

**THE RECYCLING OF DOMESTIC WASTE IN THE CAPE PENINSULA:
IMPLICATIONS FOR ENVIRONMENTAL EDUCATION**

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ABSTRACT

This case study investigates domestic waste recycling schemes in the Cape Peninsula with special reference to educational aspects as a basis for developing educational resource materials. It explores the question: "In what way can projects for the recycling of domestic waste serve as a vehicle for environmental education?". The study employs the concept of education for the environment, following a socially critical approach with action-oriented and participatory dimensions.

The research sample constituted interviewees and/or workshop participants from fourteen different municipalities, six recycling industries, one private waste contractor and the three most prominent voluntary organisations involved in recycling in the Cape Peninsula. A small-scale interview survey was done to review existing recycling initiatives, combined with a case study of several small participatory initiatives towards educational resource development. The results were analysed qualitatively.

The case study indicates that recycling initiatives have excellent potential for education for the environment. This potential was partially explored in this research by addressing key issues such as the role of local authorities in recycling of domestic waste, the short-term perspectives on the part of the local authorities, as well as the importance of and constraints on participation in recycling projects and in the research. Other issues discussed include the educational implications of personal (economic) benefits of recycling, the social development dimension of some recycling projects, the value of school children organising recycling projects, limited teacher participation in existing recycling projects, and the need for environmental education resource material. The major value of the project lies however in critical reflection on the research process. Recommendations regarding participatory resource development as an approach to socially critical environmental education are put forward to inform similar studies in the future and to elucidate the approach. Recommendations regarding the recycling of domestic waste in the Cape Peninsula are also made.

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CHAPTER 1

INTRODUCTION AND REVIEW OF THE LITERATURE

1.1 CONTEXT OF THE PROJECT

The environmental problem

The depletion of essential resources for the maintenance of present-day lifestyles is an important aspect of environmental degradation. Fuggle & Rabie (1983) contend that damage to the environment can be directly related to people's demand for resources far in excess of their biological needs, and their tendency to plan according to their short-term interests instead of their long-term responsibilities. In the USA policy makers, environmental researchers and concerned citizens increasingly propose low-technology household product recycling as one way of reducing environmental destruction (Hopper & Nielsen, 1991).

Modern society has been described as a 'a throw-away' society' (Myers, 1985; Sullivan & Sullivan, 1977). Sullivan & Sullivan (1977) are of the opinion that industry and the public need to be educated about the necessity to end the wasteful lifestyle prevailing in society. The disposal of waste presents both a logistical and an economic problem. The chief solid waste engineer of Johannesburg predicted that the national cost of cleaning urban areas would exceed R158 million by the year 2 000 (Verrier, 1980). Existing landfills are being used up and local authorities are faced with the dilemma of disposing of the vast amount of waste produced. An example is the Fish Hoek Municipality which has to arrange transport of waste for a distance of 40 km, up to three times daily. These constraints are starting to lead to an increasing demand for measures to reduce solid waste, at least overseas (Simmons & Widmar, 1990).

Recycling

In its most basic form 'recycling' means that instead of throwing something away or allowing it to end up somewhere in the environment, we re-use it or find a new use for it (Sullivan &

Sullivan, 1977). Recycling is a conservation measure because it reflects the 'wise-use' of our environment (Condon, 1976).

According to Condon (1976) the ecological web of life illustrates the interdependency of all living things in a waste free system. There is no such thing as waste in natural systems, where everything is recycled (Myers, 1985; Sullivan & Sullivan, 1977). Living organisms create and discard substances which become nutrients for others (Lukey, Albertyn & Coetzee, 1991). This leads Clarke (1991) to describe the recycling of natural resources as the only reason that life on earth has lasted millions of years.

Reasons for recycling include the need to conserve resources (Adler, 1991; Simmons & Widmar, 1990), reduce the importation of commodities (Myburg, 1990) and to reduce the energy required to produce goods from raw materials (Clarke, 1991; Myburgh, 1990; Myers, 1985). There is a monetary value associated with waste, which is in fact an excellent source of raw material (Adler, 1991; Goeschl, 1988). Recycling also reduces the amount of land used for dumping (Clarke, 1991; Myburgh, 1990), creates labour intensive operations (Ensor-Smith, 1990; Myburgh, 1990; Myers, 1985; Simon, 1989), facilitates the establishment of small enterprises (Malan, Verrier & Neethling, 1988), counters inflation (Myburgh, 1990) and gives charities, welfare and community organisations a chance to raise funds (Ensor-Smith, 1990; Myburgh, 1990). Last but not least, it reduces the country's pollution problem (Ensor-Smith, 1990; Myburgh, 1990; Simon, 1989).

The research of Vining & Ebreo (1989) shows that education about recycling has the potential to modify behaviour and encourage a more environment-conscious viewpoint. The researcher is of the opinion that recycling of domestic waste could be of value in environmental education. This aspect has not yet been explored in the Cape Peninsula; hence the aim of this study is to investigate whether the recycling of domestic waste can also be used as a vehicle for environmental education.

1.2 THE RESEARCH QUESTION, AIM AND OBJECTIVES

The research question is: "In what way can projects for the recycling of domestic waste serve as a vehicle for environmental education?"

The aims of the research were to (1) investigate current domestic waste recycling schemes in the Cape Peninsula, and (2) to start and study a participatory domestic waste recycling project, with special reference to educational aspects and the development of educational resource materials.

This aim was addressed through four specific objectives:

- (a) To review current initiatives for the recycling of domestic waste in the Cape Peninsula.
- (b) To involve the community in one particular municipal area in a recycling project, in which specific problems related to the initiatives reviewed will be addressed, and ways in which education resources can help deal with these problems, will be examined.
- (c) To initiate a participatory process to develop resource materials to address possible educational needs, if appropriate.
- (d) To describe the case of project initiation and the possible participatory resource development process, with special reference to the potential for using the recycling of domestic waste to meet environmental education objectives.

1.3 THE CONCEPT OF ENVIRONMENTAL EDUCATION

There is an increasing recognition that a new environmental paradigm is needed for a sustainable world society, in which humans have respect and compassion for each other, other living organisms and the environment which they share (Milbrath, 1984). Environmental education has developed parallel to the emergence of the new environmental paradigm.

Although many definitions of environmental education have been proposed on various occasions one of the earliest, and today by far the most widely accepted, is the IUCN definition (Irwin, 1990) which reads as follows:

Environmental education is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture and his biophysical surroundings. Environmental education also entails practice in decision making and self-formulation of a code of behaviour about issues concerning environmental quality (IUCN, 1971).

Documents emanating from an early conference in Tbilisi in 1977 (UNEP, 1978) support and further clarify environmental education. A number of principles for environmental education were identified there, which are still widely adhered to (e.g. South African White Paper on Environmental Education, Department of Environment Affairs, 1989). Essentially, environmental education is holistic, integrated and non-reductionist (Irwin, 1991). This implies that environmental education should consider the environment in its totality - natural and man-made, ecological, political, economic, technological, social, legislative, cultural and aesthetic (UNEP, 1978). According to Huckle (1986) environmental education should promote human welfare and recognise the complexity and dynamism of social, cultural and political processes; according to Sterling (1985) it should emphasise inter alia ethics, norms and values.

Environmental issues cannot be seen as separate from their context. Environmental education is more relevant if it considers environmental issues within the context of people's living environment (i.e. as part of their daily routine) (Rumbold, 1989).

1.4 APPROACHES TO ENVIRONMENTAL EDUCATION

To answer the research question: "In what way can projects for the recycling of domestic waste serve as a vehicle for environmental education?" meaningfully, the study should focus on particular aspects of a specific approach to environmental education. The

literature on environmental education reveal three emphases in environmental education. These broad, overlapping and complementary conceptions are: education **about** the environment, education **in** the environment and education **for** the environment (Fien, 1990; Fien, 1993; Robottom, 1987a; Robottom & Hart, 1993).

Education **in** the environment refers to out-of-classroom educational experiences used to introduce reality, relevance and practical experience to learning. Increased environmental awareness and concern as well as the development of important skills can be fostered through this approach (Fien, 1990).

Education **about** the environment refers to the teaching of disciplinary knowledge (Robottom & Hart, 1993). It is essential for learners to understand how natural systems work as well as to understand the impact human activities have upon the natural system (Fien, 1990). Education **about** the environment also includes learning about political, economic, socio-cultural and ecological factors (IUCN, 1971; UNEP, 1978; Irwin, 1991; Huckle, 1986).

Education **for** the environment

...seeks to engage students in the active resolution of environmental questions, issues and problems. This involves a wide range of knowledge, skill, values and participation objectives which are not addressed by teaching environmental facts and concepts (education **about** the environment) or by experiential learning in nature (education **in** the environment) (Fien, 1993, p.5).

Robottom (1987b) argues that the technocratic worldview promoted by an exclusive focus on education **about** the environment ignores the important qualitative dimensions of the majority of environmental issues which involve 'quality of life' or 'social need' concerns: emotions, beliefs, aspirations, aesthetics and, importantly, vested interests. He further argues that the decision-making processes involved in the resolution of environmental problems, such as negotiation, manoeuvring, persuasion, the offering of inducements and the exertion of influence are not considered by the technocratic worldview.

The aim of environmental education is to promote a willingness and ability in people to adopt lifestyles that are compatible with the wise use of environmental resources. To help develop an informed concern and a sense of responsibility for the environment, education **for** the environment has to build on education **in** and **about** the environment. The development of such an informed concern and sense of responsibility arises through the development of an environmental ethic, and of the motivation and skills necessary to participate in environmental improvement (Fien, 1990).

Reflection on the relative strengths and weaknesses of these three orientations in environmental education has led Stevenson (1987, cited by Fien, 1990) to argue that environmental education occurs only when the true intention is education **for** the environment; but without excluding education **about** and **in** the environment.

1.5 ASPECTS OF EDUCATION FOR THE ENVIRONMENT WHICH CAN BE ADDRESSED THROUGH THE RECYCLING OF DOMESTIC WASTE

The researcher surmises that the following aspects of education **for** the environment can be addressed through the recycling of domestic waste.

1.5.1 Political literacy

Several authors regard environmental education as a key to political literacy in the sense of active public participation in decision making. Martin (1975) has argued that environmental education does not ultimately have validity unless it also involves educating to change the human environment for the better by understanding the political processes by which this can be done as 'participating citizens'. Huckle (1991) regards political literacy as one of nine components of education **for** the environment or 'socially critical' environmental education.

1.5.2 Social critique

Robottom (1987a) believes that environmental education should adopt an approach of critical enquiry into environmental,

educational and social values to inform environmental, educational and social actions. He therefore supports a shift from a paradigm of 'information technology' to a paradigm of 'information critique'. Robottom (1987b) argues that environmental education should be environmentally and socially critical in order to improve the environment, and that a similar critical approach should be adopted to improve environmental education programmes. Environmental education "is interested in inquiries that are critical, involving critiques of environmental situations" (Robottom, 1987b, p.85). This author argues that aspects of socially critical environmental education are political literacy and involvement in real issues.

Education for the environment should be a form of social education, cast in an emancipatory mould which would seek to empower pupils so that they can democratically transform society (Huckle, 1991). The researcher supports this argument; hence the socially critical approach to the research which is equated here with 'education for the environment' (Fien, 1993).

1.5.3 Participation

Participation can be seen as an aspect of education for the environment as it attempts to engage students in the active resolution of environmental questions, issues and problems (Fien, 1993). Instead of focussing only on environmental problems, as is often the case with education about the environment, education in the environment affords people experiences of nature in either an unblemished or a blemished state (the environmental problem). Education for the environment goes further by trying to address environmental problems, thereby focussing on the positive, actually taking action to do something for the environment. An important dimension of this approach is to have groups of people, rather than individuals, participating in projects, so that they can make contributions together, because "...collective action is usually more productive than individual efforts" (Robottom & Hart, 1991). People can only make a difference when they work together, realising that environmental problems could have social implications. Robottom & Hart (1991) argue that a sense of

individual agency and responsibility is unrealistic in the light of the range of socio-political constraints in a community.

An argument for participation is raised by Robottom (1987b, p.84) who showed that a "...`recourse to technocracy' in environmental education can result in a division of labour that disenfranchises `ordinary people' and promotes passive consumerism of information about the environment."

In keeping with the participatory nature of socially critical environmental education, this study was based on a participatory research design. Brown (1985, p.70) describes participatory research as "... a people-centered learning process that can transform local patterns of awareness, equalize distributions of power and resources, and increase participation in development activity." This author believes that participatory research brings outside researchers and local participants together in joint inquiry, education, and action on problems of mutual interest. There is a potential for mutual education, new knowledge and solutions for specific problems to be produced. The interactiveness of the participatory process is of importance (Brown, 1985). Through participatory research, structures can be developed which have the potential to connect participants to a larger world and empower them to act more effectively at the local level. O'Donoghue (1993) also stresses the importance of `dialogue', together with `encounter' and `reflection' as part of a meaningful context for the active learning process.

It has been argued that environmental education must be relevant to all the inhabitants of a local area or community (Knamiller, 1981; O'Riordan, 1981; Okot-Uma & Wereko-Brobby, 1985; Agarwal, 1986). An approach where the local community is involved in the development of educational resource material could engage them in an empowering process where they could take responsibility for addressing their own environmental problems (UNEP, 1978). As mentioned above, Robottom & Hart (1991) believe that collective action is usually more productive than individual efforts.

Huckle (1991, p. 59) emphasises the educational value of local community involvement as follows:

Education is lifelong, community based, and enabling. It develops a wide range of practical, intellectual and social skills, which allow people to live co-operatively and peacefully with one another and with nature. They learn from democratically planned community development and this is allowing them to find freedom, justice and sustainability.

1.5.4. Action

The action orientation of education for the environment is described by Stevenson (1987, p.75, cited by Fien, 1990) as:

...co-operative processes of inquiry and action on real environmental issues. Such an inquiry process demands that students actively engage in critical or complex thinking about real problems. The development of knowledge, skills and values is not only directed towards action, but emerges in the context of preparing for (i.e. the inquiry) and taking action. A function of knowledge in environmental education is immediate use for the social value of a sustainable and emancipated quality of life.

The findings of Simmons & Widmar (1990) suggest that educating the public for action strategies will increase participation in recycling projects.

It would seem that recycling could fulfil many of the above objectives of education for the environment.

1.6 RECYCLING AS A VEHICLE FOR ENVIRONMENTAL EDUCATION

Literature sources support the argument that recycling of domestic waste may have special value for environmental education (Condon, 1976; Eid, 1991).

The recycling process can address ecological knowledge and understanding, people-environment relationships, ethics, politics and public participation in decision-making - all aspects that Irwin (1989) sees as part of environmental education. These notions are also embraced in the internationally accepted definition of environmental education (IUCN, 1971). Several of the 'Tbilisi Principles' (UNEP, 1978) can be applied in recycling projects. For example, recycling can involve all age groups in both formal and non-formal education processes. Environmental

sensitivity, knowledge, problem-solving skills, critical thinking and values clarification, directed to the learner's own community, can be addressed in recycling programmes.

The researcher proposes that the recycling of domestic waste is an environmental issue which forms part of the context of people's living environment, because discarding waste is a daily activity for most people. Recycling, as a vehicle for environmental education, would help people to understand the importance of conserving natural resources and thus address the issues mentioned in Section 3.1.

It is the researcher's contention that a project concerning the recycling of domestic waste can lend itself to being enquiry-based, participatory-based, practice-based, community-based, critical and collaborative. The researcher further contends that beliefs, aspirations, vested interests, negotiation, manoeuvring, persuasion, the offering of inducements and the exertion of influence (Robottom, 1978b) are all relevant issues in the recycling of domestic waste.

1.7 THE NEED FOR EDUCATION AND RESOURCE MATERIAL ON RECYCLING

Recent research conducted in the Cape Peninsula suggests that the public need information and education with regards to the recycling of domestic waste (Stevens, 1992). Simmons & Widmar (1990) suggest that public education programmes in the United States of America should continually provide information on the mechanics of household recycling. They believe that public education, to develop environmentally responsible behaviour, should not be seen as once-off information campaigns. Information and education programmes must be designed so that they will continue to reach the public long after the recycling project has been initiated.

One way of addressing the public's need for information is to develop relevant resource material. Resource development is a useful problem-solving strategy in environmental education. It can inter alia function as a tool to encourage community involvement (O'Donoghue, 1991). Participatory resource

development based on formal research may allow a community to identify its own needs and solve its own problems, while being involved in an academic research project. People, information and material resources can be mobilised through this approach, which also encourages networking. Therefore, the process has the potential to lead to the ongoing development of people and resources, by providing learning opportunities which foster human, social and environmental development.

CHAPTER 2

RESEARCH METHODOLOGY

In this chapter the choice of the research approach, the research procedure and the specific method, techniques and interpretation of the data are explained.

2.1 METHODOLOGICAL APPROACH

As outlined in the previous chapter, the researcher subscribes to education for the environment, a socially critical approach with an action-orientated and participatory nature. The recycling of domestic waste in the Cape Peninsula, with special reference to the implications for environmental education, was investigated qualitatively. From the outset the practical aim was to develop an understanding of the social context (Tripp, 1990) in which recycling projects were taking place. As the project proceeded questions of a critical nature emerged for exploration.

The study was based on the tenets of post-positivist research (Goodman, 1992). These are consistent with interpretations of the nature of environmental education which emphasise holism and integration (UNESCO, 1980), and is in contrast to the positivist research paradigm, which involves reductionism and compartmentalisation (Reason & Rowan, 1981).

The researcher's support for education for the environment, with its emphasis on community participation (Section 1.5.3), influenced her decision to explore implications for environmental education through a participatory resource development process. She strived to foster a co-operative relationship with the participants. Kemmis (1988) suggested that such a relationship could lead to the articulation of concerns by the participants, planning of strategic action, monitoring of the action of resource development, and reflection on processes and consequences. The researcher believed that the interactiveness of the participatory process (Brown, 1985) could facilitate joint inquiry, education, and action on problems of interest to both the researcher and the other participants. The potential for mutual education, new knowledge and solutions for specific

problems lies in processes of 'dialogue', 'encounter' and 'reflection' as part of an active learning process (O'Donoghue, 1993).

Environmental education research of this kind aims to be educational for both the researcher and other research participants. It is not merely an attempt to learn about people, but to come to know with them the reality which challenges them (Reason & Rowan, 1981).

2.2 THE RESEARCH PROCEDURE

The research procedure was first, to gather background information on the current recycling initiatives in the Cape Peninsula. This was followed by an attempt to start a participatory resource development project with community members. Data collection took place from October 1992 to May 1993, a period of eight months.

The first steps were to contact two groups that were regarded as important roleplayers in recycling. They were (1) all fourteen municipalities listed in the Cape Peninsula telephone directory and (2) representatives of the most prominent recycling industries in the area. These groups were interviewed to gather background information on current initiatives and to establish whether they would like to join in a participatory research project. An indication of the prominence of the industries concerned was obtained from relevant documentation and through personal communication with the co-ordinator of the Cape Recycling Network (CRN). A commercial company, Waste Tech, acting as a private waste contractor for some of the municipalities, was also contacted. The roleplayers contacted and the nature of the contact are presented in Table 1. The voluntary organisations involved in recycling initiatives were to be contacted at a later stage.

Table (1) The possible roleplayers in the research project who were initially contacted and the nature of the contact.

POSSIBLE ROLEPLAYERS	NATURE OF CONTACT
Municipalities	
Bellville	SSI, WS
Cape Town	SSI
Goodwood	SSI, WS
Parow	SSI, WS
Brackenfell	UI
Durbanville	UI
Fish Hoek	UI
Gugulethu	SSI, WS
Kraaifontein	UI
Kuilsriver	UI
Lingulethu West	UI
Milnerton	SSI
Pinelands	UI
Simon's Town	SSI
Voluntary organisations	
W. Cape Recycling Forum	UI
Cape Recycling Network	UI, 2 WS
N. Sub. Recycling Network	UI
Recycling Industries	
Sappi Waste Paper	SSI
Mondi Paper	SSI
Nampak	SSI, WS
National Metal	SSI
Consol Glass	SSI
Nampak Polywood	SSI
Private Waste Contractor	
Waste Tech	UI

SSI - Semi-structured interview	WS - Workshop
UI - Unstructured interview	

In each instance an attempt was made to interview the informant who would be in the best position to give a comprehensive description of the situation under investigation.

A third group of roleplayers in recycling constitutes the voluntary organisations. Documentation, as well as information gathered during the earlier interviews, pointed to a number of voluntary organisations which could take part in the research. Due to time constraints only the most prominent of them were contacted (Table 1). These were the Western Cape Recycling Forum, Cape Recycling Network and Northern Suburbs Recycling Network.

The original plan was to work with a community from one municipal area in the Cape Peninsula. However, an analysis of the interviews with municipal representatives revealed that the most suitable area of study should include the Goodwood, Bellville and Parow Municipalities for the reasons that they worked well together, their respective city engineers were keen to participate in the project, and all three municipalities were interested in participating in community problem-solving. Although the representative from Gugulethu, a neighbouring municipal area, also showed a keen interest in participating, he only attended the first workshop. In describing this case, the term 'community' will thus collectively refer to the local authorities, community leaders, schools, private enterprise and voluntary organisations in the municipal areas of Bellville, Goodwood and Parow.

A key informant was the co-ordinator of the Cape Recycling Network, with whom regular contact was established. Through her, access was gained to existing recycling initiatives. Consequent use was made of the extensive network contacts of the Cape Recycling Network of the Fairest Cape Association of Cape Town, an organisation which was supportive of this project.

2.3 THE RESEARCH SAMPLE

The choice of research participants was based on the following:

- 1) a review of the documentation of the Cape Recycling Network which identified existing initiatives;
- 2) personal communication with the co-ordinator of the Cape Recycling Network who had a very good overview of current initiatives and who was a key informant;
- 3) purposive sampling where key informants were pointed out by interviewees or other contacts throughout the research (Cohen & Manion, 1989).

The research sample constituted interviewees and/or workshop participants from fourteen Cape Peninsula municipalities, the six most prominent recycling industries in the Cape Peninsula, one private waste contractor and the three most prominent voluntary organisations involved in recycling. Furthermore, various schoolteachers and volunteers involved in the organising of recycling depots at schools were also interviewed, some of whom also attended workshops.

Representatives from these four groups were approached for interviews, either because they had already been involved in a recycling scheme, or because they were considered to be possible participants in the initiation of a recycling scheme. It was anticipated that these participants would identify other possible roleplayers, as part of the participatory approach adopted. This provided an opportunity for the initiation of collaborative action amongst members of the community.

2.4 RESEARCH METHODS - THE CASE STUDY AND SURVEY OF CURRENT INITIATIVES

The research method was a descriptive and action-orientated (Kemmis, 1988; Robottom, 1987b) case study (Cohen & Manion, 1989; Stenhouse, 1988) which provided an opportunity to study a complex situation in depth (Good & Scates, 1990). The value of using a

case study as research method, is that it makes use of rich, detailed and descriptive data (McKernan, 1991).

The review of the current initiatives took place simultaneously with the initiation of the project and the two processes informed each other. For an example, see Section 4.2.1.

2.5 RESEARCH TECHNIQUES

A case study lends itself to using a variety of research techniques to collect data. Those used in this study were document analysis (Zeisel, 1984), semi-structured interviews (Burroughs, 1975), unstructured interviews (Burroughs, 1975; Cohen & Manion, 1989), workshops (Fabian, 1990) and a research diary (McKernan, 1991).

