental care into the process of production, induced through the HWMC, contribute significantly to sustainable development.

Thus, voluntary participatory organisations contribute to sustainable development through their activities and through the way in which the organisations themselves are arranged. It is recognised in this study that although important activities that contribute to sustainable development have taken place through membership of the Hammarsdale Waste Minimisation Club, the way in which the Club was organised has potentially limited the extent to which the Club will contribute to sustainable development in the long-term. For the sustainable development activities generated through these organisations to be sustainable themselves then the voluntary participatory organisations should be arranged in such a way that they ensure that activities can continue over the long-term. If an organisation cannot be sustainable itself then, for the duration of its existence, activities should include a focus on ensuring that activity for sustainability will continue after the organisation 'disbands'.

#### **6.4 CONCLUSION**

The analysis of the Hammarsdale Waste Minimisation Club as a voluntary participatory organisation has revealed that these organisations do play a role in the achievement of sustainable development. The extent of the contribution of these organisations to sustainable development is dependent on the interactions between the specific activities that are carried out and the way in which they are organised.

If voluntary participatory organisations can both carry out their activities and arrange themselves with an appreciation of the need for long-term as well as current action for sustainable development then they can play an important role in the achievement of the changes needed in society for the attainment of sustainable development.

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- |                 |  |
|-----------------|--|
| 3 March 1999    | Hammarsdale Industrial Conservancy meeting   |
| 9 March 1999    | 'Play Dough Factory – Learning about Waste minimisation' capacity building session |
| 12 March 1999   | Hammarsdale Waste Minimisation Club Meeting and training by Professionals          |
| 19 May 1999     | Hammarsdale Waste Minimisation Club Meeting and training by Professionals          |
| 10 August 1999  | Waste Minimisation Club for the Metal Finishing Industry Meeting                   |
| 5 October 1999  | <i>Buckman Laboratories</i> Shopfloor training                                     |
| 6 October 1999  | <i>Coates SA</i> Shopfloor training  |
| 7 October 1999  | <i>Coates SA</i> Management training   |
| 17 October 1999 | <i>Coates SA</i> shopfloor training  |
| 19 October 1999 | Waste Minimisation Club for the Metal Finishing Industry Meeting                   |

- 20 October 1999            Hammarsdale Waste Minimisation Club Meeting and training by Professionals
- 21 February 2000        Waste Minimisation Club for the Metal Finishing Industry Meeting
- 1 March 2000            Hammarsdale Waste Minimisation Club Meeting and training by Professionals
- 11 May 2000            *DeNim* shopfloor training session
- 12 May 2000            *Coates SA* training session
- 24 May 2000            Hammarsdale Waste Minimisation Club Meeting
- 29 May 2000            Inaugural meeting of the Metal Finishing Association

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## APPENDIX A

### INTERVIEW SCHEDULES FOR QUALITATIVE, INFORMAL INTERVIEWS

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#### QUESTIONS FOR CLUB MEMBERS

1. How many employees are there in your company?
2. When was your company established?
3. What is the address of the company?
4. When did your company join the waste minimisation club?
5. What position do you, as the champion, hold in the company?
6. How do you see your position (or that of your company) within the club?
7. What are your views on clubs as mechanisms for bringing about improved waste minimisation practices in industry?
8. Would the club have been formed without the stimulus and input from the outside?
9. How will the club work once the input from the outside is withdrawn?
10. Can you briefly explain how you see the club functioning?
11. What did you know about waste minimisation before joining the club?
12. In what ways has your knowledge about waste minimisation changed or grown since becoming a member of the club?
13. In what ways has your knowledge about the environment changed or grown since becoming a member of the club?
14. In what ways has your knowledge about capacity building changed or grown since becoming a member of the club?
15. Why has your knowledge changed or grown? Please give some examples.
16. What, if anything, has changed in your company practice due to membership of the club?
17. What, if anything, has changed in your company policy due to membership of the club?
18. In your opinion, how well is the club functioning?
19. What motivators might enable the club to function in the future?
20. What constraints might prevent the club from functioning in the future?
21. What changes would you make to improve the structure and functioning of the club?
22. What relationships have developed between your company and other club members?
23. What is the basis of this relationship?
24. In your opinion, what relationships have been formed between industry and the authorities?
25. In what way do you see what you're doing as public participation? Do you think you could influence the decision making process of the DMA?
26. The club is currently a voluntary initiative, is there any way that it could be institutionalised? Is this a positive thing?
27. Do you see the Hammarsdale Waste Minimisation Club fitting into a broader movement of sustainable development and environmentalism? In what ways?
28. In what way has the link between the club and the HIC fostered increased environmental concern?
29. Do you think this link is the direction the clubs should be working towards?
30. Do you think it is better for the club if industries to be based in the same place rather than being sector based?
31. Are there any other issues you would like to discuss or comment on?