2.5.1 DOCUMENT ANALYSIS

Documents obtained from the Cape Recycling Network (CRN) were studied and formed a valuable source of background information (Zeisel, 1984). Special reference must be made to two particularly useful documents. The Recycling Network Newsletter has been published since 1990 by the Cape Recycling Network and is distributed to members of the Network monthly. Copies of CRN newsletters and CRN annual reports, dating from 1990 to 1993, were studied. These discussed the latest trends in recycling and forthcoming events. The Forum Strategic Plan (Western Cape Recycling Forum, 1992), prepared by a private contractor for the Western Cape Recycling Forum (WCRF), was an important document for the review of current recycling initiatives.

Other CRN materials, including brochures and pamphlets from the various recycling industries and voluntary organisations, were also studied. Brochures and pamphlets were obtained from governmental and non-governmental organisations. A complete list of the documentation reviewed is obtainable from the researcher.

One should note that documents are compiled with specific objectives in mind (Zeisel, 1984). This means that certain information obtained for the research project, through documentation, may be misleading because the objectives for

compiling the documents were different from the research objectives. One should pay attention to the latter when interpreting data obtained by document analysis.

2.5.2 INTERVIEWS - TELEPHONIC AND PERSONAL

For practical and financial reasons most interviews were conducted telephonically and responses were noted on interview schedules. The use of telephonic interviews enabled the researcher to collect the data within the available three week period. Secondly, telephone calls were less expensive than travelling costs would have been, as most of the interviewees were more than seventy kilometers away from the researcher's locality.

However, some interviewees requested personal interviews, as described in Chapter 4 (Sections 4.2.3 & 4.2.8).

2.5.2.1 Semi-structured interviews

The semi-structured interview (Burroughs, 1975) was chosen for a number of reasons. The technique of the semi-structured interview, as opposed to a structured or unstructured interview, has the advantages of both and can be steered more easily than an unstructured interview. Despite a framework schedule, which the interviewer completes during or after the interview, the semi-structured interview is still open enough to allow for contingent results. Although the interview schedule is used to guide the process of eliciting the necessary information, it also gives the interviewer enough freedom to decide how best to secure this information (Burroughs, 1975).

The aims of the semi-structured interviews were firstly, to introduce possible research participants to the project; secondly, to identify participants for the research project; and thirdly, to gather information for the review of current recycling initiatives in the Cape Peninsula.

When used with a well-conceived schedule, an interview can obtain a great deal of information because it is flexible and adaptable

to individual situations (Kerlinger, 1986). Such (Appendix A) an interview schedule was devised for municipalities.

A different interview schedule was devised for representatives of the various recycling industries (Appendix B), as the requirements differed from those of the municipalities. The aim of this interview was to investigate their involvement and their motives for participating in recycling schemes, and to evaluate their interest in participating in the research project.

The interview schedules were structured as follows. Questions 1 and 2 (Appendix B) used in the interview with recycling industry representatives, formed the basis for the review of current recycling initiatives in the Cape Peninsula (Chapter 3). Questions 1 to 19 (Appendix A) served the same purpose in the interviews with municipalities and voluntary organisations. Most of these questions related to community participation and the role of education in recycling, to address the research question. Question 3 (Appendix B) and question 20 (Appendix A) were designed to investigate the advantages and disadvantages of a participatory approach to the recycling of domestic waste and to establish whether the interviewees would be interested in representing their organisations in the research project.

The interview schedules were translated into Afrikaans for those four municipalities situated in predominantly Afrikaans-speaking areas (schedule not included here).

The interview schedules were both tested in pilot interviews with two officers from Cape Nature Conservation and Museums (CNC & M), both of whom were involved in recycling projects. The aim was to test and possibly revise the clarity, simplicity and effectiveness of the questions, as well as to obtain an indication of the time required to conduct the interview. The pilot interviews showed that about twenty minutes would be needed to conduct the interviews for both municipalities and the private enterprise sector. On the basis of both the pilot interviews a few changes were made to some of the questions to revise the clarity thereof.

2.5.2.2 Unstructured interviews

In some cases the possible roleplayers in the study were not involved in any recycling initiatives. In other cases their involvement was different to that for which the semi-structured interview was designed. In these cases telephonic unstructured interviews (Cohen & Manion, 1989; Burroughs, 1975) were conducted with the aim of finding out why they were not involved in any recycling initiatives. The interviewees constituted a private waste contractor, seven municipalities and four voluntary organisations (Table 1). In addition, ad hoc conversations focussing on recycling initiatives, at meetings and workshops, provided useful data for the study.

2.5.3 WORKSHOPS

The workshop method was chosen as a data collection technique, because it was well suited to the participatory resource development aspect of the project. A preliminary workshop schedule for six workshops was compiled. The workshops were to focus on: (1) existing initiatives; (2) reasons why participants were involved in recycling; (3) the role of educational resource material in problem solving, and (4) possible development of relevant resources. This original workshop schedule was not adhered to, as the participants restructured it according to their own needs, in keeping with the participatory research design.

The researcher acted as a non-participant observer (Bastin, 1985; McKernan, 1991) at a workshop with primary school children (making notes on the progress of the resource development process). At the other four workshops the researcher collected data as a participant observer (Bastin, 1985; Cohen & Manion, 1989), using audiotape recordings (McKernan, 1991) which were afterwards transcribed and analysed.

In addition, the researcher participated in a workshop, where various educational resource materials were demonstrated and discussed. Personal communication took place with O' Donoghue, a leading exponent of participatory resource development in South

Africa (1993), as well as with other environmental educators, including various school teachers from the Cape Peninsula. Notes regarding the discussions on the participatory resource development process were recorded in the research diary.

2.5.4 RESEARCH DIARY

A detailed research diary (McKernan, 1991) was kept to record events, observations, personal thoughts and reflections on the case study (Hook, 1985 in McKernan, 1991). In this way a portrayal of the research process was established as accurately as possible. The data in the diary was used throughout the analysis of this project.

2.6 INTERPRETATION OF DATA

The method of data analysis was qualitative (Miles & Huberman, 1984; Sanders & Pinhey, 1983), interpretive (Odman, 1988) and socially critical (Fay, 1987; Lather, 1988). The analysis consisted of three consecutive activities: data reduction; data display and the drawing of conclusions.

The researcher read through the research diary, interview schedules and transcriptions thoroughly, several times, before the data could be reduced. The case study was then written up chronologically. Recurring themes emerging from the description of the case study were then highlighted, which enabled much of the separate sets of data to be synthesised. This process of pattern finding (Miles & Huberman, 1984) was very productive as an analysis strategy as it improved an understanding of the situation, from which conclusions regarding the research question could be drawn.

CHAPTER 3

THE RECYCLING OF DOMESTIC WASTE IN THE CAPE PENINSULA: REVIEW OF CURRENT INITIATIVES

3.1 INTRODUCTION

One of four objectives of this study was to review current initiatives for the recycling of domestic waste in the Cape Peninsula. The findings of this review are presented with special reference to their possible educational implications. The review also formed a basis for the development of educational resource materials (Chapter 4), another objective of the research. The literature survey (Cohen & Manion, 1989) of current recycling initiatives in the Cape Peninsula (Section 2.5.1) was only part of a relatively small research project; hence it could not be comprehensive.

3.2 THE OBJECTIVES OF THE REVIEW

The objectives of reviewing current initiatives for the recycling of domestic waste in the Cape Peninsula were as follows:

- (a) To identify the various roleplayers who could take part in the research.
- (b) To establish the level of success of the various initiatives, how actively involved the roleplayers were, and what the motivations for their actions were.
- (c) To identify existing gaps and needs, specifically related to education.

3.3 CURRENT RECYCLING INITIATIVES IN THE CAPE PENINSULA

The possible roleplayers in the research project were identified through document analysis, semi-structured interviews, unstructured interviews and other personal communication. The initiatives existing at the time of the research, planned future initiatives and degree of involvement of these roleplayers are

discussed. Opinions on the role of education, as well as perceived educational needs are noted.

The results reflected in this chapter, specifically under the headings of municipalities and recycling industries, are not necessarily consistent. The reason will be discussed in Section 5.2.2.

3.3.1 MUNICIPALITIES

Four municipalities in the study area (Bellville, Cape Town, Goodwood and Parow) were identified as already active in household waste recycling schemes through discussions with the co-ordinator of the CRN (Jenman, 1993, pers. comm.). Semi-structured interviews were conducted with representatives of these four municipalities. Through telephonic interviews ten other municipalities (Sections 3.3.1.5 to 3.3.1.14) were identified as potential roleplayers.

3.3.1.1 Bellville Municipality

At the time of the research Bellville Municipality recycled glass, paper and biodegradable waste for compost at a processing plant. Their representative stated that further recycling took place at the landfill site (end point) where a private contractor did the sorting, although the municipality would have preferred to have domestic waste sorted at the source. An educational implication would be that the public would need to have the necessary knowledge and skills to sort their waste at home. Sorting at source was already being done to some extent in the form of bottle banks which were available in the municipal area, and the Mondi paper pick-up which collected paper on a biweekly, door-to-door basis. The interviewee noted that it was important to provide incentives to stimulate participation in recycling schemes. This could be concluded from the fluctuating price of recyclables which resulted in a fluctuating degree of involvement in recycling schemes.

Planned future initiatives of this municipality included expanding existing recycling schemes and co-operation with the

municipalities of Gugulethu and Lingulethu West. The Bellville Municipality's involvement in recycling did not, at the time of data gathering, have an educational dimension, although they planned to co-operate with almost 20 schools in the area, starting with the provision of bottle banks. The representative was eager to participate in the research project.

3.3.1.2 Cape Town Municipality

Cape Town Municipality used three landfill sites. At one of the sites, namely Swartklip, the municipality was involved in a composting scheme which it rated as reasonably successful. Ten percent of collected material was composted there, but the marketing of the product was considered to be a problem as the outlets were not visible to the public.

At the Vissershok landfill site, squatters salvaged domestic waste for recycling in order to survive. They sold recyclable material to recycling industries, namely Nampak, Consol Glass and Chicks Scrap Metal. Management problems were created by the squatters camping on the site and making fires which spread through the refuse. According to the Cape Town Municipality representative this problem could be overcome by appointing an outside contractor who would then provide employment for them.

Recycling in Cape Town Municipality was co-ordinated through the Cape Recycling Network, involving schools, institutions, community groups and churches. 'Bergies' (unemployed people living on the streets) collected paper, cardboard and plastic, in the central business district as well as the Wynberg areas, which they sold to commercial depots. In some of the recycling programmes the City Council tried to encourage community participation in the organisation of the schemes. The interviewee could not provide further information and when the organiser of the community-based recycling programmes was approached he was not prepared to comment.

Cape Town Municipality provided and permitted glass and paper banks in suitable areas. According to their representative, these recycling facilities and the paper pick-up system needed to

be marketed. He thought that marketing and education, aimed at increasing awareness amongst householders, would have a positive influence on the householders' participation in recycling schemes. Generally speaking, the Cape Town Municipality seemed to recognise the importance of public education.

Although this municipality was involved in the recycling of domestic waste and hoped to continue organising and expanding its own scheme, it was not prepared to take part in the research project.

3.3.1.3 Goodwood Municipality

Goodwood Municipality was mainly involved with the recycling of glass and biodegradable waste. It had installed bottle banks, which resulted in the involvement of nine schools in a glass recycling scheme. It managed a successful composting scheme in partnership with Parow Municipality. Goodwood Municipality also allowed the 'bergies' to collect recyclables, e.g. bottles, paper and cardboard, from the streets and businesses. The unemployed then sold these to recycling industries.

The Goodwood Municipality indicated a readiness to help the community in cases in which community members worked under the auspices of the Northern Suburbs Recycling Network, by providing schools with metal containers and free transport for the different recyclables.

The interviewee explained that the Town Council benefitted by supporting recycling initiatives, because every kilogram of waste not going to the landfill site saved the Council R70. The municipality was therefore prepared to approach the Council with problems such as those relating to the transport of recyclables, but his view was that the public had to initiate recycling schemes.

Planned future initiatives of the Goodwood Municipality included:

- (a) Involving the Junior Town Council in new and existing recycling projects;

- (b) Organising recycling workshops at schools;
- (c) Advertising their scheme through the logo "Goodwood Municipality supports recycling", to be displayed on the bottle banks;
- (d) Compiling a recycling newsletter and distributing it with monthly electricity accounts;
- (e) Providing metal containers in an allocated area next to the landfill site where the public can leave recyclables which the municipality would transport to various recycling plants.

The Goodwood Municipality was very actively involved in the recycling of domestic waste and indicated a readiness to participate in the research project, to provide their facilities, as well as to get involved in the education dimension of which (a) and (b) above were two examples.

3.3.1.4 Parow Municipality

The Parow Municipality provided bottle banks for glass recycling and composted its rubbish. It had four drop-off points for garden refuse, metal, rubble and glass. Over the past 24 years it had managed a successful composting scheme which involved public participation and the residents were informed regularly about its functioning through the press. The market value for glass was good, and the residents were encouraged to use the available bottle banks in the area by means of the municipal newsletter. More than 50% of the total domestic waste from the municipal area was being processed into compost. However, cost-effective management was reported to be one of the biggest problems facing this scheme.

Parow Municipality believed that involvement of the residents in decision making processes should be initiated by the Parow community. "Die belastingbetaler vra wat hy wil hê en die munisipaliteit moet verskaf wat hulle wil hê" (Interviewee 29). It seemed that the Parow Municipality, viewing itself as a service organisation, was only prepared to get involved in future projects when they were requested by the community and

consequently did not plan to initiate any further recycling schemes.

The Parow Municipality was not involved in educational activities relating to the recycling of domestic waste at the time of the research. However, planned initiatives included educating the municipal workers to enable them to confront environmental issues, and to prepare workers to support recycling at schools.

3.3.1.5 Brackenfell Municipality

Recycling was not considered to be a viable option by the Brackenfell Municipality, because of its labour intensive nature. The reduction of waste transported to the landfill site, an old quarry, was not considered to be a priority. No recycling schemes had been planned because the landfill site had a lifespan of another twenty years. The intention was to fill the old quarry and incorporate it in a nature reserve. This municipality was, therefore, not involved in organising any recycling schemes. "It is cheaper to work according to the recent scheme of compacting the refuse" (Interviewee 12).

The Brackenfell Municipality was, however, aware of and commented on paper recycling schemes in its area. The interviewee noted that the Mondi paper pick-up which operated in Brackenfell received greater support than the depots established at some of the schools, because it was more convenient for the residents. In his view this had a negative influence on the paper recycling schemes which these schools had started.

At the time of the study the Brackenfell Municipality was not involved in any recycling-related education activities, nor had any been planned. Its representative also expressed no interest in participating in the research project.

3.3.1.6 Durbanville Municipality

Although Durbanville Municipality was not directly involved in recycling, some shopping centres and schools had glass depots, and the Mondi paper pick-up also functioned in this area. Waste

Tech, a private waste contractor, was partly responsible for the removal of domestic waste in the Durbanville municipal area.

The municipality was not involved in any recycling-related educational activities, and nothing had been planned for the future. The interview with the Durbanville Municipality representative indicated that the municipality recognised that paper recycling through school depots could be a good educational strategy, yet it was not involved as such.

The interviewee expressed reservations about a participatory approach to recycling. He believed that recycling could not be based on a social conscience, but that the participants should benefit directly (financially) from their involvement. Furthermore, participation in recycling projects should be initiated through the City Council, because municipal staff were in service of the Council. No interest in participation in the research project was shown by this interviewee.

3.3.1.7 Fish Hoek Municipality

The Fish Hoek Municipality was not directly involved in recycling initiatives. The recycling which did occur in the area was coordinated by voluntary organisations. The removal of domestic waste was contracted to Waste Tech, which transported it to the Coastal Park landfill site near Strandfontein.

Fish Hoek Municipality was not, at that stage, involved in educational aspects of recycling, and no future initiatives had been planned. The municipality representative was also not interested in participating in the research project.

3.3.1.8 Gugulethu Municipality

No recycling scheme had been organised by the Gugulethu Municipality, although the representative who was interviewed reported that it would soon become necessary. The municipality was at that stage concentrating on housing, which was seen as a higher priority.

In response to probes from the interview schedule (Item 3, Appendix A) the interviewee confirmed that the municipality would be addressing aspects such as (1) obtaining consensus amongst all participants in the early stages; (2) creating a positive public image; (3) identifying decision makers and influential people who would be able to provide support; (4) seeking professional advice on aspects relating to the scheme, e.g. liaison with the Cape Recycling Network at the Fairest Cape Association; and (5) in particular securing strong local and government backing. This interviewee, as well as the representative from the Milnerton Municipality, were the only two interviewees who could report on the specific steps taken regarding setting up a recycling scheme.

The interviewee indicated that the municipality would enable the community to manage their own recycling scheme by appointing a recycling committee. This would consist of community leaders who would also be responsible for educational aspects. A compulsory drop-off system at identified depots could be used for the collection of recyclables, which would then be sorted by municipal workers and participants. The municipality would be prepared to assist by providing free transport from the depots to the recycling plants. There could also be co-operation with the recycling industry in the vicinity, e.g. Consol Glass and Chicks Scrap Metal.

The municipality would advertise through the press, both during the planning stage and when the project was in operation. The committee would then keep the residents informed about the functioning of the scheme by distributing pamphlets and door-to-door notes.

There were no related education initiatives at the time. However, the view expressed was that officials involved in future programmes should be educated and prepared to confront environmental issues which existed.

The representative of the Gugulethu Municipality was very enthusiastic about recycling in its area as well as the research project, and was willing to participate in the study. The

municipality's involvement was, however, limited to participation in the first workshop.

3.3.1.9 Kraaifontein Municipality

The Kraaifontein Municipality was not involved in any recycling scheme. Waste Tech had been contracted for the removal of domestic waste in this area. Voluntary organisations had requested permission to make bottle banks available, but at the time of the survey none had arrived.

The municipality was not involved in any recycling-related educational initiatives, nor had any future education activities been planned. It expressed no interest in participating in the research project.

3.3.1.10 Kuilsriver Municipality

No recycling schemes were organised through Kuilsriver Municipality, nor did it see a need for future involvement in recycling domestic waste. A landfill site near Faure was used for the disposal of domestic waste and garden refuse. However, voluntary organisations had provided bottle banks and the Mondi paper pick-up also functioned in this area. Schools and private contractors worked together on small recycling projects.

No recycling related educational activities were organised through the municipality or planned for the future. The municipal representative was not interested in participating in the research project.

3.3.1.11 Lingulethu West Municipality

The municipality was not involved in any recycling scheme at the time; the reason given by the representative who was interviewed was that it still had basic problems of collecting domestic waste and dealing with litter.

The interviewee reported that the Fairest Cape Association facilitated limited community participation in this municipal

area. This was the 'food for garbage' programme, in which black bags filled with domestic waste were exchanged for food parcels.

The interviewee responsible for the removal of domestic waste, was of the opinion that the municipality should address one issue at a time and that recycling projects, additional to the existing community health projects, could result in confusion.

Although the municipality was very motivated to start a recycling project, there were no initiatives relating to education, nor were any being planned in the near future. There was also no interest in involvement with the study.

3.3.1.12 Milnerton Municipality

The municipality was not involved in recycling, but planned to initiate a scheme in future. Paper and glass recycling did occur in the municipal area by means of the Mondi paper pick-up and bottle banks. The interviewee mentioned that the private business sector was already involved in recycling, but that its involvement could be improved in future.

The municipality supported private initiatives by advertising the paper pick-up service on calendars which were distributed annually to residents, and advertising bottle banks in leaflets distributed with the electricity accounts. Bottle banks were also advertised through the local press.

Milnerton Municipality was considering a voluntary drop-off scheme where the participants sorted their own waste into containers which would be provided, although the Mondi paper pick-up and bottle banks would still function in the area.

The representative who was interviewed indicated that in planning future schemes, Milnerton Municipality would try to learn from mistakes made elsewhere. In response to probes from the interview schedule (Item 3, Appendix A) the interviewee confirmed that they would be doing the following: (1) obtaining consensus amongst all participants in the early stages; (2) creating a positive public image; (3) identifying decision makers and influential people who would be able to provide support; (4)

seeking professional advice on aspects relating to the scheme, e.g. liaison with the Cape Recycling Network at the Fairest Cape Association; and (5) securing strong local and government backing. The accomplishment of a positive public image and consideration of alternatives were considered by the interviewee as important factors in successfully organising a recycling scheme.

To ensure community participation in future recycling schemes, the municipality would compile a management-objectives plan. It would also attempt to involve people from all income groups, for the municipality was said to believe in the importance of community involvement in decision- and policy-making processes.

No education-related initiatives were in existence at the time of data gathering. The interviewee was uncertain as to how they would be implemented, should they be planned in future. The opinion was expressed that municipal officials should be better informed about relevant environmental matters, and that the community should be informed of the advantages of recycling, additional to those of personal gain. This knowledge might help them to have a broader perspective on economic and environmental benefits.

Although Milnerton Municipality thus seemed motivated to become involved with the recycling of domestic waste, its representative was unfortunately not interested in participating in the research project.

3.3.1.13 Pinelands Municipality

The Pinelands Municipality was not involved in organising recycling in the municipal area; the reason given was that the private sector was already actively involved. Bottle banks and collection depots were available at some of the shopping centres, and depots also existed at most of the schools. The municipality had also given Mondi permission to start a paper pick-up system.

The municipality was not involved in recycling-related educational activities and saw no need for its involvement in

future, as the municipal representative believed that the private sector was already doing enough.

3.3.1.14 Simon's Town Municipality

This municipality was not involved in any recycling scheme, nor was it involved in any educational activities relating to the recycling of domestic waste.

Although the municipality planned to initiate a recycling scheme, details were confidential in case public expectations could not be fulfilled. In setting up this scheme the municipal representative would, however, obtain consensus amongst all participants at an early stage, create a positive public image and explore the various options. The researcher interpreted this statement as contradictory and as an indication of a limited understanding of participation (to be discussed in Section 5.4.2.3). The representative also indicated that the Town Council needed to be approached for greater support as it had to approve the municipal efforts regarding the various recycling options in the municipal area.

Simon's Town's municipal representative thought that it was not possible to become involved with educational aspects of recycling schemes, because of the municipality's time and resource limitations. He saw the benefit to the environment as being secondary to the benefits to the municipality and the community. The municipality was not prepared to participate in the research project.

3.3.2 VOLUNTARY ORGANISATIONS

Research done through documentation analysis, semi-structured interviews, unstructured interviews and personal communication (Jenman, 1992, 1993) showed that the recycling initiatives in the Cape Peninsula were mainly driven by various voluntary organisations. This was confirmed by Knutzen (1992, p.22) who stated that

Various interest groups have emerged to promote the concept of recycling. In the Western Cape in particular, the strength of the voluntary collection network has been a major success factor in the growth of the recycling movement.

Only the most actively involved organisations are discussed in this brief review. The organisations excluded here are those whose activities were not identified through the data collection techniques used, or whose involvement was understood to be fairly minor.

It was established that the success of voluntary recycling organisations was greatly influenced by market prices for recycled goods (Jenman, 1992, pers. comm.). Through the documentation studied, as well as through personal communication (Jenman, 1992; Le Grange, 1992) it was revealed that the price fluctuation which existed for these commodities was one of the biggest problems facing the voluntary organisations. Although prices fluctuated from time to time, the market value of glass, aluminium and paper was generally good, the market for plastic and tin cans in the Cape Peninsula was poor, and the prices obtained for scrap metal varied among the different dealers.

3.3.2.1 Western Cape Recycling Forum (WCRF)

Membership of this body included representatives from the major recycling interest groups, including suppliers, processors, distributors and voluntary organisations (Western Cape Recycling Forum, 1992). The Forum was started to address a number of needs identified by the Cape Recycling Network, six months after the Network was set up (Jenman, 1993, pers. comm.). Its purpose was to serve as a vehicle for the interchange of information, in order to facilitate promotion of recycling, re-use and reduction programmes in the Western Cape (Western Cape Recycling Forum, 1992). Decisions of the Forum were taken by consensus. "The Forum believes in a multi-disciplinary approach, involving behavioural, educational, promotional, legislative and economic components for an increase in recycling to be achieved" (Knutzen, 1992, p.22).

A three-year Forum Strategic Plan (Western Cape Recycling Forum, 1992) had been developed by the Forum for the promotion of recycling activities in the Western Cape, where such activities could be economically justified. In preparation of the Plan (not part of this study) delegates from various organisations attended a strategic planning workshop on 24 March 1992. In terms of the review on current initiatives, useful factual data could be found in the summary of discussion points (Appendix C).

Many of the recycling strategies set out in the Plan were applicable to the 'reduce' and 're-use' concepts as well. The Forum was of the opinion that educational and promotional activities in particular, must address the re-using, reduction and recycling of domestic waste in an holistic manner. The Forum Strategic Plan (Western Cape Recycling Forum, 1992) recommended that education programmes be developed and implemented in the Western Cape, with schools as the principal focus. Schools should be very actively encouraged to establish or expand existing voluntary collection depots. It was further recommended that educational authorities should be lobbied for the inclusion of sections on recycling in the syllabi of appropriate subjects at primary and high school level.

The Forum stressed the need to undertake various promotional activities. Those would include encouraging the principles of separation at source; the use of recycled products (thus creating better markets for the collected materials); developing a "recycled materials" logo; and persuading plastic manufacturers to identify types of plastics in use, in view of the fact that the different types require different recycling procedures.

The Forum also had as objectives: to call for legislation which would encourage reduction, re-use and recycling of waste material; to call for tariff barriers to oppose the import of foreign waste materials, and to approach the government with a view to adopting a national integrated policy on recycling and waste management.

In addition, the Forum Strategic Plan (Western Cape Recycling Forum, 1992) procured an annual independent analysis of the cost

effectiveness of various types of waste collection and removal as well as of the full process of recycling. At the time of the interview the Forum planned to publish these results in the press and to circulate them to municipalities.

A recycling directory of voluntary "drop-off" recycling depots, commercial depots and recycling companies had been compiled by two Forum members and been published by the Fairest Cape Association. It is included (Appendix D) to show the extent of recycling activities in the Cape Peninsula. This directory is in the form of an A5 leaflet which forms part of the booklet Recycling Realities. Facts, Myths and Choices (Fairest Cape Association, 1993).

The WCRF is reported to be financially supported by the main packaging and recycling industries.

3.3.2.2 The Fairest Cape Association (FCA) and affiliated Cape Recycling Network (CRN)

The mission statement of the Fairest Cape Association (1992) included the objective of influencing residents of the Western Cape to be more responsible in the handling, reduction, avoidance, re-use and recycling of waste so as to prevent littering and other forms of pollution. In order to achieve their aims, the FCA strived to facilitate, co-ordinate and co-operate with other environmental interest groups and with relevant governmental organisations.

In his annual report (Fairest Cape Association, 1992) chief executive, Roger Hulley, mentioned that the promotion of the practice of recycling was a priority for the FCA. According to Hulley the groundwork had been laid for much to be achieved in this field, but he thought that we were still behind the rest of the world in the effective reduction, re-use and recycling of various packaging materials and other waste by-products.

As a community we simply must take the subject of recycling very much more seriously in the future in order to conserve our precious material resources, to extend the life of our scarce landfill sites, and also to provide work for unskilled people (Hulley, 1992, p. 3).

The Association addressed the special problems of waste management in the township environment as well. At the time a trial programme was being undertaken in Site C, Khayelitsha. The programme was based on a system pioneered in the city of Curitiba in Brazil (Muller, 1992). Here the citizens were issued with black bags with which to collect their waste and litter. The filled bags were then exchangeable for food vouchers. If successful, this system could help to control litter in the townships, while providing job opportunities and nourishment (Hulley, 1992).

The Cape Recycling Network, which was affiliated to the FCA, had been launched as the Recycling Association of the South Western Cape in March 1990, with Barbara Jenman elected as convenor. At the following meeting the Association was renamed the Cape Recycling Network. The Network stemmed from a perceived need to co-ordinate recycling schemes and create public awareness about the reduction and disposal of household waste. By the end of 1990 some 300 individuals, groups and organisations had received minutes of the monthly meetings held since March 1990. This seemed to be an indication of the high level of success of this organisation.

The ultimate aim of the CRN was reported to have a sensible national integrated solid waste management policy implemented (Jenman, 1992, pers. comm.). The objectives of the CRN are as follows:

- * Providing a data index system of relevant recycling information to the public;
- * Initiating recycling schemes;
- * Waste reduction;
- * Liaising with authorities and industry;
- * Creating opportunities for employment.

The CRN co-ordinator collected recycling information from all over the world, mailed information to over 300 people in the Network and kept in almost daily contact with the 30 to 40 active recyclers (organisations and individuals) in the Western Cape. Monthly general meetings were held, involving talks on current recycling schemes and presentations by industry. Minutes of the meetings were distributed to all the members as well as to other interested parties. Monthly newsletters, annual reports and information leaflets were also circulated.

"The phenomenal growth of the Cape Recycling Network - linking tree-huggers, charities, municipalities, scrap dealers and down-and-out street collectors - proves that green thinking is catching on fast" (Munnik, 1991, p.2). This quote corresponded with the experience of the researcher while working closely with the co-ordinator of the Network during this study.

The CRN viewed the challenge for 1993 as developing an understanding of the various disposal options for the Western Cape, i.e. source reduction, recycling, composting, waste to energy and sanitary landfilling (Cape Recycling Network, 1993). The members of the CRN believed that there was no one solution to effective waste management and that an integrated approach was required, with all or some of the alternatives working in concert. Working relationships should be established between the recyclers and the municipalities. Finally, the Network stressed the role of relevant education. This point will be followed up in Sections 5.4.2.1 to 5.4.2.8.

3.3.2.3 Northern Suburbs Recycling Network (NSRN)

The function of the NSRN was disclosed through personal communication with Haward (1992) and Le Grange (1992). The Network was formed in September 1992 to co-ordinate recycling activities in the northern suburbs. A Northern Suburbs Recycling Network Committee (NSRNC) was formed with six nursing sisters serving on the committee. They tried to have a public meeting every quarter, to inform the volunteers about recycling activities. The NSRN also served as a support mechanism for the

school recycling depots in the northern suburbs. The NSRN liaised closely with the Cape Recycling Network.

3.3.2.4 Other Non-governmental Organisations (NGO'S)

Documentation obtained from the CRN and personal communication (Jenman, 1992, 1993) revealed that several other NGO's were prominently involved in recycling schemes in the Cape Peninsula. Although all of these organisations seemed to be involved for both environmental and socio-economic development reasons, to a greater or lesser extent, they could be divided into two groups depending on their emphasis.

The following organisations, namely, the Phillipi Squatters, Oasis Protective Workshop, Palms Work Centre, Curituba Project (Lingulethu West), Athlone Workshop, Housewives League, Kalk Bay Recycling, Operation Hunger, and St Michael's Home, are all oriented towards community development, social upliftment and/or occupational therapy.

The Wildlife Society of Southern Africa (Western Cape branch), Hout Bay Museum, Earthlife Africa, Captrust, Dolphin Action and Protection group, the Organic Soil Organisation, Cape Town Ecology Group, Save a Resource, Save our Trees, and Save All are organisations which have the well-being of the environment and the wise use of natural resources as their first priority. The generation of additional funds for these organisations was a secondary reason for their involvement in the recycling of domestic waste (Jenman, 1992, pers. comm.).

3.3.2.5 Schools

The schools involved in the recycling of domestic waste in the Cape Peninsula mainly gathered paper, glass and tin (Jenman, 1993, pers. comm.). Schools usually started with paper recycling. After the successful organisation of paper recycling, there followed the recycling of glass and tin. Plastic was rarely gathered, mainly because the industry was unable to accept all the used plastic (Interviewee 20). Twenty five schools in

the Cape Peninsula supplied mixed plastic to a plastic recycling company, namely Polywood.

The involvement of schools in recycling schemes was fairly erratic. The reasons seemed to be the fluctuating price of the recyclables and competition between the school depots and the Mondi paper pick-up. Mainly English-speaking primary schools were involved, which highlighted the need to target the Afrikaans-speaking schools in the study area (Section 2.2). It was also clear that the high schools were less concerned with the issue of recycling domestic waste than primary schools. Various reasons, e.g. time constraints and lack of enthusiasm on the part of the students, were given for this (Interviewee 28).

It would seem that most schools became involved with recycling schemes for fundraising purposes and that their recycling depots were usually managed by enthusiastic parents. Very rarely were the teachers at the schools involved with either the management of the depots, or the educational implications which might arise from pupils' participation in the recycling of domestic waste. The educational implications of recycling were not recognised as a priority (Interviewees 9, 15, 28). The parents liaised with the recycling industries in the Cape Peninsula, rather than with teachers at the schools. However, according to a teacher previously involved at a school recycling depot, the success of the scheme tended to depend on the level of support from the school principal.

3.3.2.6 Universities

The University of Cape Town (UCT) had a successful recycling scheme involving students, workers and academic staff (Raimondo, 1992, pers. comm.). Glass, metal and paper were being collected on campus from offices in all departments as well as from the residences. Half of the money earned through the scheme went to the library fund and the other half went to the different departments.

The University of the Western Cape (UWC) planned to start a recycling scheme after consultation with UCT and the University of Stellenbosch (Fredericks, 1992, pers. comm.).

3.3.2.7 Hospitals

The Groote Schuur hospital, Constantiaberg Medi-Clinic, Vasco Clinic and Alexander Institute were actively involved in the recycling of some of the hospitals' domestic and other waste at the time of the survey.

3.3.3 RECYCLING INDUSTRIES

Interviews with representatives of Sappi Waste Paper, Mondi Paper, Nampak Paper, National Metal and Consol Glass revealed that all these corporations were involved in recycling mainly for economic reasons. However, Nampak Polywood's involvement was claimed to be primarily for the benefit of the environment. It had been difficult to gather the desired information from the representatives of the recycling industries. They were generally quite forceful in steering interviews in the direction which they seemed to prefer, namely to give an overview of their business; hence the inconsequential reporting which follows. In retrospect, the interview schedule should have been more structured and less open-ended to have enabled it to function as a checklist (Section 5.2.2).

3.3.3.1 Sappi Waste Paper

The Sappi Waste Paper representative regarded his company as a "big business with a strong environmental consciousness" (Interviewee 6) and believed that the business sector, rather than the governmental organisations, must lead the way regarding the recycling of domestic waste. Their business orientation was claimed to be the motivation for their involvement in recycling.

Sappi was operating an incentive-based programme, utilising the potential for creating employment opportunities inherent in recycling schemes. The representative indicated that his company was indirectly involved for economic reasons. Sappi had also developed an education programme, War on Waste (WOW), for which

it was targetting primary schools. Associated educational activities included the use of hands-on activities and resources developed by Sappi, such as educational puzzles.

3.3.3.2 Mondi Paper

Mondi was involved in paper recycling throughout the Cape Peninsula, but its representative regarded Bellville, Milnerton and Durbanville as the most succesful areas (Interviewee 26). Mondi Paper managed a pick-up system which collected an average of 60 tonnes of paper per month. Just prior to the study they started to introduce paper collection banks which functioned in conjunction with the Consol Glass bottle banks. The management of the company as a business, was Mondi's motivation for being part of recycling in the Cape Peninsula.

3.3.3.3 Nampak Paper

Nampak Paper was involved in the collection, sorting, baling and pulping of waste paper. It had identified the businesses which were the best sources for waste paper in the Cape Peninsula and these businesses were approached for collection of office waste. Nampak Paper had a factory in Epping where certain grades of paper were sorted and baled. From there, the bales of paper went to a factory in Bellville where the paper was pulped. Nampak believed that a greater volume of paper needed to be recycled for the process to become more cost-effective, which would then enable Nampak to provide cheaper recycled paper (Interviewee 31). The motivation for its involvement in recycling was again economic. By manufacturing their own pulp they avoided having to import the pulp at an expensive price.

3.3.3.4 National Metal

National Metal bought scrap metal which was collected and delivered to a central depot in Kuilsriver by hawkers, small businesses, housewives and schools. National Metal was one of three scrap metal processors in Cape Town, the others being S.A. Metal and Chicks Scrap Metal.

3.3.3.5 Consol Glass

Consol Glass introduced bottle banks to the public of the Cape Peninsula, for the depositing of mixed coloured glass. Consol's representative mentioned a growing demand for bottle banks, which she believed reflected the level of participation of the Cape Town public in glass recycling. At the time of the study there were 205 bottle banks at strategic places in the city and suburbs. These had been bought by, amongst others, municipalities, private companies and voluntary groups at R2 200 per bank.

3.3.3.6 Nampak Polywood

Two years ago this local company got involved in plastic recycling "as part of its commitment to the environment" (Interviewee 20). The company produced a building material called 'polywood' which was similar to wood, but stronger and longer lasting, requiring less maintenance. The product was used for construction and for garden furniture. Coloured polywood was made of 98% recycled plastic and grey polywood of 100% recycled plastic. The product was reported to be environmentally friendly since it contained "nothing noxious" (Interviewee 20).

3.3.4 PRIVATE WASTE CONTRACTORS

Waste Tech was a national private contractor for the removal of domestic waste. It had disposal sites in Bellville and Vissershok. According to a representative of the company, it was involved in waste removal for profit, had no recycling schemes, and did not intend to start any.

3.4 DISCUSSION

It is important to bear in mind that, as mentioned in Section 2.4, the review of the current recycling initiatives took place simultaneously with the initiation of the project and the two processes complemented each other.

This review showed that initiatives for the voluntary recycling of domestic waste in the Cape Peninsula were in an advanced phase

of development, probably well ahead of many other areas in the country. This was borne out by the considerable interest shown in recycling in the Cape Peninsula, by representatives of the recycling industry in other provinces (Jenman, 1992, pers. comm.). In the researcher's experience, working closely with Forum members over a period of 6 months, the multi-disciplinary approach of the Western Cape Recycling Forum, involving behavioural, educational, promotional, legislative and economic components, provided part of the basis for the level of success achieved in the Cape Peninsula.

At the time opportunities existed in the Cape Peninsula for the recycling of glass, paper, tin, scrap metal, aluminium, plastic and biodegradable waste. These recyclables were either sorted at the endpoint (landfill) or at the source (home), where this process was facilitated by depots organised by volunteers, bottle banks and the Mondi paper pick-up.

Four municipalities were involved in recycling activities, three were planning to get involved in future and seven had no intention of becoming involved. There was a difference of opinion amongst some of the municipalities in terms of the financial benefits inherent in the recycling of domestic waste. Brackenfell Municipality believed that it was cheaper to compact waste, because recycling was labour intensive. Goodwood Municipality, on the other hand, showed that the recycling of domestic waste resulted in a direct saving of R70 per kilogram of waste not going to the landfill site.

Bellville, Cape Town, Goodwood and Parow Municipalities were all involved in the composting of biodegradable waste. From the interviews it appeared that financial constraints which resulted in insufficient numbers of composting machines, were detrimental to the potential success of such schemes, and that the marketing of compost needed to be improved to make the process more cost-effective.

The review also exposed other problems relating to recycling schemes which were the following:

- (a) Competition existed amongst various depots, amongst recycling industries collecting the same commodities and between school paper depots and the recycling industry, e.g. the Mondi paper pick-up (Section 3.3.1.5). The competition might be obviated, to stimulate co-operation, by better co-ordination of activities amongst these organisations;
- (b) The fluctuating prices of recyclables which appeared to have a definite influence on the enthusiasm of the voluntary participants in recycling schemes (Section 3.3.2);
- (c) The limited market for plastics (Section 3.3.2.5);
- (d) The transportation of recyclables to the depots, as well as from the depots to the recycling industries (Section 3.3.1.3). This could partly be overcome by a co-ordinated effort amongst the municipalities, organisations and companies concerned. The municipalities could play a very important role because they have the removal of domestic waste as a function, with some already having expressed their willingness to provide transport.
- (e) In some areas litter was considered to be a higher priority than the promotion of recycling (Section 3.3.1.11). The real problem might have been the perception of those who regarded litter as a problem to be solved separately from recycling initiatives. The educational implication of using recycling as a vehicle to address the problem of litter did not seem to be recognised by those who regarded litter as a problem. By actively involving people in recycling projects, they could also address the litter problem.

The review showed that, on the whole, little importance was attached to educational aspects relating to the recycling of domestic waste.

One of the most important implications for environmental education which emanated from this review was the need to develop educational resource materials (Sections 3.3.1.2, 3.3.1.4, 3.3.1.8, 3.3.1.14, 3.3.2.1, & 3.3.3.1). It was clear that fairly

extensive recycling was already taking place in the predominantly English-speaking southern suburbs, and less extensively in the predominantly Afrikaans-speaking northern suburbs (Section 3.3.2.5). This discrepancy might be partly the result of a lower level of awareness of the need to recycle caused by the limited availability of Afrikaans resource materials (Sections 4.2.3, 4.2.8, 4.3, 4.5.5, & 5.4.2.8). On the other hand, a higher involvement in recycling in the English community could have led to the development and availability of even more English materials which could have resulted in an even more extensive involvement of the English community.

The various agencies reviewed were involved with recycling for two main groups of reasons. The one group of reasons was economic. Categorised in this group were some private enterprise, some local authorities and perhaps some schools (Jenman, 1992, pers. comm.), although schools were not covered in detail in the review. The second group was involved for social development or environmental reasons. Categorised in this group were the voluntary or non-governmental organisations. Neither of these groups saw the educational implications of recycling as an important reason for why they were involved with recycling. This included the schools, which were not involved for the educational benefit of the exercise, but for financial or environmental reasons. The educational implication of the above was that if there was a potential for education for the environment (Section 1.5), education had not been exploited at the time. The reason might be because it was not seen as a priority or that the potential was not recognised.

The review suggested that public awareness of the benefits of recycling could have been addressed on a much broader scale than was the case at the time of the study. To have raised the level of public awareness of the environmental benefits of effective waste management, more people should have been encouraged to become involved in recycling schemes. When people take part in recycling schemes they will become aware of the possible constraints involved. The practical experience of taking part in recycling schemes will also teach people how they could best

contribute. The reasons why people should commit themselves to such efforts need to be addressed through education. This would be possible through the approach of environmental education for the environment, because "it seeks to engage students in the active resolution of environmental questions, issues and problems" (Fien, 1993, p.5).

This review contributed to the establishment of a basis for the development of educational resource material, by revealing some needs of the possible or existing roleplayers, which could be addressed through the relevant educational materials. It also revealed gaps and limited perceptions e.g. the teachers who did not "need" resource materials, for they did not see an educational potential in recycling (Section 3.3.2.5). Similarly the Afrikaans-speaking schools did not "need" resource materials either, because they did not regard it as important (Section 3.3.2.5). These needs are described in more detail in Chapter 4 and will be discussed in Chapter 5.

CHAPTER 4

THE CASE STUDY: DESCRIPTION AND RESULTS

4.1 INTRODUCTION

This chapter describes the initiation of a number of small-scale participatory project and resource development initiatives for the recycling of domestic waste in the Cape Peninsula. The process was guided by an attempt to answer the research question: "In what way can projects for the recycling of domestic waste serve as a vehicle for environmental education?" As far as possible the case study was written up in a chronological order, however certain aspects ran concurrently, e.g. the planning of some of the meetings. In retrospect, the researcher observed that the case study reflects very little sense of continuity. This will be discussed in Section 5.1.

An objective of the research was to initiate a participatory project and resource development process involving various interest groups in an identified community. From an evaluation of the case study it seems that most of the time spent on data gathering, including 'workshopping', (eight months) was taken up by introducing the research approach, the research aim and objectives, to possible participants in the project. The participatory project and resource development process took much time to develop. As a result, largely preliminary work, in preparation for such a project, took place. Hence much of the discussion will concern the initial contacts made and the workshops initiating the development of educational resource materials. Despite the lack of progress of the kind the researcher envisaged, valuable insights and results did emerge from this phase. These will be discussed in Chapter 5.

4.2 INTRODUCTION OF THE PROJECT TO KEY ROLEPLAYERS AND SEARCH FOR POSSIBLE PARTICIPANTS

The introduction of the project to the key roleplayers and the search for possible participants by conducting interviews took place in the months of October and November 1992.

4.2.1 INTERVIEWS WITH MUNICIPALITIES

All fourteen municipalities listed in the Cape Peninsula telephone directory were contacted in order to conduct telephonic interviews with representatives. This was done to identify a municipal area suitable for the research project as well as to gather information for the review of current recycling initiatives. It was sometimes difficult to reach the person responsible for waste management. In some cases secretaries did not know whose responsibility it was to deal with the issue of recycling domestic waste; attempts were then made to speak to the best informed person available.

Eventually it was possible to speak to representatives from all fourteen municipalities. Eight semi-structured telephonic interviews were conducted over a period of four days (1-4 October 1992) with representatives from the following municipalities: Bellville, Cape Town, Goodwood, Gugulethu, Lingulethu West, Milnerton, Parow and Simon's Town (for interview detail, see Chapter 3 & Appendix A). These representatives reported that their municipalities either had a recycling scheme of some kind, or would plan a recycling scheme in the future.

During the course of these four days the researcher also conducted six unstructured telephonic interviews with the representatives of the following municipalities: Brackenfell, Durbanville, Fish Hoek, Kraaifontein, Kuilsriver and Pinelands. These representatives noted that their municipalities did not have any recycling schemes planned, and/or that the removal of domestic waste in their area was handled by private waste contractors. Through these unstructured interviews other useful contact names and telephone numbers were obtained.

4.2.2 SOME RESULTS FROM INTERVIEWS WITH MUNICIPALITIES

The results from the semi-structured and unstructured interviews with the municipalities reflected a range of perspectives, which in one case was contradictory. The Goodwood Municipality representative (Section 3.4) stated that recycling or the support of recycling held great financial benefits. Every kilogram of

waste which did not go to the landfill site meant a saving of R70 for the municipality, which included the transfer and labour costs as well as the running costs of the landfill site. The representative from Brackenfell Municipality on the other hand, claimed that it was not financially feasible for the municipality to start a recycling scheme because of the intensive labour demand. This contradiction might be a result of different circumstances in the different municipalities. It might be more expensive for Goodwood Municipality to use its landfill site than is the case with Brackenfell Municipality. This example showed that there were differences in attitude to the recycling of domestic waste in the different municipal areas which might be dependent on different circumstances.

A study area was chosen on the basis of the outcome of the telephonic interviews. The most suitable study area included the Goodwood, Parow and Bellville municipalities, because they demonstrated that they already worked well together, especially in terms of the composting of waste material. The neighbouring municipal area of Gugulethu also showed a keen interest in participation. It intended becoming involved with recycling of domestic waste. Bellville also showed interest in having Gugulethu as a participant. Parow was prepared to work with other municipalities if it would be to the advantage of the community. This willingness to participate led the researcher to choose to work with communities in a broader study area than originally intended, i.e. the northern suburbs, where the above-mentioned municipalities are situated (Table 1).