## QUESTIONS FOR PROFESSIONALS

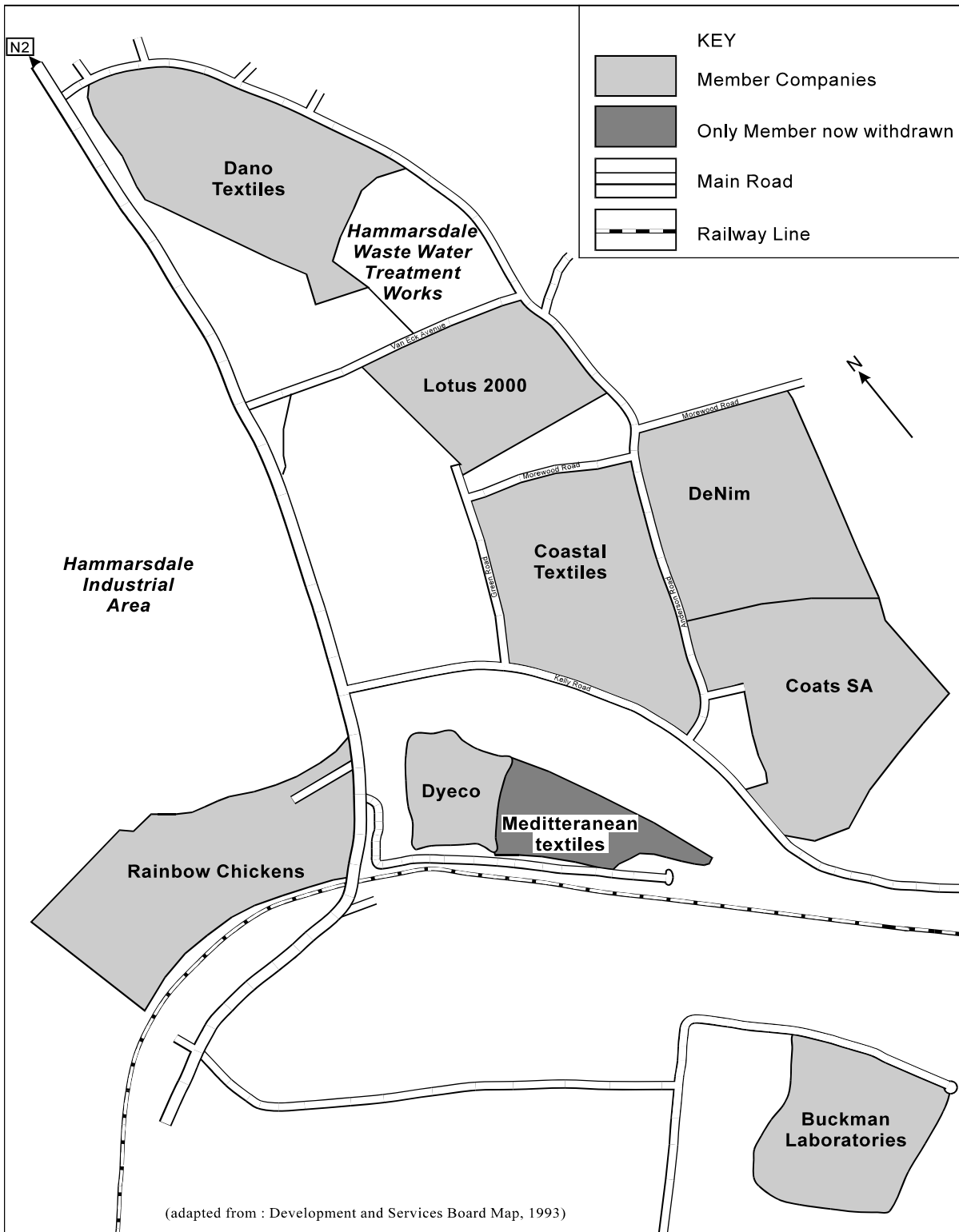
1. How was the project/your involvement in the club instigated?
2. Why was the club set up?
3. How was the Hammarsdale Waste Minimisation Club established?
4. Why was it established in this way? Please give details.
5. What was your role in setting up the club? Please give details.
6. What difficulties were encountered in establishing the club?
7. Who provides funding for this project?
8. What are the demands of the funders? Do they involve themselves in how funding is used?
9. How do you see your position within the club?
10. Do you consider yourself a member?
11. Is there a hierarchy amongst club members? Please explain your answer.
12. Why is this grouping of industries called a 'club'?
13. Can you briefly explain how the club functions?
14. Do you consider consensus building, conflict resolution and information a role of the club?
15. In what ways has your knowledge about waste minimisation changed or grown since becoming involved with the club?
16. In what ways has your knowledge about the environment changed or grown since becoming involved with the club?
17. In what ways has your knowledge about capacity building changed or grown since becoming involved with the club?
18. Why has your knowledge changed or grown?
19. What have you learnt about waste minimisation from the members of the club?
20. In what ways have you learnt about the setting up and management of clubs?
21. To what degree is capacity building taking place within the club?
22. In your opinion, how is the club functioning?
23. What motivators might enable the club to function in the future?
24. What constraints might prevent the club from functioning in the future?
25. How will the club function without outside facilitation?
26. Do you see the Hammarsdale Waste Minimisation Club fitting into a broader movement of sustainable development and environmentalism? In what ways?
27. Do you think that the clubs contribute to sustainable development at this stage? In what ways?
28. How the club will continue into the future with regard to contributing to sustainable development?
29. What relationships have been formed with institutions?
30. In your opinion, what relationships have been formed between industry and the authorities?
31. Is the local authority fully participating in the club? Why/why not?
32. In what way do you see what you're doing as public participation? Do you think you could influence the decision making process of the DMA?
33. Can the club improve waste minimisation control in the DMA?
34. In what way has the link between the club and the HIC fostered increased environmental concern?
35. Do you think this link is the direction the clubs should be working towards?
36. How do you see the role of the scientific experts in the club?
37. How do you see the role of the social scientists in the club?
38. How do you see the role of the educators in the club?
39. How will the waste minimisation club project benefit you as a professional?
40. With hindsight, is there anything you would have done differently in this project?
41. Are there any other issues you would like to discuss or comment on?