4.2.3 INTERVIEWS WITH RECYCLING INDUSTRY REPRESENTATIVES

During 7 to 21 October 1992 interviews were conducted with representatives from the recycling companies active in the Cape Peninsula, either by telephone or personal visits, the latter in response to invitations to visit the recycling plant in question. The relevant companies were identified through relevant documentation and through personal communication with the coordinator of the CRN. The aim of the interviews was to gather information for the review of current initiatives for the

recycling of domestic waste in the Cape Peninsula (Chapter 3), as well as to introduce the participatory resource development approach and to identify representatives of industry interested in participating in the project.

The industries contacted were National Metal, Consol Glass, Sappi Waste Paper, Mondi Paper, Nampak Paper, Nampak Polywood, Ecobott and Waste Tech.

A telephonic interview with a representative of **Sappi Waste Paper** established his willingness to participate in a workshop with teachers. However, the representative had no interest in participating in a workshop with the local authorities because he did not agree with the "philosophy of the municipalities" (Interviewee 6) in terms of recycling. Sappi was not in favour of enforcing recycling through legislation, which the representative interpreted as "the philosophy" of some of the municipalities. The representative believed that the community must introduce the change.

The researcher tried to make contact with a representative of **Ecobott**, a glass recycling company, but repeated failure led to this company being excluded from an opportunity to participate in the research project. This illustrated that one of the problems of establishing a recycling project might be to contact some of the roleplayers.

The **National Metal** representative invited the researcher to the depot in Kuilsriver to have a personal interview and tour of the facility, rather than a telephonic interview. This visit gave the researcher first hand experience of the functioning of such a depot. Interestingly, he did not wish to be involved with workshopping, because he felt he did not have any experience in a participatory methodology. He also maintained that the management of the business took up a great deal of his time.

The researcher also visited the **Consol Glass** recycling plant at the invitation of their representative. The Consol Glass representative expressed an interest in education and a willingness to become involved with educational initiatives. The

representative felt that there was a need for the development of Afrikaans resource material. This gap in the spectrum of educational resources was previously also identified by the National Metal representative and later confirmed by the convenor of the Northern Suburbs Recycling Network.

The researcher and the co-ordinator of the CRN visited the Nampak Polywood representative. The latter believed that legislation would help to promote greater public awareness of recycling and that it would also support the recycling industry. He reasoned that legislation was necessary because "in South Africa there is no pressure to recycle yet; we have enough landfill space for the next seven years" (Interviewee 20). He also stressed the importance of education, particularly directed at children.

4.2.4 MEETINGS WITH THE CO-ORDINATOR OF THE CAPE RECYCLING NETWORK (CRN)

The co-ordinator of the CRN is in almost daily contact with most of the important roleplayers in recycling in the Cape Peninsula. At a meeting during the early stages of the research, the researcher and the co-ordinator of the CRN discussed and agreed on a list of representatives of key recycling groups for the first workshop. All those listed as potential participants were then invited to participate in the first workshop.

The co-ordinator was visited a second time, to discuss waste management in the Cape Peninsula with special reference to the concept of recycling. In this discussion a number of different points relating to (1) social development dimensions of recycling, (2) the role of the local authorities, (3) markets for recyclables, (4) incentives, and (5) uniqueness of areas, were discussed. Although it might seem that there is no coherence in the discussion of these points, all of these are aspects which elucidate the research question. Firstly, Jenman (1992, pers. comm.) stressed the importance of addressing social upliftment and economic development through recycling, something which the local authorities were unable to do. In her view, "Our voluntary organisations are involved with the social problems of the community. Local authorities cannot get involved with these

issues." She also made the point that the successful initiation of recycling schemes depended on the existence of viable markets for the commodities. This endorsed the importance of the market research which was done through the interviews with the representatives of the local authorities and the voluntary organisations. (Item 9 in Appendix A). The researcher believes that one should not stimulate recycling through education initiatives if there is any doubt about the ability of the market to cope with the supply. Jenman also noted the need to create incentives such as the creation of employment opportunities. This was a clear indication of the CRN's integrated approach to recycling. Further to the point raised in discussion (Section 5.4.1), Jenman (1992, pers. comm.) pointed out that each area is unique and that one could not apply what one municipality was doing to another municipality. This view was supported by the Consol Glass and Mondi Paper representatives.

4.2.5 CAPE RECYCLING NETWORK MEETING

A meeting with the full CRN was attended in early November 1992 where the researcher met more possible participants for the research project. It also provided an opportunity to introduce the project to those present on an informal basis.

4.2.6 CONTACT WITH CO-ORDINATOR OF ENVIRONMENTAL EDUCATION OF CAPE NATURE CONSERVATION AND MUSEUMS (CNC & M) IN WESTERN CAPE

The co-ordinator of environmental education of Cape Nature Conservation and Museums is stationed in the Western Cape Regional Office in Bellville and has contact with schools, teachers and other potential roleplayers in that area. The researcher recognised the co-ordinator's valuable ability to assist with the identification of key participants for the workshops. Involving her in the project also formed part of the co-ordination of action envisaged by the researcher. It was suggested by the co-ordinator that the Teachers' Centre in Parow be used to make contact with the schools in the northern suburbs.

4.2.7 CONTACT WITH ENVIRONMENTAL EDUCATION AND RESOURCES UNIT, UNIVERSITY OF WESTERN CAPE (UWC)

The idea of the project was introduced to the co-ordinator of the Environmental Education and Resources Unit at the University of Western Cape (UWC) on 9 October 1992. Their possible involvement with the project was discussed. The co-ordinator showed great interest in the project and was interested in attending the project workshops, as the Unit intended to start a recycling scheme at UWC. According to another representative of the Unit past attempts to network with the Bellville Municipality had failed, because of resistance on the part of the municipality. Since then it had not been possible to initiate any scheme. The researcher identified the need to investigate the form this resistance had taken. It became apparent that a lack of co-operation between the university and the municipality was interpreted as resistance. The opportunity to work in collaboration with the municipalities, which this study afforded, was appreciated by the representative of the university.

This contact led the researcher to identify representatives of the Environmental Education and Resources Unit as potential participants in the project. Consequently, they participated in the first workshop hosted by the Goodwood Municipality (Section 4.3), after which they decided to meet with the Universities of Cape Town and Stellenbosch to exchange information. Subsequent enquiry revealed that the representative from UWC had not initiated any contact with the mentioned universities, but was instead expecting such action to be initiated either by the co-ordinator of the CRN or by the researcher.

4.2.8 CONTACT WITH NORTHERN SUBURBS RECYCLING NETWORK (NSRN)

The convenor of the NSRN was contacted (9 October 1992) to arrange a telephonic interview, aimed at gathering data for the review of current initiatives and exploring the form and extent of the Network's participation. During this contact the convenor suggested that the researcher would find attending a committee meeting of greater value than a telephonic interview.

Through documentation as well as through personal communication (Jenman, 1992; Hayward, 1992) another member of the NSRN was identified as a key contact person for resource development in the northern suburbs. She was one of the mothers responsible for initiating a recycling scheme at Edgemean, a northern suburbs primary school. Her involvement with this successful recycling depot made her an excellent resource person and contributor to the review of current initiatives. The researcher was particularly interested in her views on education and participatory resource development.

This person showed great interest in the project and supported its participatory approach. She stressed the need for co-operation amongst teachers, parents and the volunteers running recycling depots (collection points). She believed that mothers could play a vital role in the organisation and initiation of recycling schemes. Her experience has led her to believe that there was a need for Afrikaans resource material and she expressed a willingness to be involved with the resource development aspect of the study.

4.2.9 CONTACT WITH EDGEMEAD PRIMARY SCHOOL

Edgemean Primary School was one of the few schools in the northern suburbs which were actively involved in recycling domestic waste. It was therefore possibly in a position to contribute to the educational resource development aspects of the envisaged research project. The researcher was in telephonic contact with a teacher at Edgemean Primary School after the latter had been identified as a key representative in recycling in the northern suburb schools. Through this teacher the research project could be introduced to the school.

The teacher stressed that the support of the school principal was vital to any environmental education initiative at a school. She also expressed the opinion that it was more difficult to organise recycling schemes at high schools. In her experience recycling schemes functioned better in primary schools, because younger children were in general very enthusiastic and more motivated to take part in recycling than high school pupils.

The teacher had started a recycling scheme at Bergvliet Primary School. On being questioned, she explained that the educational aspects of the recycling project at this school were neglected when the pupils' mothers took over the organisation. They ran the project according to business principles and neglected the educational dimension (see discussion in Sections 5.4.2.6 & 5.4.2.7).

The teacher was also of the opinion that "the Afrikaans-speaking communities don't care as much as the English-speaking communities when it comes to environmental issues" (Interviewee 28). She seemed to be referring to limited participation in recycling projects by Afrikaans communities. Although the researcher identified a need to follow up this observation, e.g. by means of a small survey amongst households in the northern suburbs, it has not been possible because of time constraints.

The teacher offered to help with the project and to participate in a workshop. Unfortunately she was unable to participate after this discussion, because of her commitment to other extramural activities, and a key participant, with useful insights, was lost to the study.

4.2.10 CONTACT WITH TEACHERS' CENTRE, PAROW

Telephonic contact was made with the regional co-ordinator of education for gifted children in the Western Cape at the Teachers' Centre in Parow, and the research project introduced to her. The possibility of incorporating the project into the teachers' programme at the centre was discussed. It became evident that the organisation of a teachers' workshop at the centre would be impractical, because of time constraints affecting the researcher, the co-ordinator and the teachers. Already, too many commitments on the part of the teachers were a constraint against participating in the project. The co-ordinator suggested as an alternative that the project be given publicity through their newsletter. Responses to such a notice would provide some indication of the teachers' interest in the project. The suggestion was valued, but could not be acted on,

since it was made at a late stage of data collection when too little time was available to follow it up.

4.2.11 PROJECT INITIATION: VISIT TO GOODWOOD MUNICIPALITY

In order to start the research project, the researcher and the co-ordinator of the CRN visited the Goodwood Municipality on 21 October 1992 and met with the city engineer. The aim of this meeting was to gather information for the review on current initiatives and to discuss and plan the first workshop. He offered to host the first workshop, which was to involve community leaders, governmental and non-governmental organisations, recycling industries, voluntary organisations and educational institutions in the Goodwood, Parow, Bellville and Gugulethu municipal areas, as planned at the meeting noted in Section 4.2.4.

4.3 SHARING OF EXPERIENCES AND PRELIMINARY EXPLORATION OF PROBLEMS: WORKSHOP HOSTED BY GOODWOOD MUNICIPALITY

It was difficult to finalise a workshop date to suit all four municipal representatives. Eleven days before the proposed date of 18 November 1992 the participants representing four municipalities, various recycling companies, NGO's and educational institutions were invited telephonically. Of the 25 individuals invited, 15 confirmed that they would be attending. The workshop was attended by 13 people representing the following parties:

- * Four municipalities, i.e. Bellville, Goodwood, Parow and Gugulethu;
- * One recycling company
- * Northern suburbs rate-payers represented by individuals;
- * CNC & M Environmental Education section;
- * UWC Environmental Education and Resources Unit;
- * Cape Recycling Network of the Fairest Cape Association.

It was hoped that this workshop would stimulate communication between the roleplayers, and lend added perspective to their

viewpoints already explored superficially in interviews. The aim was to create a climate which would be conducive to the development of a co-ordinated plan of action to address particular needs, which were also to be identified in the workshop. The aims of the workshop were thus to gather further information, to identify existing problems experienced by the participants with regards to recycling, to explore the implications of recycling for environmental education, and to work towards the development of a plan of action for sustained community participation in recycling projects.

The researcher as a participant observer contributed to the workshop by proposing an agenda which was, however, not followed. At the start of the workshop a joint decision was made by the other participants to restructure the meeting to focus on sharing their experiences, practices and views on recycling. The main themes remained participation and the role of education, as originally planned by the researcher. The questions "Who has to be educated?" and "Where do we start with education?", as well as the role of the local authorities in the recycling of domestic waste, were explored. The exploration of these specific topics addressed the needs of the participants present.

The city engineers argued that landfill would remain the cheapest method of waste management in South Africa. They believed that there are sufficient landfill sites available in the Cape Peninsula for the next 15 to 20 years. This argument indicated that most local authorities seemed to plan for waste disposal in their areas on a short-term basis. According to all the city engineers present at the workshop, the role of the municipality was to satisfy the user of municipal services. A municipal representative said,

As die verbruiker tevrede is met 'n duur tarief ten opsigte van rommelverwydering, dan gee ons dit vir hom. Dit hang net af wat die verbruiker wil hê (Interviewee 29).

In response, the co-ordinator of the CRN remarked that such an approach did not help the environment. All the municipal representatives repeated that they could only do what their

councils expected of them and that their municipalities were service organisations. The researcher perceived this to mean that rate-payers should be able to put pressure on municipalities to respond to their requests. One of the main themes emerging from the workshop was that "the community is the municipality" (Interviewee 29). The researcher interpreted this from the context in which it was said, as meaning that the municipalities only do what the communities request.

The workshop participants stressed that it was important to reduce waste for environmental reasons. The municipal representatives, however, made it clear that they could only consider "environment" as far as their sphere of work made it possible. With regard to education it became apparent that community leaders or prominent community organisations were regarded as important players in attempts to reach educational goals. The educational goals, as envisaged by the meeting, were the production of educational resource material which would inform the public about the technical and environmental aspects of the recycling of domestic waste. The group thought that the public would need information which would address the questions "How to start a recycling scheme?" and "Why do we recycle waste?" All the participants strongly favoured schools as the ideal places to initiate recycling schemes. This was not so much because of the educational value of recycling, but more because schools had existing infrastructure for the organisation of recycling depots. The co-ordinator of the CRN highlighted the need for an educational workshop for teachers where the educational implications of recycling could be explored. However, she said that there was a time constraint on the part of the teachers. The participants also identified a need for schools and teacher training centres e.g. the Teacher Centre in Parow, to become involved in the development of educational resource material. The general opinion of the group was that education, which they interpreted as information transfer, should ideally start with the education of teachers and student teachers.

Representatives of UWC said that they wanted to start a recycling programme. They indicated that the workshop was useful to them in this regard as they were informed about the scheme at the University of Cape Town and were given a contact name. They would value the opportunity to plan a workshop involving the Universities of Cape Town, Western Cape and Stellenbosch. The UWC representatives had previously perceived an unwillingness on the part of the Bellville Municipality to co-operate. They were now informed by this particular municipality that they were willing to support recycling schemes, provided that the initiative came from the community. The positive spirit of communication with the municipalities made the workshop a success as far as the UWC representatives were concerned. However, upon subsequent discussions with the UWC representative, the researcher found that nothing had been initiated by him since the workshop at Goodwood Municipality. He had been waiting for the co-ordinator of the CRN to initiate a meeting with the Universities of Stellenbosch and Cape Town.

Although the researcher had a specific agenda for this research workshop, the other participants had established their own agenda which they felt would address their needs more effectively. The agenda was changed according to their needs, in keeping with the participatory nature of the study. Consequently, the workshop did not have the outcome expected by the researcher on the basis of the original schedule. The researcher, however, remained confident about the participatory project and resource development process she had initiated. This was in keeping with the view of O'Donoghue (1993, pers. comm.) who advised that in participatory research one has to adapt to what the participants want.

The participants decided that the next step should be to involve the Northern Suburbs Recycling Network Committee in the participatory project and its resource development aspects. This task was to be undertaken by the researcher. The first possible opportunity to meet the committee members was 3 months later on 17 February 1992.

4.4 WORKSHOP FOLLOW-UP

4.4.1 MEETING WITH THE WESTERN CAPE RECYCLING FORUM (WCRF)

The researcher attended a meeting, 9 February 1992, organised by the Western Cape Recycling Forum, as a participant observer. The agenda set out by the Forum included the development of educational resource materials and a synopsis from the various recycling industries in terms of their perspectives on recycling domestic waste in their respective industries.

In response to the educational objectives stated in the Forum Strategic Plan (Western Cape Recycling Forum, 1992) the Forum had initiated the development of a poster on effective waste management. A draft copy created by a local artist was discussed. The need for the use of the three languages most common in the area, i.e. English, Afrikaans and Xhosa, was stressed. It was also stressed that simplicity was important so that children could understand the poster. The Fairest Cape Association (FCA) was going to design their education programmes regarding littering and effective waste management around the envisaged resources.

The researcher addressed the meeting, detailing the background of the research project and introducing the concept of participatory resource development to the members. The researcher explained that she envisaged the participatory development of fact sheets, posters and activity sheets as part of her research project. Although the concept was not familiar to most of those present, they agreed that this approach should promote the development of relevant material. The researcher used a water cycle poster (Urban Foundation Primary Science Project, Western Cape and CNC & M, 1992) developed by teachers, to illustrate a process of participatory resource development. The researcher suggested that a draft poster on waste management could be "workshopped" using the same process.

In terms of the study, the most important outcome of this meeting was that the Forum objectives for 1993 included the development of educational resource material. This was not as a direct

result of the research, though. The Forum members had the resource development planned before the research project was known to them. The researcher felt that the Forum's attempt to develop resource material could provide an opportunity to explore possible ways in which the recycling of domestic waste can be used as a vehicle for environmental education by employing a participatory approach. The Forum's proposed research, development, dissemination and adoption (RDDA), approach to resource development (O'Donoghue & McNaught, 1989), involved a video on recycling, a recycling directory, posters and fact sheets on effective waste management. The researcher suggested to the meeting that if they changed their approach to be more participatory they could, through this approach, address aspects of education for the environment.

Following the meeting in February 1993, two members of the Forum developed a recycling directory. The directory was published by the Forum in June 1993 and a poster on effective waste management in September 1993. The development of the poster was done on a participatory basis in the sense that quite a few people with experience and knowledge on recycling as well as education, made inputs as to what should be addressed by the poster. These included the researcher who offered intermittent suggestions.

The researcher decided to contribute to the Forum's research development process by initiating and exploring the participatory development of fact sheets and teaching aids like activity sheets to accompany the poster. This would form a package for both formal and informal teaching. If need be, the existing poster could be re-developed on a participatory basis through facilitation by the researcher, to perhaps serve as a worksheet for teachers' use. The development of some of the above-mentioned material will be described in Section 4.5, but much of the envisaged development was prevented by the transfer of the researcher away from Cape Town.

4.4.2 MEETING WITH NORTHERN SUBURBS RECYCLING NETWORK COMMITTEE (NSRNC)

The NSRNC was not represented at the first workshop hosted by the Goodwood Municipality, because of the full-time work responsibilities of its members. The participants at that workshop identified a meeting with the NSRNC as a priority and the researcher also identified this group as a possible key roleplayer in the project. The meeting with the NSRNC on 17 February 1993 was attended by three committee members, the coordinator of the CRN and the researcher. The researcher gave a report on the outcome of the first workshop and gathered background information on the work of the committee. The members discussed some ideas for participatory resource development in their area, specifically involving the schools in the northern suburbs. They suggested a fairly conventional approach which involved art classes at two schools, to develop posters on the recycling of domestic waste. The other participant, the researcher, did not see fit to comment on the conventional approach at that stage. With hindsight the researcher should have taken a more pro-active role and should have suggested the development of an interactive poster. The development of such a poster would have been a participatory process involving collective action which is usually more productive than individual efforts (Robottom & Hart, 1991).

When questioned about the reasons for the apparent success of their work, the committee members ascribed it to the fact that all the members are senior nurses. Their profession has developed their organisational skills and a sense of responsibility. The researcher regards these as part of the objectives of education for the environment (Section 1.4). The NSRNC members believed that school children should be involved in recycling schemes, which could serve to develop the same qualities among the youth. Their idea of involving the children to organise the recycling schemes, rather than the teachers or mothers, would support an approach of education for the environment.

At the time of the research, the mothers ran the depots at the schools. The committee members suggested that the researcher encourage the teachers to involve the children more actively. They felt that teachers needed to understand the educational implications and positive influence of more active involvement on the part of the children.

4.4.3 THIRD VISIT TO THE CO-ORDINATOR, CAPE RECYCLING NETWORK

The researcher and the CRN co-ordinator met on 19 February 1993 to plan a workshop for teachers. The possible need for a teachers' workshop on the recycling of domestic waste was perceived at the first workshop hosted by the Goodwood Municipality. The aim of the intended workshop was to link integrated waste management to the school syllabus, with the assistance of teachers. It was thought that this would contribute to an interdisciplinary approach to waste management. The workshop could look at developing educational activities through a participatory approach. These could be employed in formal and non-formal education, introducing recycling as a valuable educational tool.

In preparation for the teachers' workshop, it was decided that the researcher would attempt to address the expressed need for resources providing information on the recycling of domestic waste (Stevens, 1992; Western Cape Recycling Forum, 1992), by developing a draft series of fact sheets on integrated waste management. This could then be discussed, assessed and adapted to the syllabus by the teachers at this workshop. If deemed appropriate, a related series of activity sheets for teaching purposes could also be developed with participation of the teachers.

The intended workshop did not materialise. A possible reason, perceived by the researcher, could have been the limited involvement of teachers in the recycling of domestic waste. In trying to arrange the workshop, it once more became apparent that very few teachers were actively involved in the recycling schemes at schools, and those that were, seldom had time to get involved in any other activities such as regular workshops. The view of

the researcher was that, instead of organising a workshop with many teachers attending, it might be better to communicate individually with those few teachers who were involved in recycling schemes.

4.4.4 MEETING WITH TWO MEMBERS OF THE WESTERN CAPE RECYCLING FORUM (WCRF)

A committee member of the WCRF invited the researcher to attend a meeting on 29 April 1993, to plan a seminar on the role of the Cape Peninsula local authorities in the recycling of domestic waste. Two members of the Forum and the researcher exchanged ideas and produced a draft seminar agenda. The results and analysis of the interviews and the workshop with the local authorities served partly as basis for the seminar planning. The researcher provided the Forum members with relevant literature as well as a list of contact people at the municipalities. The seminar was planned for August 1993, after the data gathering phase of the study was completed. Therefore, it was not possible to report the outcomes of the seminar and its relevance to the research.

4.5 RESOURCE DEVELOPMENT

4.5.1 PARTICIPATION IN A WORKSHOP ON PARTICIPATORY RESOURCE DEVELOPMENT

The researcher attended a workshop on 16 April 1993 on participatory resource development and the latest Share-Net resource materials run by O'Donoghue, a leading exponent of participatory resource development in southern Africa. Discussions with O'Donoghue proved invaluable in clarifying the issue of participatory resource development. The philosophy behind participatory resource development was the "collective consciousness of people working together", emphasising that the solutions should not only come from the environmental educators, but also from the people who experience the needs relating to the environment. People should be partners in the solutions and not "victims of one-way information" (O'Donoghue, 1993, pers. comm.).

The Share-Net Enviro-Picture Building Resource Pack (Umgeni Valley Project, 1993) was demonstrated and discussed. The researcher saw great potential for the development of a similar picture game on effective waste management, including aspects of recycling. This was discussed with O'Donoghue who suggested that the researcher should contact the Sappi Waste Paper representative, as he had mentioned a similar idea as well.

4.5.2 PROPOSED DEVELOPMENT OF ENVIRO-PICTURE BUILDING RESOURCE PACK

The researcher contacted the Sappi Waste Paper representative who said that the picture building game had already been drafted. It was agreed that the researcher should meet with him to discuss the use of a participatory approach in the further development of educational materials on recycling. This meeting has not been possible, because the researcher has been transferred away from Cape Town. She hopes to take this up at a later stage as part of her work in the development of environmental education resource material.

4.5.3 FACT SHEETS WORKSHOP

Through personal communication with the co-ordinator of the CRN, and by studying relevant literature, the researcher was able to compile a series of draft fact sheets on aspects of effective waste management (Appendix E). The re-development and adaptation of these fact sheets for environmental education purposes at a local level, by means of a participatory approach, would further help to answer the research question. The redevelopment and adaptation of the fact sheets was explained at the meeting with the WCRF (Section 4.4.1).

A list of 15 teachers, environmental educators and other people involved in recycling depots at schools was compiled, on the basis of their involvement or intended involvement in recycling schemes, as potential participants in a workshop session. The limited involvement of teachers (Section 3.3.2.5) meant that this list included individuals who did not necessarily represent the teaching profession. These individuals also represented both the

northern and southern suburbs; thereby including a broader community than had been intended. The original aim of the workshop was to discuss the above-mentioned draft fact sheets and to develop teaching activities relevant to the fact sheets with the participation of teachers. Invitations were made telephonically. Some of these conversations gave the researcher valuable insight into difficulties such as the time constraints on teachers involved in heavy work schedules and the consequent difficulty of including them in the workshops.

The 15 people invited included 11 who were active in formal or non-formal education, three mothers involved with the running of depots and a person involved in the editing of environmental publications. Four teachers, a recycling depot supervisor, a student nurse and the CRN co-ordinator attended on 1 May 1993. The three-and-a-half-hour workshop was devoted to the development of six new fact sheets. The researcher's draft sheets were distributed amongst the participants but the group preferred to start from scratch, as they indicated that they would feel more confident with this approach. This may have been because they were not familiar with the content of the draft fact sheets at that stage of the workshop. The fact sheets were unfortunately distributed at the workshop for the first time.

The development process started with the identification of the following topics identified by the workshop participants according to their needs:

- * Green your school administration
- * A map and directory of Cape Peninsula recycling depots
- * Reject and reduce
- * Re-use
- * Recycle
- * How to start a recycling depot.

Although it was intended by the researcher and the CRN co-ordinator that the syllabus would be considered in the development process, this was not done. The four teachers

present agreed with each other that the above-mentioned topics were more relevant to their immediate local needs. A discussion on the information needed and the layout of the sheets followed. Consequently, the participants designed another series of draft fact sheets.

It was decided that the researcher and the CRN co-ordinator would produce draft copies which would be circulated to the workshop participants, for comment before final production. The aim was to distribute these fact sheets at a major environmentally-oriented exposition in Cape Town which had 'Spaceship Earth' as a theme, but the sheets were not finalised in time for the exhibition. At the time of submission of this thesis, these sheets were not ready for publication either. The reason for the delay was partly due to a very busy work schedule of the CRN co-ordinator and the teachers who attended the workshop. There were also not enough volunteers to assist in the final stages of the development process. Therefore, comment as to how the sheets were received by the public is not possible.

On the next day, 2 May 1993, a meeting with the CRN co-ordinator was held to evaluate the fact sheets workshop, discuss the input and finally collate the information. The co-ordinator agreed to assume the responsibility of editing, publishing and distributing the fact sheets, because at this stage of the process the researcher was transferred away from Cape Town. The co-ordinator also offered to introduce overseas resource materials, dealing with specific activities based on the recycling of domestic waste, to teachers in the Cape Peninsula. In this way teachers might be drawn to become part of the proposed workshop on the development of teaching activities relevant to the South African context.

4.5.4 PRIMARY SCHOOLS' WORKSHOP

Following a telephone conversation with the co-ordinator at the Teachers' Centre, Parow (Section 4.2.10), the researcher visited the centre to discuss the possibilities of integrating the intended research with the centre's activities. The choice of this venue was suggested by the participants at the first

workshop (Section 4.3), because it is a centrally-situated educational organisation in the northern suburbs. This organisation had existing structures such as regular contact with the schools of the northern suburbs through, amongst other things, regular meetings and newsletters for teachers. Making use of these existing structures could benefit the project by facilitating relatively easy contact with as many teachers as would be interested in the project.

On the suggestion of the co-ordinator of the Centre, a group of 12-13 year old primary school children from the northern suburbs were brought together at the centre for a workshop session on 3 March 1993. Primary school children were chosen, because the researcher and the co-ordinator thought that would allow for possible syllabus-related resource material to be developed. The aim was the development of resource material which would address the issue of effective waste management. The session was facilitated by the co-ordinator and the researcher observed and documented the process of resource development by the three groups of four children. Each child received an information package compiled by the researcher, which included the series of draft fact sheets on effective waste management. They were given the task of developing their own resource materials which would address the needs of the target audience, namely the school or the community. The development was to be based on the package, with an emphasis on originality, creativity and factual accuracy. The children were also asked to keep in mind the 1993 schools' theme, "Conserve for our Future". They had to identify a problem from the provided information package and to suggest a solution in the form of a resource. It was envisaged that their resources would be distributed widely in the community to stimulate uninvolved people to participate.

The researcher thought that the process would be participatory in terms of the project aims because the children would use the information provided to develop educational resource materials which they could use to teach other uninvolved people or through which they themselves could become involved more actively. In retrospect these assumptions seem naive and unrealistic. This

will be discussed in detail, because the experience of the researcher led to an important insight (Section 5.2.4).

The criteria given to the children were:

- * A morning is available
- * Use the information in the package
- * Work in groups
- * Resource materials must be reproducible
- * The result can be in any form, e.g. brochure, pamphlet, poster, newsletter, story, poem, song, drama
- * Use the facilities provided, i.e. pencils, pens, scrap paper, poster paper, coloured paper, pastels, pencil crayons, tape recorder and tapes
- * Resource materials must have a title
- * Specify for which age group the material is developed
- * Give instructional details as to the use of the resource

These criteria were fairly non-prescriptive in order to stimulate the children's creativity and provide an opportunity for original resource material to be developed. Originality of the work was stressed to prevent the children from producing stereotyped material which might not necessarily be relevant to their needs. The children should also feel that the material developed by them belonged to them.

In planning the workshop, the researcher and the co-ordinator at the centre agreed that this would be an ideal way to involve some children from the northern suburbs in the development of educational resource materials which would address the children's own needs. The activity would also address the following needs which had previously been identified:

- (1) To involve the Teachers' Centre in participating in the research project;

- (2) To involve the schools in recycling domestic waste through participation of the school children;
- (3) To involve people representing the northern suburbs which had been identified as study area;
- (4) To create an opportunity for community participation in the development of resource materials by e.g. making it possible for people to identify their own needs and solve their own problems.

All three groups developed two posters each which addressed the topics: littering, pollution, ways to help save the earth and paper recycling. These posters were to be presented at their respective schools. The children requested a follow-up workshop so that they could develop their resource material further. They felt that a morning did not allow sufficient time for them to explore all their ideas. The suggestion was made that a video camera would have been a useful piece of equipment to have available. One child mentioned that he wanted to ask the Parow Municipality to assist with the distribution of his material. The researcher was able to inform him that the municipality had already expressed its willingness to assist schools with the recycling of domestic waste, but that at that stage nothing tangible had taken place (see discussion in Section 5.4.2.3). In retrospect, the approach followed during the workshop with the children, had various weaknesses (Section 5.2.4).

The main shortcoming (Section 5.2.4) was that the school children were not involved during the rest of the process and, therefore, did not relate what they were doing in terms of resource development to the context and needs of their own community. One of the needs identified, was the need for information on the recycling of domestic waste. Although a follow-up was requested by the children, it was also felt by the researcher that a follow-up would be essential in terms of the process of ongoing involvement of the project participants, as well as to address the shortcoming mentioned above. Unfortunately, the proposed workshop had to be cancelled, because of time constraints on the

co-ordinator at the Parow Teachers' Centre who had to organise and facilitate the workshop.

4.5.5 TWO WORKSHOPS WITH TYGERBERG HIGH SCHOOL LAND SERVICE MOVEMENT

The teacher responsible for the Land Service Movement group at the Tygerberg High School contacted the researcher in early April 1993 for guidance on environmental education activities. The researcher suggested that the group become involved with the research project. It was an ideal opportunity to involve a high school from the northern suburbs, and would address the groups' needs too. The teacher agreed and two workshop sessions were approved by the headmaster.

The researcher suggested that it would be appropriate to focus on the development of Afrikaans resource materials and the revival of the recycling depot previously established at the school. This would address two concerns expressed by various interviewees, i.e. the need to involve the Afrikaans-speaking community and specifically the high schools more fully in recycling projects, and the need to stimulate the development of Afrikaans resource materials. A committee member of the NSRN agreed to be involved and to share her knowledge and experience with the group.

On 27 April 1993 a meeting was held with 20 members of the Land Service Movement. Unfortunately, their teacher could not attend due to other school-related responsibilities. The researcher stressed that the meeting was not intended to be purely an address by herself, even though the aim was to introduce the research project to them. The members were encouraged to participate in the discussions.

The concepts of 'environment', 'education' and 'environmental education' were discussed. It was apparent that the children had a "science-based approach" to environmental education, therefore a discussion on the concept of environmental education for the environment ensued, to broaden their views. The importance of active participation in environmental education was stressed.

This differed markedly from the 'knowledge-transfer' approach with which they appeared to be familiar. The background to the development of the research project was also sketched, and the importance of the involvement of schools and co-ordinated community action was emphasised.

The pupils did not respond spontaneously to the researcher when they had the opportunity to air their opinions. This could possibly have been due to unfamiliarity with the participatory approach or the researcher. It could also have been due to a lack of ideas which they could share with the researcher.

The researcher suggested that the group could become involved in the study by translating an English brochure on how to start a recycling depot at a school (Le Grange, undated). A draft brochure on the same topic and specifically dealing with the Cape Peninsula, produced by the researcher, was also made available for further development and translation into Afrikaans. The group was provided with Become an environmental shopper - it makes good sense (Chief Directorate Nature and Environmental Conservation, 1990) and Everyone's Guide to Recycling (Earthlife Africa, 1990) as reference sources, because the researcher was of the opinion that these resources were relevant and were what the group needed in terms of background for the development of their intended resource material.

The stated aims of the Land Service Movement are to serve the Country, Environment, Community and the Creator (Land Service Movement, undated). Participation in the project would support the objectives of the movement. The researcher felt that by engaging the Land Service Movement in active resolution of environmental questions, issues and problems, they could also be involved in education for the environment.

The group was keen to consider possibilities for involvement with the research project. They stressed that they believed that incentives are important to stimulate active participation amongst pupils. To address this need, copies of Enviroteach (Projects and Competitions) (Gamble, 1992) and EnvirOK (Department of Environment Affairs, 1993) were given to them.

One of the Land Service members, who also serves on the Parow Junior City Council, suggested that the project be introduced to the Council in order to encourage the local authority to become involved.

A follow-up workshop was conducted at the Tygerberg High School on 4 May 1993. It was attended by the same 20 Land Service Movement members, their teacher and a member of the NSRNC who developed the brochure on how to start a recycling depot at a school.

As suggested in the first meeting, the group shared their ideas for participation in the recycling of domestic waste at their school, as well as the translation of resource material. They agreed that involvement in activities related to the recycling of domestic waste would address the objectives of the Land Service Movement. They wanted to upgrade and expand the recycling scheme in existence at the school. The Land Service Movement group would steer this project, involving as many pupils and households in the area as possible.

The NSRN committee member addressed the group, providing valuable general information about procedures for starting schemes at schools, while concentrating on their specific needs. She shared her practical experience gained at the Edgemoor Primary School and was able to answer their questions on practical details. The importance of careful and thorough planning was stressed. She also explained the value of learning life skills, i.e. organisational skills as well as responsibility, by participating in recycling schemes.

The researcher suggested that the group study the resource materials already introduced during the first session, as a way of starting the process. The researcher argued that the translation exercise would familiarise them with the suggested procedures and would form a valuable part of the vital planning stage of their intended recycling project.

The researcher stressed that they could approach their municipality as well as local business for support in trying to

upgrade the recycling depot at their school. The group realised that participation would serve to market the Land Service Movement and its objectives. The Junior City Council member offered to report on the project at their next meeting. A visit to a well-organised recycling depot, e.g. Edgemead Primary School, was to be considered as a future outing for the group. The NSRN committee member agreed to assist and advise where possible in the future. At the time of writing up the case study (between May 1993 and January 1994), these plans have not been followed through as a result of very busy extramural schedules at the school. The researcher contends that if these activities had been integrated into the childrens' daily school activities it would already have been in operation.

At the time, the teacher stressed that the project would be steered by the Land Service Movement committee, and she would act as facilitator. On the suggestion of the researcher and with guidance from the NSRN committee member, the group drew up an action plan for upgrading and organising the depot at their school and the translation of the English brochure.

The group would be actively involved in addressing a need which had been expressed by members of their community. Members would work in pairs and each pair would translate one page of information into Afrikaans. The researcher offered to have the translated version edited and printed. The Parow municipality would assist with the distribution.

Three months after the follow-up workshop (August 1993) the first draft of the Afrikaans brochure was sent to the researcher for editing (Appendix F). It will be distributed as soon as the cover page has been designed by the Land Service Movement members.

4.6 WITHDRAWAL FROM PROJECT

At this stage (August 1993) the project had to be abandoned by the researcher, because she was transferred away from Cape Town. This was very unfortunate, because it seemed that the project had just reached the stage where it was possible to do some

productive work, after the preliminary introduction of the idea and identification of project participants. Also, some resource development initiatives had been started and had the potential to become very productive and meaningful. The researcher left in the hope that other research participants would take various aspects of the project further themselves. In telephonic follow-ups it appeared that this was so in some cases, but not in others. For example, the Land Service Movement of the Tygerberg High School carried on with their project of reviving the recycling depot at their school, but the follow-up teachers' workshop to stimulate the development of teaching activities did not materialise, nor the workshop which the University of the Western Cape planned to hold with the other universities.

Although the initiation of a number of small-scale participatory project and resource development initiatives for the recycling of domestic waste did not lead to productive work, the discussion (Chapter 5) and evaluation (Chapter 6) thereof, had, according to the researcher, implications for environmental education in the Cape Peninsula, and in general.

CHAPTER 5

DISCUSSION RELATED TO THE RESEARCH DESIGN AND APPROACH AND THE RESEARCH QUESTION

5.1 THE RESEARCH DESIGN AND APPROACH

The research design was a descriptive and socially critical case study, which provided an opportunity to analyse a complex situation in depth (Good & Scates, 1990), and which included a small-scale survey. It was an action-orientated case study, but it was clear that the repeated spirals of planning, acting, fact-finding and analysis of conventional action research (Kemmis, 1988; Tripp, 1990) could not be followed in this brief (9 months) study.

The strength of this particular research design, which involved action and participation, was that problems could be identified which would not have been identified as successfully, had it only involved a one-way data-gathering exercise such as a survey. Constraints on participation is an example of the problems identified through the participatory process. One of the most important constraints identified was that the participatory resource development approach was a foreign concept to some of the participants (Sections 3.3.1.14, 4.2.3 & 4.4.1). Time constraints on roleplayers, including the researcher, also had implications for participatory recycling and resource development projects (Section 5.4.2.3).

Action-oriented research might also have longer term benefits, for it allows for broader participation by the community which might ultimately result in action which can be sustained without the input of the researcher, e.g. in the case of the Land Service Movement (Section 4.5.5). This is in contrast to a single survey which usually consists of short-term information gathering with little involvement from the respondents.

A weakness of the case study was that there was very little sense of continuity in the overall project. This could have been partly a result of the participatory approach to the research.

The researcher followed up on the immediate needs of some of the roleplayers instead of following a predetermined research schedule which could have had continuity as a priority. The transfer of the researcher away from Cape Town cut the time available for the field work component of the study to 6 months. This most certainly influenced the continuity of various processes started during the research, because these could not be followed-up and taken further by the researcher, as was required.

A socially critical stance was taken to this research in order to understand and challenge the structure and functioning of the system in which recycling was taking place, within a particular community. An example is the exploration of the shifting of responsibility regarding the organisation of recycling schemes, which is discussed in Section 5.4.2.1.

Initially the researcher perceived the limited time available for data gathering as a constraint in this study. Although not one of the projects initiated in this study reached an advanced stage, it seemed, upon reflection, that enough data was gathered to discuss participatory resource development, the initiation of recycling projects and the educational implications thereof.

5.2 THE RESEARCH TECHNIQUES

5.2.1 DOCUMENT ANALYSIS

In this section the value of using document analysis as a data collection technique is noted, as well as some comments on the quality of the available data sources. The quality of the document analysis can only be as good as the source documents (Zeisel, 1984).

Exploration of available documentation contributed to the planning of the project. The files of the CRN provided sufficient information for the brief review required by this study. The resources available from the CRN were found to be most helpful and it was found to be a good way of gaining access to the already existing recycling initiatives in the Cape Peninsula. The documentation revealed many useful contact names

and telephone numbers. However, the information was very scattered through the documentation, and it would have been useful to have the available information in a more accessible form. Through document analysis a need for a recycling directory for the Cape Peninsula was identified. Such a directory would solve the present problem of information being scattered throughout the documentation, which made it difficult to gain a broad perspective on the recycling initiatives. The need for a directory was also identified in the Forum Strategic Plan (Western Cape Recycling Forum, 1992). The CRN had the same objective of providing a properly indexed source of information to the public, noted earlier in this report (Section 3.3.2.2). A recycling directory of voluntary "drop-off" recycling depots, commercial depots and recycling companies, which was compiled and published in 1993 (Appendix D), partly addressed this objective. The appointment of a person responsible for the compilation, co-ordination and dissemination of the information available at the CRN, would also, according to the researcher, be a means of addressing the above-mentioned objective. This appointment of an information management officer would leave the CRN co-ordinator with more time to work towards the aim of the CRN to have a sensible national waste management policy implemented through addressing the objectives stated in Section 3.3.2.2.

The review of current recycling initiatives could have been more complete if more of the documentation was better referenced. For example, the text of the Forum Strategic Plan (Western Cape Recycling Forum, 1992) contained no references at all, which detracted from its value as a research document. Cross references to other documentation and literature regarding recycling in the Plan would have been valuable in terms of additional information.

5.2.2 TELEPHONIC SEMI-STRUCTURED INTERVIEWS

Some interviews were difficult to steer, resulting in the gathering of inadequate data. Certain interviewees, such as the recycling industry representatives, concentrated on their own interest in advertising their businesses, and did not focus on

the researcher's questions (Section 3.3.3). This could have been partly due to the telephonic nature of the interviews. The researcher could rely only on voice intonation, whereas body language would also have helped to effectively guide the interview process in a personal meeting. It would also have helped to use a checklist, which is more structured, with more closed-ended questions than the existing interview schedule (Cohen & Manion, 1989).

A further disadvantage of a telephonic semi-structured interview was the lack of personal contact. Although the personal contact with several industry representatives did not persuade them to participate in the workshops, the researcher surmised that personal contact with the other interviewees could have stimulated better opportunities for future participation in the research project.

A positive aspect of the telephonic, semi-structured interviews was that the general aims were reached in the relatively short time of four days, and with a minimum of expense. Using this technique the project was introduced to 14 municipalities in the Cape Peninsula, as well as to six representatives of the recycling industries.

5.2.3 UNSTRUCTURED INTERVIEWS

The unstructured interviews conducted with voluntary organisations, Waste Tech and those local authorities not already involved in recycling, were useful for obtaining additional information. They were not successful in drawing these municipalities into participating in the research. Again, personal contact would possibly have been more successful in this regard.

5.2.4 WORKSHOPS

'Workshopping' was found to be an effective technique to use in the participatory research approach, because it gave motivated people the opportunity to interact meaningfully. It enabled them to meet others with similar interests and to initiate a process of possible future co-operation.

Following a participatory approach, the researcher did not have full control over the direction of the workshops (Sections 4.3 & 4.5.3). As a participant observer at the workshop hosted by the Goodwood Municipality (Section 4.3), as well as the fact sheets workshop (Section 4.5.3), the researcher could, however, contribute to the agenda by proposing a workshop schedule, while allowing for flexibility so that the other participants' needs could also be accommodated. With the primary school's workshop (Section 4.5.4), the researcher and the co-ordinator of the Teacher Centre, Parow, had more control over the direction of the workshop because, on reflection, the approach used in this case was indeed only 'pseudo-participatory'. The researcher was an observer (not a participant observer) and the co-ordinator of the Teacher Centre, Parow, was a facilitator of, to a large extent, pre-planned activities. It was thought that the process would be participatory in terms of the project aims because the children would use the information provided to develop educational resource materials which they could use (Section 4.5.4) to address the need which existed for information on the recycling of domestic waste (Stevens, 1992). They were, however, not involved during the rest of the project, neither were they informed about the context within which they were developing the resource material. In retrospect, the assumptions mentioned above, seemed naive and unrealistic, because it is unlikely that 12-year-old children would become more involved in recycling than they previously were, through the development of resource materials regarding the matter. In terms of approach, it was fairly 'top-down' and had very little participatory characteristics.

A difficulty with 'workshopping' as a research technique was getting the relevant parties together at the same time (Sections 4.3, 4.4.3 & 4.5.3). It is suggested that this difficulty could be overcome by communicating by means of facsimiles instead of trying to get relevant parties together at the same time.

5.2.5 RESEARCH DIARY

The diary provided a record and evaluation of events. As the research process continued, the researcher's reflections on the events were recorded daily in the research diary. These notes in the research diary formed a valuable basis for reflecting on the project. The interpretation of results depended strongly on reflections on thoughts recorded in the diary at the time of the events.

5.3 THE RESEARCH AIM AND OBJECTIVES

The results pertaining to the research aim (Section 1.2) are discussed below in terms of the four specific objectives.

(a) To review current initiatives for the recycling of domestic waste in the Cape Peninsula.

The review showed that initiatives for the voluntary recycling of domestic waste in the Cape Peninsula were in an advanced phase of development, probably well ahead of many other areas in the country. Four municipalities were involved in recycling activities, three were planning to get involved in future and seven had no intention of becoming involved. The various agencies reviewed were involved with recycling for two main groups of reasons. The one group of reasons was economic and the other was social development or environmental reasons. The discussion relating to this objective is presented in Section 3.4. The review gives background information for anybody interested in becoming involved in recycling-related activities in the Cape Peninsula. It has the potential to be published and distributed to those municipal representatives who did indeed request feedback on the study.

(b) To involve a community in the northern suburbs in recycling initiatives; to identify specific problems related to these initiatives; and to explore ways in which education resources can help deal with these problems.

The original plan was to work with the community in one particular municipal area, who would be interested in

participation in recycling, as well as interested in participation in the development of resource material regarding domestic waste recycling. This plan changed, as is to be expected with a participatory action-orientated research approach. During the semi-structured interviews and during the workshop hosted by Goodwood Municipality, the municipalities of Bellville, Parow and Goodwood expressed a desire to work together. Instead of concentrating upon one municipal area, the study area was, therefore, expanded to include these municipal areas in the northern suburbs.

For the fact sheets workshop the project eventually also included participants from the southern suburbs of the Peninsula. No teachers from the northern suburbs were in a position to take part in research development initiatives at the time.