## Questions for Educators

1. How was your involvement in the club instigated?
2. How do you see your position within the club?
3. Explain briefly how formal environmental education has occurred in the club.
4. Do you think that environmental education has occurred informally, in other ways in the club?
5. In what ways has your knowledge about waste minimisation changed or grown since working with the club?
6. In what ways has your knowledge about the environment changed or grown since working with the club?
7. In what ways has your knowledge about capacity building changed or grown since working with the club?
8. Why has your knowledge changed or grown?
9. How do you see the club members interpreting the term “environment”?
10. How do club members react to environmental matters in general?
11. What contribution to the success of the club has the environmental education made?
12. Has there been enough environmental education for the club to become an instrument of sustainable development?
13. Do you think that environmental education will contribute to the sustainability of the club itself?
14. In what ways do you think that environmental education through the club is important in our current context?
15. Do you think the emergence of clubs here and elsewhere links to broader environmental movements in the present context of global environmental concern?
16. Do you see the Hammarsdale Waste Minimisation Club fitting into a broader movement of sustainable development and environmentalism? In what ways?
17. In your opinion, how is the club functioning?
18. What motivators might enable the club to function in the future?
19. What constraints might prevent the club from functioning in the future?
20. With hindsight, is there anything you would have done differently in this project?
21. Are there any other issues you would like to discuss or comment on?

**APPENDIX B**

**AREA PLAN MAP OF THE DEVELOPMENT AREA OF THE HAMMARSDALE AREA**



The location of member companies in the Hammarsdale Industrial Area.

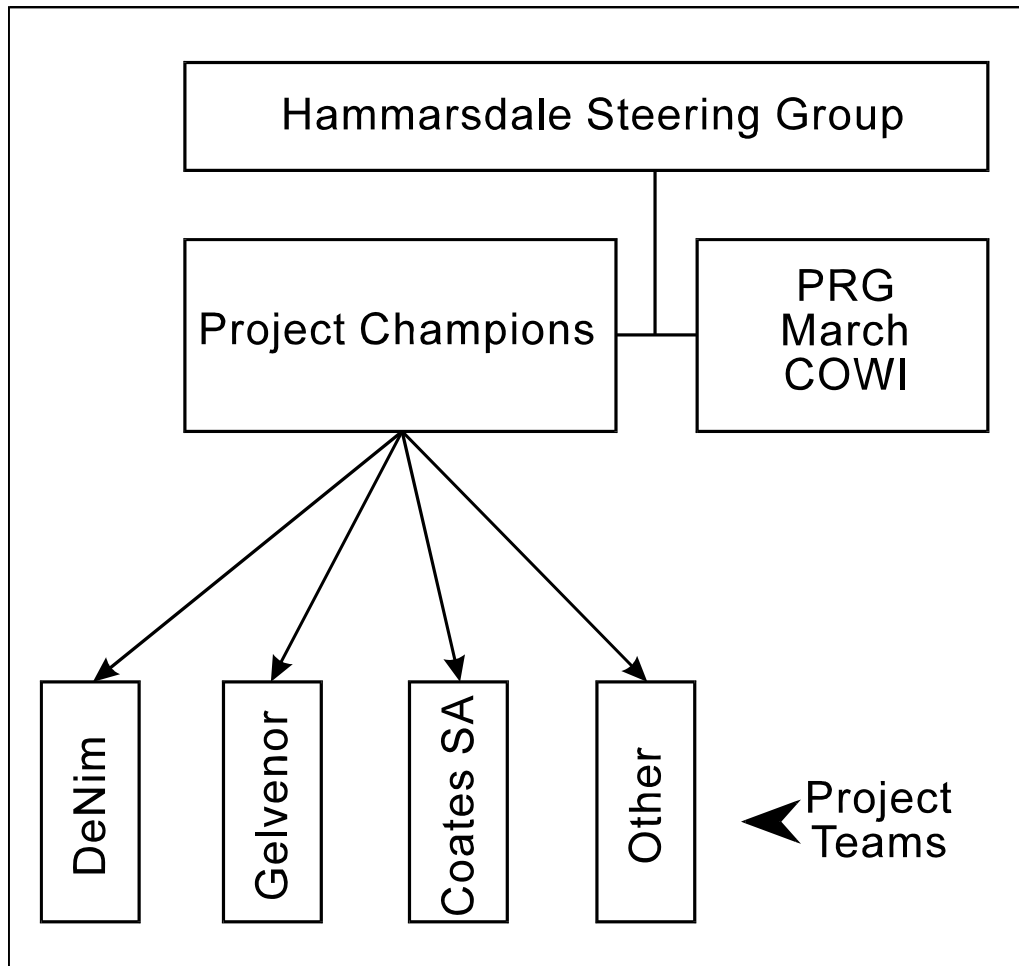
**APPENDIX C****PREPLANNED STRUCTURAL ORGANISATION OF THE HAMMARSDALE  
WASTE MINIMISATION CLUB**