The most obvious key points affecting the recycling initiatives in the Cape Peninsula were identified, by the researcher and various participants, as the short-term perspectives of the local authorities, the lack of co-ordination of activities, the limited teacher participation in recycling projects, the limited involvement of high schools and a lack of Afrikaans resource materials. These issues are discussed in Section 5.4.2., where suggestions are made as to how educational resource materials can help deal with them.

(c) To initiate the development of educational resource materials in collaboration with this community.

The educational resource materials, the development of which were initiated, partly initiated or supported during this project, were:

- a) a poster on effective waste management in the South African context, developed by the WCRF (Section 4.4.1);
- b) a recycling booklet, Recycling Realities. Facts, Myths and Choices. (Fairest Cape Association, 1993), which includes a directory of voluntary "drop-off" depots, commercial depots

and recycling companies (Sections 3.3.2.1 & 5.2.1; Appendix D)

- c) a draft series of fact sheets developed by means of a participatory process under the researcher's guidance, which is in an advanced stage of development and to be distributed soon after the completion of this report (Section 4.5.3);
- d) posters developed by primary school children in the northern suburbs (Section 4.5.4)
- e) the translation into Afrikaans of an information brochure on how to start a recycling depot at schools, by the Tygerberg High School Land Service Movement (Section 4.5.5 & Appendix F).

Not all the above-mentioned resources were developed through participation by community members as planned. Reasons for this are discussed under the section on participation (Section 5.4.2.3). The first two resources were published by the WCRF.

(d) To describe the participatory resource development process as a case study, with special reference to the potential for using the recycling of domestic waste to meet environmental education objectives.

Chapter 4 described the research process as a case study of the initiation of a number of small-scale participatory project and resource development initiatives for the recycling of domestic waste in the Cape Peninsula. The processes which were started through the research seemed to have the potential for ongoing and productive resource development. The potential was not fully explored, because the research was terminated by the departure of the researcher at a stage when more workshops, facilitated by the researcher, seemed necessary to ensure ongoing communication between various roleplayers (municipalities, recycling industries, NGO's and school groups). It could, for example, have been very productive to bring the four groups from the four workshops held (Sections 4.3, 4.5.3, 4.5.4 & 4.5.5) together. At such a workshop they could have co-ordinated and possibly

combined all the suggestions and preliminary efforts into the development of one single, probably more powerful resource or set of resources.

From this study it appeared that the role of the project initiator in an ongoing development process is of the utmost importance in sustaining and broadening the networks which are established. This became clear for example, when the researcher followed up the intended meeting of the Environmental Education and Resources Unit of the University of the Western Cape with the Universities of Cape Town and Stellenbosch. At the time of the follow-up the meeting had not taken place, because the representative of the University was expecting this meeting to be facilitated by either the co-ordinator of the CRN, or the researcher.

It also became clear during the study that a participatory resource development approach takes time to develop. This was found by Ashwell (1992, p.49) as well, who observed that "Timing was seen to be a crucial factor influencing the successful introduction of such a project". In this study in the Cape Peninsula the initiation of a number of small-scale participatory project and resource development initiatives took 9 months, after which not one of the projects reached an advanced stage of development. Part of the reason might be that people first have to gain confidence in the project initiator and the process before they become actively involved. Another reason might be that both the researcher and the general public are not familiar with participatory development processes (Sections 3.3.1.14, 4.2.3 & 4.4.1) and that it would take time to get used to its implications. Finally, it is of benefit when the project initiator is already familiar with the possible roleplayers, as Ashwell (1992) also observed.

5.4 THE RESEARCH QUESTION

The research question was *In what way can projects for the recycling of domestic waste serve as a vehicle for environmental education?*

Based on this research it seems that projects for the recycling of domestic waste can indeed serve as a vehicle for environmental education. To explain this conclusion, the rest of this chapter is devoted to examining aspects of recycling projects which lend themselves to being good media for environmental education, as highlighted by the results of this study.

5.4.1 MAKING RECYCLING PROJECTS WORK

One of the most important aspects of a successful recycling project from an environmental education perspective, is that it should function effectively. However, it became clear that there was no single recipe for the organisation of a successful recycling scheme. Circumstances affecting the recycling of domestic waste in every municipal area are unique (Section 4.2.4), both in areas where recycling is already actively organised or where it could potentially be organised. What one municipality is doing in terms of recycling could not be done by another municipality, because their circumstances differ. The circumstances referred to here include all the social, economic, political, biophysical and demographic aspects of a particular community. For example, the representative of the Goodwood Municipality explained that it benefitted the Town Council to support recycling initiatives, because of financial savings involved (Section 3.3.1.3). Opposed to the latter, was the Gugulethu Municipality with circumstances which prevented it from taking part in any recycling projects, because at that stage the representative regarded housing as a priority in his municipal area (Section 3.3.1.8).

Unique contextual circumstances should, therefore, be taken into account when developing a project (or educational resource materials). There are, however, a few general points to consider for making recycling projects work effectively, e.g., involving the local authorities (Section 5.4.2.1), efficient co-ordination of activities (Sections 5.4.2.1 & 5.4.2.2), the need to provide financial incentives (Section 5.4.2.4) and the involvement of school principals at school recycling depots (Sections 3.3.2.5, 5.4.2.6 & 5.4.2.7).

It is important that the local authorities be involved in recycling projects because they are responsible for the removal of household waste in municipal areas. Their involvement partly addresses the co-ordination of activities, which is essential for a recycling project to function successfully (Van der Merwe, 1980). Other roleplayers such as recycling industries and NGO's are also responsible for a certain level of co-ordination. This is supported by Adler (1990) who argues for a genuine and sincere commitment from the local authorities to foster community response and co-operation. Furthermore, the Agenda 21 document drawn up at the 1992 United Nations Conference on Environment and Development, suggests that

local authorities should enter into a dialogue with their citizens, local organisations and private enterprises and adopt a 'local Agenda 21'. It is hoped that by 1996, most local authorities should have undertaken this consultative process and achieved consensus (Wynberg, 1993, p. 75).

The research as well as the literature (Adler, 1990) showed that participants would like to benefit financially from recycling schemes, and that the provision of incentives contributes to the success of such projects. At the time of the research there was not a strong commitment to the wise use of natural resources amongst the general public in the Cape Peninsula. The researcher argues that an emphasis on financial incentives could have educational implications if educational efforts to stimulate the development of an environmental commitment, could accompany the financial emphasis of recycling projects.

In most cases the parents of the school children were operating the school recycling depots, without active participation of the school children, teachers and principals. Although these depots functioned well, the involvement of school principals at these depots could have made it easier, especially in terms of logistics, for teachers and school children to participate in the organisation of the depots, because of the managerial function the principals fulfill at the school.

5.4.2 KEY POINTS EMERGING FROM THE REVIEW AND THE CASE STUDY, HIGHLIGHTING THE EDUCATIONAL POTENTIAL OF RECYCLING PROJECTS

Analysis of the research data revealed the following key points which elucidate the research question. (The key words regarding the educational potential of recycling projects are printed in bold).

5.4.2.1 The importance of the role of the local authorities - opportunities for socially critical analysis

A **critical analysis of the function of the various roleplayers** in the recycling of domestic waste by the broader community has important implications for environmental education. Such an analysis is a form of social education which enables different sectors of the community to think critically about their own contribution and that of others to the improvement of their environment.

The local authorities are the main agencies for the collection and disposal of household waste. They are, therefore, uniquely placed to develop and encourage the recycling of this waste, e.g. through source separation (LARAC/NCVO, 1988). Principle 8 from a declaration developed at the United Nations Conference on Environment and Development (UNESCO-UNEP, 1992) argues for the achievement of sustainable development and a higher quality of life for all people, through local governments reducing and eliminating unsustainable patterns of production and consumption and promoting appropriate demographic policies. Following a critical approach to environmental education, with a view to making the recycling of domestic waste an educational venture, it is important to explore the role of the local authorities.

The research revealed that certain local authorities do not recognise their responsibility for the recycling of domestic waste. At times they seemed to be shifting their responsibility when they were involved or expected to be involved in recycling projects. Some municipal representatives, e.g. from Goodwood and Parow, indicated that local authorities regard themselves as

"service organisations" which need only react to requests from the ratepayers. One municipal representative present at the workshop hosted by the Goodwood Municipality stated the following:

As die verbruiker tevrede is met 'n duur tarief ten opsigte van rommelverwydering, dan gee ons dit vir hom. Dit hang net af wat die verbruiker wil hê (Interviewee 29).

This affirms that the local authorities have a responsibility towards the ratepayers, but the statement indicating that the municipality will only react on the request of their ratepayers, might be an indication of the shifting of the responsibility for environmental care.

Another facet of socially critical environmental education would be the exploration of exactly where this responsibility lies. Exploration of various aspects, such as the extent to which the local authorities are prepared to take responsibility and to what extent they communicate to the rest of the community that they are service organisations, as well as their motivation for participation in recycling schemes, would be possible in socially critical environmental education.

The researcher would contend that if the local authorities indeed regard themselves as 'service organisations', then they are certainly not communicating that strongly enough to their ratepayers. The majority of ratepayers do not necessarily regard them as 'service organisations' of which they need to make more pro-active use. This has implications both for environmental education and for educational materials. In education for the environment, political literacy, decision making and collaborative action taken at a local level are important objectives (Sections 1.5.1 & 1.5.4). For learners to become involved in recycling projects and to be able to do so successfully, they would have to understand how they would be able to make use of their 'service organisations', namely, the municipalities. This means that there needs to be better communication between the municipality and the ratepayers. The research workshop hosted at the Goodwood municipality, involving

local authorities, voluntary recycling organisations and recycling industries was an example of the kinds of initiatives which are needed. Additionally, it has implications for **educational resource materials**, because these materials need to **explore the functions of the various roleplayers.**

Such an exploration was intended at the first workshop hosted by the Goodwood Municipality, where five representatives of four different municipalities were present. The workshop as well as interviews with several municipal representatives in the Cape Peninsula, revealed that municipal officials could only act on approval of the City Council who employs them. It would thus seem that City Councils should be directly involved in the management of the recycling of domestic waste, to accomplish better involvement and co-ordination between them and the local authorities regarding the organisation of recycling projects. Better co-operation with the local authorities, ratepayers and voluntary recycling organisations could also be accomplished. This ignorance of power to act independently could also imply that the municipalities use their City Councils to shift at least some of their responsibility in the recycling enterprise.

In socially critical action research it is often the facilitator who first raises these kinds of issues which could turn a practical action research project into a socially critical one (Tripp, 1990). The various above-mentioned aspects were not raised in this action-oriented study, because most of them became apparent only upon reflection on the results (Section 6.4). This does not mean that it does not have implications for environmental education. For example, a **teacher and pupils** attempting to use recycling in environmental education for the environment, could, as a result of this observation of the researcher, **critically explore these already identified aspects.**

An example of how this statement of a municipal representative (p. 89) and the attitude which it reflects could have been used in an educational situation, is a suggested workshop with the group of secondary school pupils from the Land Service Movement of the Tygerberg High School, representatives of the Parow,

Goodwood and Bellville Municipalities, as well as northern suburbs ratepayers. An exploration of the statement would be a valuable workshop exercise in which the pupils, ratepayers and the local authority representatives could discuss the role of both the local authorities and the ratepayers in the recycling of domestic waste. Special reference could be made to the notion of the local authorities being 'service organisations' which only acted on requests of ratepayers. In the suggested workshop reference could also be made to how the different roleplayers view their respective functions, which should form part of the **communication** amongst them. The educational implication is that the ratepayers should know that the municipalities see themselves as service organisations, and that the pupils will develop '**political literacy**'. The ratepayers should know how to use a service organisation to mutual benefit. The critical exploration of the responsibility of all people concerned in the recycling process would have educational value, in that it will provide an opportunity for the pupils to develop critical independent thinking. This is one of the foremost aims of environmental education (Robottom & Hart, 1991).

During this study, especially during the interviews and as a result of personal communication with various participants, the researcher perceived that certain people representing recycling industries had vested interests in the recycling of domestic waste. School children would have a much better insight into the **functioning of real life issues** if they had the opportunity to explore these vested interests in the context of the social, political and historical background of domestic waste recycling in the Cape Peninsula.

The following serves as an example from the case study, of the kind of issue which will be raised when an environmental educator takes a socially critical approach to education through a recycling project. In reviewing the current recycling initiatives in the Cape Peninsula, the researcher interviewed an individual who was known to have disrupted the co-ordination of recycling activities in the Cape as a result of historical and personality factors and vested interests (Jenman, 1993, pers.

comm.). This person was identified as constraining the recycling initiative, but the researcher was not in a position to discuss this with any of the participants in this study at any workshop or meeting. It was not feasible, because this powerful individual could have taken action against the researcher. These are the kinds of constraints that the teachers and pupils will encounter if they start doing socially critical environmental education. They perhaps need to learn that such **vested interests exist**, and need to learn how best to address environmental problems despite these kinds of constraints.

5.4.2.2 Short-term perspectives on the part of local authorities: educational implications

The development of **critical thinking and problem-solving skills** through a variety of practical and interdisciplinary learning experiences which focus on **real-world problems** and involve the study of a **wide range of sources and types of information**, are elements of education for the environment (Fien, 1993). Recycling lends itself to just such critical exploration. In the case of the research project, the **short-term perspectives** of the **municipal representatives** could have been critically explored. Throughout the study there were examples of municipal representatives with short-term perspectives, such as the group of city engineers present at the first workshop (Section 4.3) who argued that there was no urgent need for the organisation of recycling of domestic waste by local authorities, because there are sufficient landfill sites available for the next 15 to 20 years. The impression is that the engineers and town planners are not planning for the longer-term, or bearing the future quality of the environment and the quality of life of its inhabitants in mind. The view of a city engineer that "We can't help the environment as it is" confirms this impression. Although some of the municipalities do take part in recycling schemes, this quote also suggests that some of the local authorities display a lack of an ecological perspective on the issue of effective waste management. The latter included refuse removal and disposal as well as the alternatives, such as re-using, reducing or recycling waste.

People with such a short-term perspective often hamper the initiation of projects for the recycling of domestic waste by simply ignoring the **possibilities** which **active participation** in such schemes offers. The researcher argues that recycling is a suitable field to develop critical thinking and problem solving skills. Critical analysis of the role of the local authorities in the recycling of domestic waste and the short-term perspectives on their part could have been employed by, for instance, the Land Service Movement of the Tygerberg High School. Such an analysis was not done, because of time constraints on the part of all parties concerned (researcher, local authority representatives and representatives of Land Service Movement), the difficulty of organising such workshops (Section 5.2.4), as well as the absence of a socially critical perspective on the part of the other research participants. The constraints which prevented the researcher from employing such a critical analysis with the Land Service Movement should not necessarily always be present in recycling initiatives. Thus, such constraints should not hamper the use of recycling projects for **socially critical** environmental education.

The above discussion indicates that a potential exists to **explore environmental education amongst the staff** of the local authorities. The representatives of Parow, Gugulethu and Milnerton Municipalities mentioned at three different occasions (Sections 3.3.1.4, 3.3.1.8 & 3.3.1.12) that a need exists for environmental education directed towards municipal officials. Thus Interviewee 1 stated: "Our employees need to be educated". This might, or might not, be addressed through the development of educational resource material. The latter should be debated through participation, involving the local authority representatives.

5.4.2.3 Participation and constraints on participation in recycling projects

Participation

It has been argued that the particular role and educative component of participatory research lies in the process of

mobilisation of people to collectively create new knowledge about themselves and their own reality (Hall, 1981). According to the Brundtland Report (World Commission on Environment and Development, 1987), a new approach to development must, of necessity, include "the promotion of local participation in decision-making" (p.38). Principle 10 of the 1992 Declaration on the Environment and Development declares that environmental issues are best handled with the participation of all concerned citizens, at the relevant level (UNESCO-UNEP, 1992).

However, participatory approaches such as participatory project and resource development seemed to be a foreign concept to some of the participants (Sections 3.3.1.14, 4.2.3, & 4.4.1). The contradictory statement made by the representative of the Simon's Town Municipality (Section 3.3.1.14) pointed to a limited understanding of participation. If the representative had understood the concept of participation, he would have planned to share his ideas with the ratepayers from the start of the recycling project and he would have been amenable to their ideas and needs as well. The contradiction became clear when he also argued that he actually would obtain consensus amongst the participants at an early stage. Another example was the NSRNC's suggestion of a conventional approach to resource development, after the researcher had called for ideas for participatory development projects (Section 4.4.2). This might reflect a **limited awareness of the value of participatory processes** in our society.

Based on the experience the researcher had during the research project, **the role of the project initiator** in establishing initial co-ordination and continuity of activities seems very important. The project initiator should be able to be involved with the process closely to ensure the continuity which seemed important to ensure that such a study would reach an advanced stage, during which time development of resource material could contribute to environmental education **for the environment**. Facilitation of the process cannot solve the problems, but it can illustrate and expose them.

The research indicated that a sense of involvement and ownership were issues which possibly created a favourable atmosphere for the **collaboration of activities**. These elements were present in the case of the Land Service Movement of Tygerberg High School. Their sense of ownership of a part of their recycling project, which formed part of the research project, ensured their active involvement in the process of participation.

Participatory approaches to resource development solicit the involvement of the people to shape the development of their own resources, addressing the problems they experience and providing solutions that are feasible to them. This was illustrated in the fact sheets workshop (Section 4.5.3) when the participants decided to develop facts sheets which would suit their immediate local needs instead of redeveloping the series of draft fact sheets developed by the researcher.

Constraints on participation

The following exploration of observed constraints on the roleplayers' participation in recycling projects also reveals important implications for environmental education.

This study showed the **difficulties** involved in trying to **stimulate participatory recycling activities** (Sections 4.3, 4.4.3 & 4.5.3). In some cases of this study, people had a tendency to do things for others, instead of doing things with them, e.g. the resource development models of the CRN (Sections 5.2.1 & 5.3) and the WCRF (Section 5.3). In other cases people showed a limited understanding of what a participatory project and resource development approach entails. The representative of one commercial recycler, for example, stated that he was not really willing to attend the workshop because the idea of participation scared him (Interviewee 29). He wanted the researcher to visit his recycling business and have an interview instead. He was also prepared to be contacted whenever advice and guidance with regard to metal recycling was needed. This kind of reluctance to participate is ironic, because the approach has the potential to enable people to learn about the process whilst they are actively participating (Hall, 1981).

In the first workshop (Section 4.3), it was apparent that the researcher's agenda was not the only one. The participants also had their own agenda, through which they wanted to address their own specific needs. The researcher thought that by allowing the participants to concentrate on their agenda, participatory research was supported. The pitfalls of following a different agenda than planned only emerged upon reflection on the process. The **change of agenda** resulted in the important question "Why do the municipalities and industries not see co-operation amongst themselves as important?", not being asked. Reflection on this event leads to the **critical evaluation of the role of the researcher** as a participant in the research and workshops. Participatory research does not deprive the researcher of having an agenda as well. In this case, the researcher could have divided the workshop into two sessions, addressing the sharing of experiences during the first half. In the second half of the workshop the researcher's question: "Why is there not co-operation amongst the groups?" could have been discussed. In this way the researcher's agenda as well as the agenda of the participants would have been addressed and people would have gained from each other's experiences.

Another aspect of community participation is that it seems to be a **slow and long-term process** (Section 4.1). The researcher did not anticipate the length of time needed for the short-term data gathering phase she had planned, because she learned by reflection that she had underestimated the slowness of the various processes involved in the research. The gaining of confidence amongst the participants taking part in a participatory process, which is an integral part of this process, only happens over a long period of time. The workshops with the Tygerberg High School Land Service Movement served as an example (Section 4.5.5). During the first workshop the children were still uncommunicative, but after they got to know the researcher and the background to the research, they communicated much more easily during the second workshop. The reluctance of the representative of a recycling industry (Section 4.2.3), for example, to become involved in the participatory approach, led to the insight that involving participants takes time. It took a

long time for the respective roleplayers to get used to the idea of active participation and eventually to become involved, e.g. the teachers who worked on the development of fact sheets (Section 4.5.3). Group meetings and workshops can be used to bring people together, to encourage them to discuss issues and mobilise them to action (Boeren, 1992), but just organising such meetings take substantial time, based on the experience of trying to arrange a teachers' workshop during the course of this research (Section 4.4.3).

The researcher noticed that there was both competition and collaboration amongst the participants. The research highlighted the co-ordination of recycling activities in the Cape Peninsula as an area for investigation. This confirms Van der Merwe's (1980) recommendation that the co-ordination of recycling-related activities of relevant South African organisations needs to be addressed. Robottom & Hart (1991) also see collective action, which is usually more productive than individual efforts, as being important.

With regards to co-ordination of recycling activities in the Cape Peninsula, the representative of Sappi Waste Paper stated that his industry would be willing to participate in research workshops under certain conditions. One of those conditions was that they would not attend the workshops if the other paper recycling industries were also to be represented (Section 4.2.3.). The perception of the researcher was that there was a certain degree of competition amongst these paper recycling companies. The researcher believes that all the different roleplayers should know about each other's activities and problems with regard to the recycling of domestic waste. Boeren (1992) stated that participatory development requires considerable levels of democracy and a co-operative spirit in the community. In Brackenfell, the paper collection efforts of various schools failed because there was no co-ordination with the Mondi paper pick-up system already functioning in the area. The recycling efforts would probably have been more successful if they had been supportive of each other instead of working against each other.

For the roleplayers to work in competition can have either beneficial or detrimental effects, depending on specific circumstances. Globally, competing vested interests of individuals, groups and nations (Robottom, 1991) have resulted in deterioration of the environment. In the local recycling industry, competition amongst the different companies, e.g. the different paper companies, could be of benefit if it led to excellent public service. If schools or community organisations compete instead of co-ordinate their actions, however, the outcome would almost certainly have detrimental effects.

The perception of the researcher is that there is also a **reluctance to get involved** in such a process (Section 4.2.3.), which might be linked to vested interests and competition (Section 5.4.2.1) rather than collaboration. Sections 4.2.3 and 4.3 show that some of the recycling industries and some of the municipalities thought only of their own individual interests as opposed to the interests of all participants involved.

Participation in resource development workshops was clearly linked to the availability of time on the part of possible participants. It was very difficult to find dates and times which would suit all the possible roleplayers to attend workshops and meetings (Sections 4.3 & 4.4.3). Sometimes it was impossible to organise a meeting which everybody concerned could attend (Section 4.5.3). **Time constraints** have implications for participatory recycling and resource development projects. This will be discussed further in the section on the limited involvement of teachers (Section 5.4.2.7). Instead of organising workshops and meetings, it could be easier and more effective to communicate via a telephone and facsimile machine. The implication of this kind of communication would be that the personal meeting situation would be replaced, or might only be possible for some of the participants.

5.4.2.4 Educational implications of personal (economic) benefits of recycling

The recycling of domestic waste provides opportunities for taking an **holistic, integrated approach to education**. This is because

the benefits of recycling, as well as the analysis of environmental issues and solutions to which it lends itself, include both the **bio-physical and socio-economic spheres**. For example, recycling addresses the wise use of physical resources (Condon, 1976; Sullivan & Sullivan, 1977) and the reduction of energy required to produce goods from raw materials (Myers, 1985; Myburgh, 1990). The research also indicated that recycling has socio-economic benefits, because it creates **employment opportunities** and can be a **source of income** for the poor - a case in point is the squatters salvaging domestic waste at the Vissershok landfill site (Section 3.3.1.2). Another socio-economic benefit revealed through this study was the food which people receive for recyclables in a 'food for garbage' programme in Lingulethu West (Section 3.3.1.11).

The data also revealed that personal incentives for participation in recycling schemes are a very important aspect of the success of such schemes. The first question that many potential project participants ask upon introduction to a recycling scheme is: "What is in it for me?" Incentives such as money (Jenman, 1992; Van Heerden, 1992, pers. comm.), employment opportunities (Jenman, 1993, pers. comm.) and food (Jenman, 1993, pers. comm.; Muller, 1992) influence people to start or participate in recycling schemes. The fluctuating prices of recyclables (Sections 3.3.2 & 3.4) seems to hamper the sustained participation of people. However, in terms of the importance of monetary incentives, Vining *et. al.* (1992) found that all four communities in their study area rated this as low in importance, particularly in comparison with the importance of altruistic reasons. This opposing finding could be partly ascribed to different contextual factors between the situations in Illinois and South Africa. Another reason could also be that the USA research revealed what the people thought was right, or that it was due to a higher level of environmental (perhaps as opposed to social) awareness in that country. The researcher argues that, generally speaking and with the exception of most of the voluntary recycling organisations, incentives are important in involving the broad spectrum of the community in the South African context.

The provision of financial incentives is not only in itself a way of encouraging people to participate in recycling schemes, but it also has educational implications. When people take part in recycling schemes from which they receive financial rewards, they learn that doing something for the environment could also be of direct benefit to them. This is however the case only when they are aware that the environment is benefitting too. In this way one addresses the **multi-dimensional aspect** of the environment, which has biophysical, economic and social components (Figure 1). The relationship between development and conservation can be addressed by e.g., pointing out the financial benefits to the country of not having to import pulp and not having to plant more trees to produce new pulp, which would use more water and space. The fact that recycling of domestic waste can **directly help people**, reinforces its value as an educational medium. It is not only another 'green issue' which is addressed, but it is a 'bread and butter' issue which is **related to real life**, as other 'green issues' should come to be seen, too.

Simmons and Widmar (1990) stress that public education programmes need to build on several motivating factors, two of which are a sense of **responsible action** toward the environment and future generations, and the development of a **conservation ethic**. Because each of these factors may appeal to different people, according to these authors, **providing a mix of reasons** for recycling is desirable in any public education programme; hence the **provision of financial incentives** should not be overlooked.

5.4.2.5 Educational implications of the social development dimension of some recycling projects

O'Donoghue (1993) argues that the environment is not just plants, animals and the physical world, but also people and social structures. Figure 1 shows the environment as interacting patterns of political, social and economic activity within the biological and physical world.

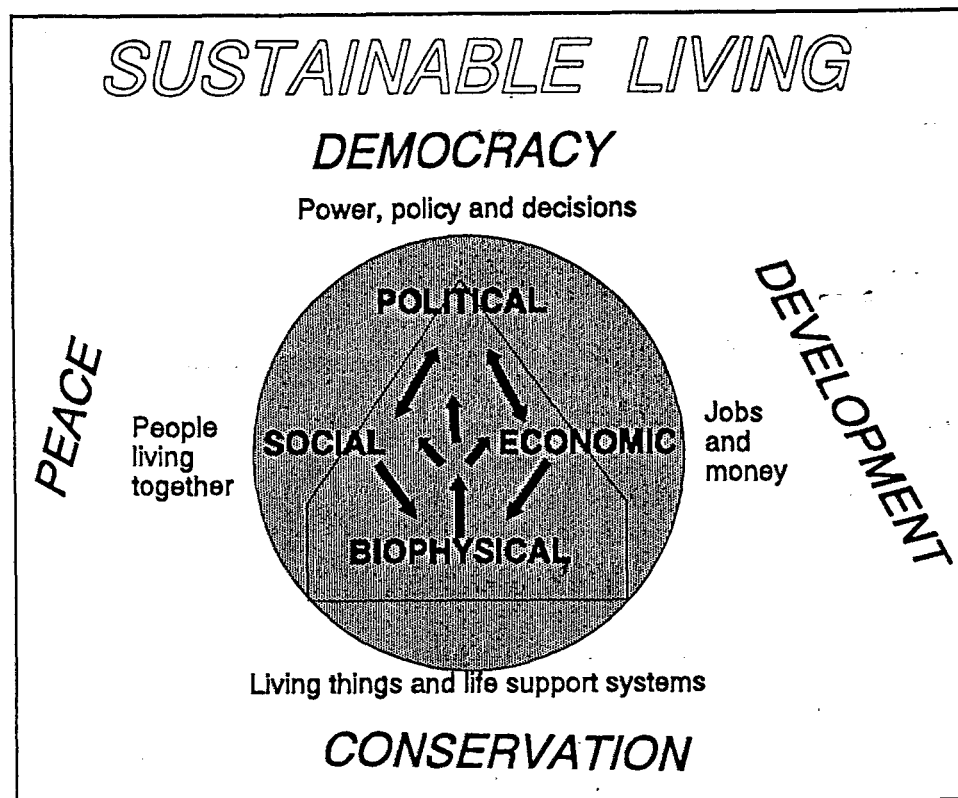


Figure 1 The environment. People and other living things within life-support systems and processes (O'Donoghue, 1993).

Voluntary organisations involved in recycling schemes are not only interested in the wise use of biophysical resources, but also in social development aspects (Section 4.2.4), such as the quality of life of participants in the schemes. This implies that voluntary organisations, the CRN in particular (Section 3.3.2.2), address a number of these **interacting patterns of political, social and economic activity**, which they regard as relevant education (Sections 5.4.2.1 to 5.4.2.8). It should be noted that it was mostly the voluntary organisations that recognised and stressed the importance of the **social development potential** of recycling projects (Section 4.2.4). The local authorities and the recycling industries did not view recycling in this light (Jenman, 1993, pers. comm.).

5.4.2.6 Educational implications of school children organising a recycling project

The review of current recycling initiatives in the Cape showed that schools are involved in the recycling of domestic waste mainly for fundraising purposes. The educational implications of recycling projects were not seen as a priority by teachers (Section 3.3.2.5). There might, however, be educational value in the children themselves organising the recycling schemes or taking some responsibility for their organisation, through which they could learn valuable life skills (Fien, 1990) such as problem solving-, action- and organisational skills, as well as responsibility and accountability (Section 4.5.5). The researcher argues that a teacher utilising the full educational potential of a recycling project would ensure that pupils are "...actively involved in environmental issues" (Fien, 1993). This would entail exploiting the potential to develop political literacy (Section 1.5.1). Unfortunately pupils are currently, only to a limited extent involved in the organisation of the recycling schemes at most of the schools in the area. More often than not the depots are run by the parents without any substantial input from the children (Section 3.3.2.5). The researcher believes participation of children in the organisation of a recycling depot, their liaising with other depots, local authorities and NGO's should be encouraged and supported by the parents, teachers, local authorities and all the other roleplayers. In this way recycling could serve as a vehicle for education for the environment (Fien, 1993). It might, however, also require active involvement from teachers. Limitations on such involvement are discussed in the next section.

5.4.2.7 Limited teacher participation

The study revealed relatively limited teacher participation in the recycling of domestic waste in the Cape Peninsula. The research project was introduced to a number of teachers at the beginning of the first term when they were, according to themselves, too busy planning their schedule for the year; thus they could not consider participation. Thereafter followed the

April school holidays and the mid-year examinations. Apart from one workshop with a few teachers in May 1993 (Section 4.5.3), the tight schedule of the teachers left hardly any time to involve them in research workshops. The conclusion, that their busy schedule limited their participation in recycling schemes, was supported by others (Kotze, 1993; Van Deemter, 1992, pers. comm.).

Experience with an environmental education project in Grahamstown led Ashwell (1992) too, to comment on a lack of teacher involvement in extra-mural projects. The time factor was, at least partly, to blame here too. Ashwell (1992, p. 49) noted that: "Teachers also stated that they could not afford the time to get involved in something they perceived to be peripheral to their immediate needs." The latter might also have been the case in this study. A teachers' workshop in the Cape Peninsula never materialised, because too few interested teachers could be identified (Section 4.4.3). A mother running a recycling depot at a school stated that: "The teachers have too much on their plates; they cannot get involved any further. The teachers do support the children though; talk about recycling and encourage the children" (Interviewee 24). The latter statement is encouraging and supports a recommendation that the **organisational aspects** are left to **pupils** and willing **parents**, while teachers use the formal curriculum to make the most of the experience with recycling, for critical analysis and reflection. An integrated approach is supported, because it allows for **syllabus-related activities** which the teachers could fit into their daily teaching programmes. The researcher suggests that a **change of educational approach** could address the limited time which prevent teachers from participating in recycling activities at schools. Schreuder (1993, pers. comm.) argued that 'hooks' exist in the syllabus on which the issue of recycling of domestic waste can be 'hung'. For Biology or General Science teachers specifically, the process of photosynthesis in plants, the water cycle and the food chain serve as examples. The discussion applies equally to primary and secondary school teachers.

In the researcher's analysis, limited teacher participation in school recycling projects was directly related to the limited teacher participation in the research workshops (Sections 4.4.3 & 4.5.3).

The participants at the first workshop pointed out that it is important to involve teachers in establishing a participatory resource development project. However, the teachers' busy schedules had implications for participatory resource development, especially when workshops were intended. If teachers do not have time for extramural recycling activities, it should be obvious that they would not be able to participate in resource development activities, specifically at workshops. It is suggested that one should then think of innovative ways of doing participatory resource development such as using facsimile machines. It was, however, based on experience in this research, impractical to expect of teachers to attend resource development workshops. The researcher perceived this to be a factor to consider in future participatory project and resource development projects.

5.4.2.8 The need for environmental education resource material

A need for environmental education resource materials of various kinds was raised on several occasions during the data gathering phase of the research (Section 3.4). The discussions also revealed educational implications of recycling which might be addressed through the development of relevant resource materials (Sections 5.4.2.1 to 5.4.2.8).

A need for Afrikaans resource material on the recycling of domestic waste, for teaching purposes as well as for general information, was identified by a number of participants in the project (Jenman, 1992; Le Grange, 1992; Sherman, 1993; Van Deemter, 1992, pers. comm.). The researcher's perception is that a lack of Afrikaans resource material could be one of the reasons for the more limited involvement in the recycling of domestic waste by Afrikaans speaking communities, reported by several research participants (Jenman, 1992; Van Deemter, 1992, pers. comm.). This is not a strong argument, however, for English is

presented as second language in Afrikaans medium schools and so most pupils and teachers should be able to utilise existing materials. A reverse explanation could also apply: there is little Afrikaans resource material available, because of the more limited involvement of Afrikaans schools and communities (Section 3.3.2.5).

This study confirmed Stevens's observation (1992) that there was a need for **information** on the recycling of domestic waste, among members of the public in the Cape Peninsula. The draft series of fact sheets on effective waste management developed by the researcher (Appendix E) was an initiative to address this need. Three workshops (Sections 4.3, 4.5.3 & 4.5.5) indicated that information which addresses the questions "How to start a recycling depot?" and "Why do we have to recycle?", in particular, was required.

O'Donoghue (1989) describes the value of a **participant-centered approach** to environmental education resource material. To illuminate this approach, two workshops from this study need to be discussed and compared. It can be argued that the fact sheets workshop (Section 4.5.3) stimulated participant-centered development of a draft series of six fact sheets. The participants were familiar with the background and context of the research project, and based the resources they developed on their own needs and insights, preferring for example not to work from an earlier draft, but to start anew. This workshop had the potential to initiate an ongoing participatory process in which the current drafts of the fact sheets could be redeveloped, for example for use in other geographical areas and to accommodate the different circumstances in the different municipal areas. In contrast to this fairly successful (in terms of a participant-centered approach) workshop, was the workshop held with the primary school children (Section 4.5.4). Upon reflection, the latter can be regarded as a 'pseudo-participatory' process. To start with, the children were not able to develop their resource material within the context of the research. They had only a limited background to the rest of the project. Thus the resource material developed by the children was done in isolation; in a

'once-off' event removed from the rest of the project, and thus contributing very few insights to the research question. It is also doubtful whether their involvement in the workshop was a particularly learning- or meaningful experience for them.

Material on **teaching activities** to supplement the information materials was identified as another kind of educational resource material needed, at the meeting with the WCRF (Section 4.4.1), as well as at the fact sheets workshop (Section 4.5.3). In this regard, the fact sheets on effective waste management (Section 4.5.3; Appendix E) have much potential to be redeveloped into activity sheets, which might support the syllabus-related approach for utilising the educational value of recycling, recommended here. The availability of such resource material can assist teachers in using the theme of recycling to enhance their teaching. Then recycling need not be regarded as an extramural activity taking up precious time, but as a syllabus-related topic.

The WCRF, CRN and the FCA had decided that a **poster on effective waste management** would address the observed need for educational material regarding the recycling of domestic waste (Section 4.4.1). It became apparent that the representatives of these two organisations had particular ideas about educational materials and how they should be developed. They had a fairly limited understanding of participatory project and resource development and its underpinnings, because they had not been exposed to the debates on RDDA versus participatory resource development (Robottom, 1987a & b; O'Donoghue, 1989; O'Donoghue & Taylor, 1988). The researcher perceived that their approach implied that more information would obviously lead to awareness of the specific topic addressed, and that such awareness was the ultimate aim. The researcher contributed input from recent environmental education theory and examples, e.g. the water cycle poster (Urban Foundation Primary Science Project Western Cape & Cape Nature Conservation, 1992) which had been developed on a participatory basis. The researcher explained to the members of the WCRF (Section 4.4.1) that the poster on effective waste management had the potential to be developed through a

participatory resource development process to form part of an educational resource package which could include the fact sheets, activity sheets and a proposed video on recycling. Developing the poster for multiple purposes, for example as a worksheet or puzzle, could broaden its educational value to a wider range of learning opportunities.

Resources have to be developed according to **local needs**, as discussed below. It was pointed out by participants that every community is different and has its own unique circumstances. People from different areas have different needs; for example, the people from affluent areas do not feel the same need for re-using certain household items as would people from informal settlements. These factors would influence the kind of educational resource material they would need to practice education for the environment. Practical experience led O'Donoghue (1993, pers. comm.) to suggest "work with existing material and redevelop that for local needs". An exploration and enhancement of what one already has, knows and does, specially in the case of teachers, creates an empowering process of reflective deliberation, during which refinement of perspectives and the development of critical skills can take place (O'Donoghue, 1989). Ashwell (1992) pointed out that local redevelopment of resources is a relatively new approach in environmental education. She emphasised the social and educational value of this kind of approach:

Involving users of a resource in its local redevelopment enhances their **understanding** of the resource and issues relating to its development. Involving a range of participants in the process helps to **establish a local network** providing both expertise and community support for the project (Ashwell, 1992, p.73).

The adaptation and redevelopment of resources to local needs is also advocated by O'Donoghue & McNaught (1989).

5.4.3 CONCLUDING REMARKS

From the discussions in this Chapter it became clear that there are several ways in which projects for the recycling of domestic

waste can serve as a vehicle for environmental education. The conclusions and recommendations regarding the research question are consolidated in Chapter 6. Evaluation of the research is also done in the same Chapter, in terms of the importance of a reflective case study.

CHAPTER 6

CONCLUSIONS, RECOMMENDATIONS AND EVALUATION OF THE RESEARCH

This chapter aims to consolidate the research findings by drawing conclusions, making recommendations and evaluating the study.

6.1 ANSWER TO THE RESEARCH QUESTION

The aim of the research was to describe the research process as a case study of the initiation of a number of small-scale participatory project and resource development initiatives for the recycling of domestic waste in the Cape Peninsula. The researcher considers that this aim has been reached, because the data gathered revealed information and perceptions which has implications for environmental education in the Cape Peninsula and the planning of similar future projects in the study area. The research question was *In what way can projects for the recycling of domestic waste serve as a vehicle for environmental education?* Key points which emerged from the review and case study and which elucidated the research in terms of the research question, were the following:

- 1) The importance of the local authorities - opportunities for socially critical analysis of the responsibilities of various roleplayers;
- 2) Short-term perspectives on the part of local authorities - opportunities for development of critical thinking and problem solving skills;
- 3) Participation and constraints on participation in recycling projects;
- 4) Educational implications of personal (economic) benefits of recycling;
- 5) Implications for holistic or broad education, in the social development dimension of some recycling projects;
- 6) Educational implications of school children organising a recycling project;
- 7) Limited teacher participation;
- 8) The need for environmental education resource material.

The case study indicated that recycling activities have excellent potential for education for the environment, i.e. socially critical, broad, integrated education. This potential could be addressed by exploring the above-mentioned key points, and should be recognised, expanded and advocated.

A critical analysis of the function of the various roleplayers in the recycling of domestic waste by the broader community can have important implications for environmental education, because it is a form of social education which enables different sectors of the community to think critically about their own contribution and that of others to the improvement of their environment. Recycling lends itself to the development of critical thinking and problem-solving skills, e.g. through a critical exploration of the short-term perspectives of some of the municipal representatives, and of the responsibility of all people concerned in recycling.

The objectives for education for the environment, e.g. political literacy, decision making and action taking at a local level in a collaborative manner can be addressed through taking part in recycling projects. The socially critical exploration of the vested interests of some participants in recycling projects has educational implications if it is done in the context of the social, political, economic and historical background. Participants in recycling projects have the potential to be involved in, and to explore, interacting patterns of political, social and economic activity.

The constraints to participation in recycling projects and resource development were explored and revealed important implications for environmental education. The constraints to participation, which can also be explored through socially critical environmental education, include the competition and the tension between competition and collaboration among the various roleplayers, the time constraints involved and the shifting of responsibility for the recycling of domestic waste on the part of the local authority representatives.

The educational implications of involving school children in the organisation of recycling projects might include learning valuable lifeskills, e.g. problem-solving, action- and organisational skills, as well as responsibility and accountability.

Recycling of domestic waste lends itself to a participant-centered approach to environmental education resource material, developed according to local needs (O'Donoghue, 1989). A need for environmental education resource materials of various kinds was raised at several occasions during the data gathering phase of this study. Examples included a need for Afrikaans resource material, material addressing the information needed on the recycling of domestic waste, and material on teaching activities to supplement the information materials. The educational resource materials, the development of which were initiated, partly initiated or supported during this project, were a poster on effective waste management, a recycling booklet, a draft series of fact sheets, posters developed by primary school children and the translation into Afrikaans of an information brochure on how to start a recycling depot at schools.

In conclusion the study showed that the recycling of domestic waste has the potential to be enquiry-based, participatory-based, practice-based, community-based, critical and collaborative.

6.2 REFLECTIONS ON PARTICIPATORY PROJECT AND RESOURCE DEVELOPMENT

In this section the researcher will reflect on certain aspects of participatory project and resource development based on her experience during the research project.

In agreement with Robottom and Hart (1991), the study showed the importance of participants working together actively. The community participation in the recycling of domestic waste which has been followed in this study, has value in terms of the research approach: education for the environment (Fien, 1993).

The role of the project initiator in establishing initial co-ordination and continuity of activities seems very important.

The case of the Land Service Movement of the Tygerberg High School showed that participation, involvement and ownership creates the best atmosphere for co-ordination and collaboration of activities. It became evident that participatory resource development is a new concept to many people, and that it is a long-term process.

Complex social factors appeared to inhibit participation in the recycling of domestic waste, for example, the dividing politics which existed among some of the different roleplayers. Vested interests also appeared to have an influence on the motivations for participation.

It was found that incentives, primarily monetary ones, are an important stimulus for participation in recycling schemes. The benefits to the environment and the community were of secondary importance, but the potential exists to emphasise the latter through education and participation by the community.

The researcher believes that all the different roleplayers should know about each other's activities and problems with regard to the recycling of domestic waste, for this could result in support for each other instead of working against each other.

The research revealed that municipal staff have a short-term view with regard to the planning of domestic waste removal and that certain municipalities see themselves as service organisations reacting on requests from the ratepayers. The impression is that the town planners and engineers are not planning for the long-term with the quality of the environment and the quality of life of its inhabitants in mind.

People from different areas have different needs in terms of waste disposal. The development of resources should take such local needs into account. The above indicates that local authorities are among the roleplayers with and for whom educational resource material has to be developed.

The researcher initiated a process of participatory development of fact sheets on effective waste management and suggested the development of activity sheets to accompany the fact sheets.

The review pointed out that the educational potential of recycling is neither recognised nor fully utilised by the teaching community in the Cape Peninsula. Schools are involved in recycling of domestic waste mainly for fundraising purposes. Very little is being done in terms of educational aspects relating to the recycling of domestic waste. This can be linked to the limited teacher participation. The conclusion was made that teachers' workshops, which address environmental education as an approach to education, have an important role to play, bearing in mind the constraints which are associated with workshops, the most important of which is the difficulty of getting the relevant parties together at the same time.

A number of constraints on a participatory project and resource development approach were identified during the research. The constraints included the following:

- 1) Participants, including the researcher, do not always understand the concept of a participatory project, due to a lack of experience and a lack of exposure to such an approach;
- 2) The mere mentioning of the approach scares some people off, because it sounds unfamiliar;
- 3) The roleplayers who are willing to be part of a participatory project and resource development initiative usually do not have sufficient time to take part. Their busy work schedules do not allow for participation;
- 4) Other people, including the researcher herself, who want to become involved and who supports a participatory approach, are still trapped in more conventional approaches. An example is that one could withdraw so much from the process, in order to allow for participation from the others, that one is no longer part of the research process. Another example

is that one could foster certain expectations and if they are not fulfilled, one tends to think that the process has failed and one is not perceptive to the educational value of what has happened.

6.3 SOME PRACTICAL RECOMMENDATIONS

Based on the experiences in the Cape Peninsula a few recommendations are made, some specifically directed to the recycling of domestic waste initiated in the Cape Peninsula and others being general recommendations regarding participatory resource development as an approach to socially critical environmental education:

- 1) It is important to get to know the people with whom you want to work before attempting to involve them in the project. Working through a co-ordinator, already familiar to the community, is advisable (Sections 4.2.4, 4.2.6 and 4.2.10). This facilitates the introduction of the researcher to interested groups and individuals (Section 5.4.2.3).
- 2) People with an interest and concern for the project should be motivated to share responsibilities with the researcher. A sense of ownership of the project ensures active involvement in the process (Section 5.4.2.3).
- 3) Try and involve as many of the possible roleplayers and share with them ideas on the value of co-ordinating their activities. Co-ordination seems to be a pre-requisite for successful participation in a community project (Section 5.4.2.3).
- 4) Participatory project and resource development involves long-term processes. Therefore, it is suggested that this approach should not be considered in the case of brief studies or short-term projects. Enough time must be provided for the organisation of workshops as it is usually very difficult to find dates which suit all the participants (Section 5.4.2.3).

- 5) School children should be involved in the organisation of recycling depots at schools. Liaison with other depots, local authorities and all the other roleplayers in a community recycling project should be encouraged by the parents involved as well as the teachers. Their active involvement would lead to the learning of valuable lifeskills (Fien, 1990) e.g. the sense of organisation, responsibility and accountability (Section 5.4.2.6).
- 6) If involvement of teachers is desired, make every effort possible to invite them well in advance, preferably a year in advance, as they have to fit it into very busy yearplans (Section 5.4.2.7).
- 7) Involve the school principals in the recycling activities at school recycling depots, because this could also enhance the involvement of other teachers and school children (Section 5.4.1).
- 8) Although preconceived ideas and project schedules can form a basis for participatory research, these should be flexible (Sections 5.2.4 and 5.4.2.3). The needs identified by the community must be the focus (Section 5.4.1).
- 9) A participatory approach will fail in its aim when people feel forced to take part. Although this sometimes means that there will be fewer participants, involving people who are not really committed, can negatively affect the process (Section 5.4.2.3).
- 10) Participatory project and resource development should never be rushed. Adequate time must be provided to ensure that all relevant aspects arising can be addressed. Ignoring important matters, because of time constraints, can be very discouraging to participants (Section 4.5.4).
- 11) When information on the recycling of domestic waste is published, it needs to be in an accessible form, e.g. documented properly and this documentation should be properly referenced (Section 5.2.1).