Figure 1 :



**APPENDIX D****TRAINING MANUAL FOR SHOPFLOOR AND MANAGEMENT  
CAPACITY BUILDING**

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Kagiso-COWI  
8th Floor  
Braamfontein Centre  
23 Jorissen Street  
Braamfontein  
2001  
Johannesburg  
Tel (011) 403 -6319

# Kagiso-Cowi

# Hammarisdale Waste Minimisation Club

*Waste Minimisation Trainer's Manual*

Manual - Waste Minimisation Training - Hammarisdale Club

**Environmental awareness**

Overview of our environment

What is the environment? It is everything - the air that we breathe, the water we drink, the soil on which we grow our food, where we live, work and play. In the past, South Africans were encouraged to think of the environment as the game parks, saving the rhino, and preserving the beautiful green areas of our land - the fact that Black South Africans paid the price for environmental degradation was conveniently ignored.

Most landfill sites, including those handling hazardous and toxic waste, are situated near our homes in townships. Polluting - industries are also, as a rule, situated near former Black group areas. Workers had minimal information and protection against environmental hazards, and many cases exist where workers have died from problems caused in the workplace.

The hole in the ozone layer, which amongst other things, increases the risk of skin cancer; global-warming, which could lead to radical changes in the weather and nuclear waste, terrible in it's ability to create mutant babies, are some of the issues facing the planet today.

These are not creations of countries far away - it is our actions, both at home and in the workplace, that caused these scenarios - and, in the end, it is us that will pay the full and horrible price, In suffering, illness and even death.

How are we responsible for all this? Simple - by the way we live and work. If we drive unnecessarily, we waste energy, release toxic pollutants, and contribute to global warming... when we use electricity unnecessarily, we contribute to air pollution in Mpumalanga, and also to global warming..... using too much of the resources of the planet is the common factors in all environmental degradation.

## 2) Health & Safety

The health impacts of products and processes on workers Environmental threats in the workplace

What impacts can participants identify that exist in their workplace?

## Legal & policy

Implications for companies and directors

The new National Environmental Management Act changes the ground rules for the environment in our country in many ways. For example, should a company pollute, not only will it be held liable, but the director/s themselves could be held personally liable. they will also have to pay to clean up the pollution, and pay for all damage caused, including that done to human health. An example is Thor Chemicals, which imported mercury waste for local processing - this happened because our environmental legislation was less strict, if not non-existent, compared to the countries where that waste originated. This resulted in widespread toxic contamination, and also to the death of workers, with other health impacts.

There will also be a new waste register, under the national waste management strategy, which includes all discharges and waste from any production facility, whether to air, water or landfill. There are many more issues that will affect companies directly.

### Implications for workers

There are also many implications for workers too. These include the responsibility to avoid causing pollution as a first step. The Act also empowers workers to decide not to carry out a specific order, on the grounds that it could lead to pollution - the company may not act against such a worker.

It is important to note that workers should be joining NGO's and CBO's that are concerned with environment, so that they may inform themselves, and be part of the solution. Many organisations are involved in hands-on work, and know many things about the environment that we may not all be aware of

## Financial

### Impacts to company profits and viability

Waste is simply a product for which no use is found - it all costs the company, because what leaves the factory as waste was bought in at a price; so waste has more of an impact on the bottom line than just the cost of handling such waste. One company, through implementing sound waste management principles, improved its profits by over R800 000 per annum! And there are many more such examples,

Also, causing and handling less waste makes the company more efficient, and it will find it easier to comply with upcoming legislation.

### Impacts on job security and job creation

Why should workers be concerned about waste and pollution? In the first instance, they are the frontline when pollution is caused, and their health could be seriously affected by such incidents. Secondly, if the company continues to generate more and more waste, the local communities, which is generally where workers live, will also be negatively affected by the pollution.

If the company, on the other hand, minimises waste, then the health risks are also lessened, the company wastes less money in raw materials, and other costs, making it more viable, and thereby helping ensure it's profitability, which in turn, ensures 'job security. We know of a company in Durban which is profitable only through the waste minimisation programme - without it, they would have to close their doors, with the loss of many jobs.

Other companies did close their doors because the cost of handling waste. hazardous waste in particular, had risen dramatically. With the "polluter -pays" principle-, the cost of waste handling, will continue to rise.

One company thought their waste cost them R49 000 per year (the cost of disposing waste) after an analysis, and a few minor changes, they were able to save over R800 000 per year!

## 7) Labour issues

### Rights and obligations

As discussed previously, the worker has the right not to carry out a task that could lead to pollution, or that which will constitute a risk - but workers are also obliged to avoid waste and pollution as well, so it makes sense to do the training that we have begun today.

### Consequences of environmental issues on labour issues in general

For general knowledge, the issues surrounding waste and labour are far beyond that which was mentioned above - it also has global implications. This would include the right to a clean environment, as stated in our constitution, but also issues such as 'job security, economic sustainability, and 'job creation are at stake. For example, if we were able to design all the processes in this company so that all waste could be a raw material for some other product, then we would not only ensure that the company remains viable, but would lead to direct job creation, where such raw materials could be downstream businesses, often suitable for small and medium enterprises.

## 5) Waste minimisation

Waste minimisation is more than reducing the amount of waste that is carried away by waste contractors - it means a look at how we are working, the production process, all the inputs and outputs of the process, and re-examining production management. The inputs we need to look at

are:

- Raw materials
- Packaging
- Energy
- Water
- Consumables
- Product design and manufacture
- Emissions to air
- Waste water
- Solid and liquid waste

The advantages are many:

- \* Environmental improvement
- \* Cost savings
- \* Complying with legislation
- \* Reduction of risk
- \* Competitive advantage

To achieve waste minimisation, we need to look at people ' systems and technology. This training is a beginning. It is also important to carry out a waste audit, to see what you are actually dealing with. This will lead to:

- Understanding what the magnitude of the problem is
  - Being able to identify options, beginning with low-cost and no cost.
  - Implementation
  - Plans for improvement
  - Develop control systems
- \* Develop control systems
    - Continue data collection
    - Check improvements on an on-going basis
    - Analyse new data
    - Continuous improvement

### **Waste Minimisation Ideas**

*Importance of logging such ideas*

Process - develop clear methodology of generating, logging, and implementing ideas.  
Suggest ideas are logged on a designed form, with copies to relevant personnel

*Following up such ideas*

Clear lines of communication and responsibility. Shop floor to management decision makers identified, and made accountable

*Implementing such ideas*

Laid out procedure for trial and implementation, before and after measurements are taken.  
Cost accounting applied to be one of the methods of evaluation and chasing progress.

*Feedback on ideas*

Regular feedback process and evaluation - discussion with all role-players

*Re-evaluation of original idea*

Monitor level of success and value to company

8) Communication

The importance of communication  
Methodologies for improving communications

Methodologies for developing communication channels

9) General

## APPENDIX E

### LIST OF PROCESS CHANGES IN MEMBER COMPANIES

<b>Member Company</b>	<b>Practice Change</b> <i>(implemented or identified)</i>	<b>Effects of Change and Estimated Savings</b> <i>(where reported)</i>	<b>Report Details</b>
<b>Gelvenor Textiles</b>	Standardisation of fabric width	Saving: R1.92 / m	20/10/1999 HWMC meeting
	Use plastic cones for thread rather than cardboard	Saving: R140 000 / yr	1/3/2000 HWMC meeting
	Warping and sizing alterations	Increased efficiency in raw material use	1/3/2000 HWMC meeting
	Savings in consumables identified	Saving: R208 000 / yr	Common Goal 2/2000
	Potential chemical savings through reformulation	Possible saving: R113 000 / yr	Common Goal 2/2000
	Heat recovery: use of excess heat to heat water in the dye house	Increased energy efficiency	20/10/1999 HWMC meeting
<b>Coats SA</b>	Increased monitoring of water usage	Monitoring to ensure efficiency	20/10/1999 HWMC meeting
	Montage* installed in the boiler house	Monitoring and targeting for waste minimisation	20/10/1999 HWMC meeting
	Electricity savings	Saving: R13 000 / month	Common Goal 2/2000
	Change in capacitors and power factor correction	Increased energy efficiency	1/3/2000 HWMC meeting
	Heat recovery project for waste heat in the dye house. Installation goal for July 2000	Increased energy efficiency	1/3/2000 HWMC meeting
	Installation of water meters	Monitoring to ensure efficiency	1/3/2000 HWMC meeting
	Installation of water meters	Monitoring to ensure efficiency	20/10/1999 HWMC meeting
<b>Dano Textiles</b>	Replacement of 3 coal-fired boilers with electro-boilers	Energy savings No coal use Reduced air pollution	20/10/1999 HWMC meeting
	Recycling of water through processes	Reduced water use	20/10/1999 HWMC meeting
	Alterations to condensate systems	68% recovery of condensate	20/10/1999 HWMC meeting

	Water meters installed and water leaks fixed	Saving: 1000 kilolitres per year	1/3/2000 HWMC meeting
	Reduction of redyes from 7,8% to 2%	Reduced dye use Reduced water and energy use	1/3/2000 HWMC meeting
	Substitution of some raw materials	Saving: 48% of raw material costs	1/3/2000 HWMC meeting
<b>Buckman Laboratories</b>	Reuse of rinse aides	Reduced water use	1/3/2000 HWMC meeting
	New meters installed	Monitoring to ensure efficiency	1/3/2000 HWMC meeting
	New boiler installed	Energy savings 25% air pollution reduction	1/3/2000 HWMC meeting
	Good housekeeping	35% reduction of solid waste to landfill	Common Goal 2/2000
	Leaks fixed	Saving: R25 000 / month	1/3/2000 HWMC meeting
<b>DeNim Textiles</b>	Effluent monitoring meters installed	Reduced acid consumption	1/3/2000 HWMC meeting
	Plans to service and upgrade 2 boilers	(Planned)12% reduction in steam consumption	1/3/2000 HWMC meeting
	Water savings identified	Potential saving: 30% / month	Common Goal 2/2000
	Process and treatment chemical savings identified	Reduction in chemical use	Common Goal 2/2000
	Cutting waste	Saving: R3 000 000 / yr on raw material costs	Common Goal 2/2000
	Identification of water consumption as key area for change	Saving: R13 000 / month	1/3/2000 HWMC meeting
<b>Coastal Textiles</b>	Installation of energy and steam meters	Monitoring to ensure efficiency	1/3/2000 HWMC meeting
	Installation of water meters	Monitoring to ensure efficiency	1/3/2000 HWMC meeting
	Investigation of acid costs and planned reduction of acids in effluent	Improved effluent quality	1/3/2000 HWMC meeting
<b>Dyeco</b>	Heat changes	Improved process efficiency	1/3/2000 HWMC meeting
	Dyeing changes	Reduction in chemical use	1/3/2000 HWMC meeting

\* Montage is a custom developed software package produced by Enviros-March for monitoring and targeting of waste minimisation. It is available, free, to all club members.