- 12) An information management officer should be appointed at the CRN to compile, co-ordinate and disseminate the information and documentation on the recycling of domestic waste which is available at the CRN (Section 5.2.1).
- 13) The possible roleplayers who would have the capacity to implement recycling strategies should be part of educational programmes (Section 3.3.1.12).
- 14) It was recommended by the research participants participating in the facts sheets workshop that teaching activities, related to the fact sheets on domestic waste management and the syllabus, should be developed in future. The need for Afrikaans resource material for teaching purposes as well as for general information concerning the recycling of domestic waste in the Cape Peninsula identified, should be addressed by several research participants. It has been proposed in this study that one should work with existing material and redevelop this for local needs (Section 5.4.2.8).
- 15) The educational potential of the poster on effective waste management, initiated by the WCRF and the CRN of the FCA, should be further explored. Through a participatory resource development process, this poster could be developed as part of an educational package which could include the fact sheets, activity sheets and proposed video on recycling. Developing the poster for multiple purposes, for example, as a worksheet or puzzle could spread its educational value over a wider spectrum of target groups (Section 5.4.2.8).

6.4 THE IMPORTANCE OF A REFLECTIVE CASE STUDY

The participatory project and resource development process in itself did not lead to noticeable contributions to environmental education. Although not one of the projects initiated in this study reached an advanced stage, it seemed upon reflection that enough data was gathered to discuss participatory resource development, the initiation of recycling projects and the educational implications thereof. The researcher's experience was that the process of writing about the research process

disclosed various ideas which would not otherwise have come to the fore. Therefore, it is of importance to write about one's experiences and have it published as, for instance, a case study. A reflective case study is recommended, because it allows for evaluation of the research in terms of whether it was able to illuminate the research question. The approach of participatory project and resource development seemed to have certain constraints, such as being a new concept to most participants, time constraints, the slowness of various processes involved in the research, the competitive outlook of some of the participants, and the reluctance of some possible roleplayers to get involved for reasons such as vested interests and competition (Sections 5.4.2.3 & 6.2).

It was the reflection on the case study from the research perspective which was particularly important. The critical reflection on the research and the process (the case study) revealed the pitfalls, the weaknesses, the problems with and the constraints on participatory project and resource development, from which one can learn and gain educationally. The research was educational for both the researcher and the participants, because the researcher managed not to only learn about people and environmental education, but to a certain extent, to come to know **with** the participants the complexity of the reality which challenges us.

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PERSONAL COMMUNICATIONS

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APPENDIX A**INTERVIEW SCHEDULE: TO GAIN AN OVERVIEW OF CURRENT INITIATIVES
FOR RECYCLING OF DOMESTIC WASTE IN THE CAPE PENINSULA: AIMED AT
MUNICIPALITIES AND VOLUNTARY ORGANISATIONS****INTRODUCTION**

Good morning/good afternoon. My name is Engela Gobrechts. I am an environmental education officer at the Gold Fields Environmental Education Centre at Cape Point. I am involved in a research project in partial fulfilment of a Masters degree in environmental education at Rhodes University. The research deals with the recycling of domestic waste in the Cape Peninsula with special reference to the implications for environmental education. As part of the project I would like to review the current initiatives for recycling of domestic waste in the Cape Peninsula through telephonic interviews with identified key people in the field. Through the interviews I would also like to choose representatives from a particular municipal area who would be willing to participate. Participation would involve attending six workshops and taking part in group interviews at the workshops during the months October and November 1992 and January 1993.

I have included your organisation because I believe that you have already started a recycling scheme\that you might have started a recycling scheme\that your organisation is in a good position to be able to initiate a recycling scheme. Would you be the person in your organisation to speak to?

If yes:

Would you please be so kind as to allow me to have a telephonic interview lasting about 15-20 minutes with you? If it is inconvenient right now, can we arrange a time during this week which would suit you best? (Arrange time). Thank you.
Goodbye\ (Proceed with interview).

If No:

Could you possibly please give me the name of the person in your organisation who will be in the best position to provide me with the relevant information? (Obtain relevant name and phone number). Thank you. Goodbye.

PERSONAL DETAILS:**NAME:****ADDRESS:****TEL. NO.:****ORGANISATION:****POSITION IN ORGANISATION:**

1

Do you play a key role in the organising of a project such as recycling of domestic waste in your organisation?

*** Yes**

If yes: Have you organised a recycling scheme within your community?

If yes: When did you start the programme?

How successful is it at the moment?

What do you consider as the most important problems that you have encountered so far?

How do you think you can overcome the previous?

If no: Are you planning to organise
a programme in future?

If no: Why not?

Thank you for your time.

Goodbye.

If yes: (Proceed with remainder of
interview).

* No

2

Are you aware of any other recycling schemes functioning in the
Cape Peninsula?

* Yes

If yes: Does your organisation participate in that
programme?

* **Yes:** Since when has your organisation been part of
that programme?

* No

* No

3

Which of the following steps have you addressed/would you address
in setting up a recycling scheme? Please answer yes/no to the
following (Name them; choose)

- * Achieve an early consensus among all participants involved
- * Accomplish a positive public image
- * Secure strong local and government backing
- * identify decision makers and influential persons whose
support will be necessary
- * Explore alternatives
- * Seek professional advice

4

Which of the following are participating in your recycling scheme? Please give full details, e.g. state locality of people involved, contact person etc. (Name them; choose)

* people from the more affluent societies

* people from the lower income groups

* both

* other (Name them)

5

Are you using/would you use (choose one)

* a voluntary recycling scheme

* a mandatory recycling scheme?

6

How do you/would you collect the recyclables? (open-ended)
(CHECK)

* curbside collection

* drop-off system at identified depots

* other (name)

7

Do the participants themselves sort the waste? (direct)

* Yes

If yes: How do they sort it? (open-ended)

* No

If no: Who does it?

Where does it get done?

8

How are the recycling facilities marketed in your area? (open-ended)

9

Do you think that there is a market value for the following commodities? Please indicate how you would rate the value of each, e.g. good, fair or poor. (Name all)

	(CHOOSE)	Good	Fair	Poor
* Glass				
* Aluminium				
* Plastic				
* Paper				
* Scrap metal				

10

Is/would the private business sector (be) involved in your recycling scheme? (direct)

* Yes

If yes: Who are involved? Please give details.
(Names)

How are they involved?

* No

If no: Why not?

11

Do the local recycling groups get official public recognition for their recycling efforts? (direct)

* Yes

* No

12

Have you been using/would you use any of the following as positive reinforcements in your programme: (Name all; choose)

* raffle tickets

* coupons

* contests

* public commitment approaches e.g. verbal\written

* monetary awards

* none of the above

* other (name)

13 (only to those already involved in a project)

Have you informed the community about what is expected of them in the recycling of domestic waste? (direct)

* Yes

If yes: Which strategy have you used? (open-ended)

(CHECK)

* Pamphlets

* Brochures

* Speeches by city officials to schools/local groups

* Special educational programmes in local schools about recycling

* Newspaper advertisements

* Other (Name)

No

If no: Why not?

14

Have you utilised/would you utilise the press to advertise your recycling campaign? (direct)

*** Yes**

If yes: At what stage of the campaign? (open-ended)

(CHECK)

- * Planning stage
- * When project was in full swing
- * End of project
- * Other (name)

In brief, what have you published?

*** No**

If no: Why haven't you used the newspaper to help promote the campaign?

15

Do you/would you emphasise public education in your recycling efforts?

*** Yes**

If yes: In which way has your community placed emphasis on public education?

*** No**

If no: Was there/would there be any particular reason why you have/would not emphasize public education with regard to recycling?

16 (to those involved as well as not already involved in projects)

Are the officials involved in the recycling programme (do you think the officials involved in the recycling programme should be) educated about and prepared to confront current environmental issues?

* Yes

* No

17

Please state briefly (3 sentences) how the people in your community went about setting up a recycling scheme.

18

What are some of the effective methods that you have used /would use to ensure participation in a recycling programme? (open-ended)

(CHECK)

- * Set up a management plan
- * Set up goals
- * Have a recycling co-ordinator
- * Provide public with different containers
- * Other (Name)

19

Has the community been/would the community be involved in the decision making and policy making regarding the recycling scheme in your community?

* Yes

If yes: Why?

How successful was it?

*** No**

If no: Why not?

20

Would you be interested in trying to implement a community participatory approach to recycling of domestic waste in your community which would entail the development of educational resource material under my guidance ? Before you answer, let me briefly sketch the particular approach. A community participatory resource development approach encourages community involvement by allowing a community to identify their own needs and to attempt to solve their own problems. People, information and material resources can be mobilised through this approach, which also encourages networking. The process has the potential to lead to ongoing development of people and resources, by providing learning opportunities which foster human, social and environmental development.

*** Yes**

If yes: What do you consider as the advantages for your community?

Thank you for your time. It is much appreciated. If you are chosen to act as a participant in the workshops you will hear from me soon. Goodbye.

*** No**

If no: What do you consider as the disadvantages in your own community?

Thank you for your time. It is much appreciated. Goodbye.

APPENDIX B

**INTERVIEW SCHEDULE: TO GAIN AN OVERVIEW OF CURRENT INITIATIVES
FOR RECYCLING OF DOMESTIC WASTE IN THE CAPE PENINSULA: AIMED AT
THE PRIVATE ENTERPRISE SECTOR****INTRODUCTION**

Good morning/good afternoon. My name is Engela Gobregts. I am an environmental education officer at the Gold Fields Environmental Education Centre at Cape Point. I am involved in a research project in partial fulfilment of a Masters degree in environmental education at Rhodes University. The research deals with the recycling of domestic waste in the Cape Peninsula with special reference to the implications for environmental education. As part of the project I would like to review the current initiatives for recycling of domestic waste in the Cape Peninsula through telephonic interviews with identified key people in the field. Through the interviews I would also like to choose representatives from a particular municipal area who would be willing to participate. Participation would involve attending six workshops and taking part in group interviews at the workshops during the months October and November 1992 and January 1993.

I have included your organisation because of your involvement in the processing of recyclable material. Would you be the person in your organisation to speak to?

If yes:

Would you please be so kind as to allow me to have a telephonic interview lasting about 10-15 minutes with you? If it is inconvenient right now, can we arrange a time during this week which would suit you best? (Arrange time). Thank you.
Goodbye\ (Proceed with interview).

If No:

Could you possibly give me the name of the person in your organisation who will be in the best position to provide me with the relevant information please? (Obtain relevant name and phone number). Thank you. Goodbye.

PERSONAL DETAILS:

NAME:

ADDRESS:

TEL. NO.:

ORGANISATION:

POSITION IN ORGANISATION:

1

Could you please indicate briefly your involvement in current recycling schemes with regard to domestic waste in the Cape Peninsula and with special reference to the municipal areas as well as communities in the Cape Peninsula.

2

Could you please indicate why you are taking part in the scheme(s) mentioned above.

3

Would you be interested in trying to implement a community participatory approach to recycling of domestic waste in the communities of the Bellville, Parow and Goodwood municipal areas which would entail the development of educational resource material under my guidance ? Before you answer, let me briefly sketch the particular approach. A community participatory resource development approach encourages community involvement by allowing a community to identify their own needs and to attempt to solve their own problems. People, information and material resources can be mobilised through this approach, which also encourages networking. The process has the potential to lead to ongoing development of people and resources, by providing learning opportunities which foster human, social and environmental development.

*** Yes**

If yes: What do you consider as the advantages for your organisation?

Thank you for your time. It is much appreciated. If you are chosen to act as participant in the workshops you will hear from me soon. Goodbye.

*** No**

If no: What do you consider as the disadvantages for your own organisation?

Thank you for your time. It is much appreciated. Goodbye.

APPENDIX C

Summary of discussion points from WCRF strategy workshop on 24 March 1992. Extract from Forum Strategic Plan (Western Cape Recycling Forum, 1992).

WESTERN CAPE RECYCLING FORUM		APPENDIX C PAGE 1		
STRATEGIC PLAN 1992 - 1995				
SUMMARY OF DISCUSSION POINTS FROM STRATEGY WORKSHOP ON 24 MARCH				
INDUSTRY :	GLASS	PAPER	PLASTIC	OTHER
INDUSTRY DATA				
INDICATE APPROXIMATE TONNAGE CURRENTLY BEING RECYCLED IN SOUTH AFRICA	106000	600		
IN THE WESTERN CAPE	15000	130		
WHAT PERCENTAGE DOES THIS REPRESENT OF TONNAGE CONSUMED ANNUALLY ?	68	33	17	
IS THIS % LIKELY TO CHANGE OVER THE NEXT 5 YEARS ?	YES	YES		
IF SO , BY HOW MUCH AND WHY ?	TO 72 % Increased public awareness Growth in domestic market	TO 40 % Consumer pressure Legislation Natural growth Investment		
INDUSTRY :	GLASS	PAPER	PLASTIC	OTHER
SOURCING				
ESTIMATE CURRENT PERCENTAGE OF MATERIAL SOURCED FROM VOLUNTARY COLLECTION GROUPS	5	UNKNOWN	85	
COMMERCIAL COLLECTION AGENCIES	10	UNKNOWN	5	
BIG INDUSTRY	80	UNKNOWN	10	
MUNICIPALITIES AND CIVIC AUTHORITIES	5	UNKNOWN		
OTHER SOURCES		UNKNOWN		
IS THIS MIX OF SOURCES ACCEPTABLE ?	yes	UNKNOWN		
IF NOT,WHAT WOULD BE THE IDEAL MIX ?		UNKNOWN		

STRATEGIC PLAN 1992 - 1995

SUMMARY OF DISCUSSION POINTS FROM STRATEGY WORKSHOP ON 24 MARCH

INDUSTRY :	GLASS	PAPER	PLASTIC	OTHER
VOLUNTARY COLLECTION GROUPS				
IS THEIR RELATIVE CONTRIBUTION TO THE WASTE SUPPLY LIKELY TO INCREASE OR DECREASE OVER THE NEXT 5 YEARS AND IF SO BY HOW MUCH ?	YES	YES	DONT KNOW	
WHAT ARE THE STRENGTHS AND WEAKNESSES OF THE DEPOT SYSTEM ?		STRENGTHS Enthusiasm Voluntary Low cost Educational impact WEAKNESSES Holidays Space Continuity Cosily Mixed quality		Inconsistent
WHAT MORE CAN THE INDUSTRY DO TO ASSIST THE DEPOTS ?	Start new ones	Better co - ordination Central collection	Encourage schools to buy plastic Educate	Contract prices
HOW EXPENSIVE IS THIS SOURCE ?	Expensive	Expensive		Cheap
HOW ARE PRICES SET FOR THIS MATERIAL ?	Rel to raw material	Individually by demand		
SHOULD THE PRESENT PRICING STRUCTURE BE CHANGED AND IF SO HOW ?	NO	NO		
DO WE NEED MORE SCHOOLS ?	YES			YES
WHAT SHOULD THE DEPOTS BE DOING DIFFERENTLY ?	More accessible	NEED MORE		Buy in centres
INDUSTRY :				
COMMERCIAL COLLECTION AGENCIES				
IS THEIR RELATIVE CONTRIBUTION TO THE WASTE SUPPLY LIKELY TO INCREASE OR DECREASE OVER THE NEXT 5 YEARS AND IF SO BY HOW MUCH ?	NO			
WHAT MORE CAN THE INDUSTRY DO ?	NIL		Support them	
HOW EXPENSIVE IS THIS SOURCE ?	Cheap		Expensive transport	
HOW ARE PRICES SET FOR THIS MATERIAL ?	Market			
SHOULD THE PRESENT PRICING STRUCTURE BE CHANGED AND IF SO HOW ?	NO			
BIG INDUSTRY				
IS THEIR RELATIVE CONTRIBUTION TO THE WASTE SUPPLY LIKELY TO INCREASE OR DECREASE OVER THE NEXT 5 YEARS AND IF SO BY HOW MUCH ?	YES			
WHAT MORE CAN THE INDUSTRY DO TO ASSIST THESE SOURCES?			Identify type of material on moulds Supply and demand	
HOW ARE PRICES SET FOR THIS MATERIAL ?				
SHOULD THE PRESENT PRICING STRUCTURE BE CHANGED AND IF SO HOW ?			No	

STRATEGIC PLAN 1992 - 1995

SUMMARY OF DISCUSSION POINTS FROM STRATEGY WORKSHOP ON 24 MARCH

INDUSTRY :	GLASS	PAPER	PLASTIC	OTHER
MUNICIPALITIES AND CIVIC AUTHORITIES				
WHAT MORE CAN THE INDUSTRY DO TO WORK WITH THE MUNICIPALITIES ?	Contact			
WHAT MORE SHOULD THE MUNICIPALITIES BE DOING TO INCREASE RECYCLING ?		Legislation to reflect true cost of disposal Promote source separation	Legislation to reflect true cost of disposal Help set up depots	
IS COMPOSTING A VIABLE ALTERNATIVE TO RECYCLING ?		NO		
SHOULD THE PRESENT PRICING STRUCTURE BE CHANGED AND IF SO HOW ?		NO		
<p>STRATEGIES FOR IMPROVING COLLECTION</p> <p>PAPER Concentrate on fewer and larger depots Separate at source (households) Identify true cost of disposal Requirement for minimum floor price and security of tenure for continuity of depots and voluntary groups Municipality and Fairvest Cape to play more active role to connect sources with users</p> <p>PLASTIC Sourcing linked to end markets Encourage buy back schemes Supermarkets to provide collection points Municipalities to centralise sources</p> <p>OTHER Separation at source Buy in centres Compulsory composting Legislation re source separation</p>				
INDUSTRY :	GLASS	PAPER	PLASTIC	OTHER

STRATEGIC PLAN 1992 - 1995

SUMMARY OF DISCUSSION POINTS FROM STRATEGY WORKSHOP ON 24 MARCH

INDUSTRY :	GLASS	PAPER	PLASTIC	OTHER
RECYCLING ACTIVITIES				
BRIFLY DESCRIBE THE NUMBER AND TYPE OF ORGANISATIONS WHO PROCESS RECYCLED MATERIAL	Consol Ecobolt	3 large. Nampak Sappi Mondi Many smaller collectors 90% of all secondary fibre used by NSM.	About 22 in CT	
HOW SOPHISTICATED IS THE TECHNOLOGY BEING USED ?	Average	Appropriate /	Basic	
WHAT OPPORTUNITIES EXIST FOR IMPROVING TECHNOLOGY AND /OR REDUCING COSTS ?		None apparent		
ARE THE RECYCLED PRODUCTS PROFITABLE IN THEIR OWN RIGHT ?	Yes	Yes		
IF NOT , WHAT CAN BE DONE TO MAKE THEM PROFITABLE ?		Separate before disposal		
MARKETING				
WHAT ALTERNATIVE END USES EXIST FOR THE PRODUCT - CURRENTLY BEING USED - NOT BEING USED	Minimal	Other paper products eg stationery Higher recycled content in existing products		
HOW STABLE ARE THE MARKETS FOR THESE PRODUCTS ?	Very	Fairly		
HOW SHOULD WE BE PROMOTING ?	Schools videos	Logos promoting recycled content Newspaper and magazine environment ads	Need more promotion in all areas	
WHAT POTENTIAL MARKETS EXIST THAT HAVE NOT YET BEEN EXPLORED ?	na	Non papermaking applications eg animal bedding low cost houses	None	
HOW CAN THE MARKETING OF RECYCLE PRODUCTS BE IMPROVED ?	na	Logos	Market research	
HOW MUCH PRICE STABILITY EXISTS ?	Very	Reasonable but inherently cyclical	Little	
IS STABILITY DESIRABLE AND IF SO HOW CAN IT BE ACHIEVED ?	Yes	Yes by good planning and minimum floor prices	Yes but dont know how	
EXPORT POSSIBILITIES ?		Being done		
WHAT SHOULD BE THE ROLE OF THE SUPERMARKETS ?	Market recyclable products	Education Specify recycled content in product packaging	Collection depots Bulk buying	

STRATEGIC PLAN 1992 - 1995

SUMMARY OF DISCUSSION POINTS FROM STRATEGY WORKSHOP ON 24 MARCH

INDUSTRY :	GLASS	PAPER	PLASTIC	OTHER
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STRATEGY FOR RECYCLING IN THE WESTERN CAPE

EDUCATION OF CONSUMERS AND THE PUBLIC

GLASS Education should be part of school syllabus

PAPER

Calculate publicise and recover true cost of disposal of waste from Ratepayers

PLASTIC

Identify type of plastic on moulds

NCCCR should have a higher profile

OTHER

FCA to play major role and eliminate disinformation

Go full out to promote separation at source

PROMOTION AND PUBLIC RELATIONS FOR RECYCLING AND RECYCLING INDUSTRIES.

INFLUENCING LEGISLATION

PAPER

Some favour this - industry opposed

Lobby to stamp out imports

OTHER

Re dumping of oil

OBTAINING SUBSIDIES , GRANTS , TAX BENEFITS ETC FOR RECYCLING ACTIVITIES

PAPER

Special tariff for ads on recycling and environmental issues from SABC MNET newspapers

PLASTIC

Transport subsidies should be sought

OTHER

Transport subsidies should be sought

WORKING WITH THE MUNICIPALITIES

PAPER

Need good cooperation and ongoing reviews

OTHER Promote buy-in centres

FINDING NEW MARKETS FOR RECYCLED PRODUCTS

PLASTIC

Main problem is that there are no markets .Cant do anything until these created.

Encourage schools to buy Polywood

Promote refillable containers

OTHER OIL Must help to increase this market - has surplus capacity

FINDING AND SPONSORING NEW TECHNOLOGY

OTHER Should be industry driven

PLASTIC Technology exchange should be encouraged

PROVIDING AN INFORMATION BASE AND CO-ORDINATING RECYCLING ACTIVITIES

WHAT SPECIFIC THINGS SHOULD BE DONE ?

PAPER

Fairest Cape Assn should educate and promote recycling locally

Publish true disposal costs

STRATEGIC PLAN 1992 - 1995

SUMMARY OF DISCUSSION POINTS FROM STRATEGY WORKSHOP ON 24 MARCH

ROLE OF THE WCCR

WHAT ARE ITS GOALS ?

PAPER

Provides authoritative platform for public industry and local authorities to clear up bottlenecks and other stumbling blocks inhibiting the recycling effort

WHAT SHOULD IT BE DOING ?

PAPER

Affiliate with NCCR

PLASTIC

Interact with NCCCR

More formal structure

Provide a database of all firms involved in recycling

OTHER

Co ordination and information

DOES IT HAVE THE RIGHT MEMBERSHIP ?

PAPER

Must invite pulp moulders

IN ADDITION , PLEASE SPEND SOME TIME DISCUSSING THE ROLE OF THE CAPE RECYCLING NETWORK

WHAT ARE ITS GOALS ?

PAPER

Promotes public awareness of the need to recycle and reduce particularly among the uninformed

WHAT SHOULD IT BE DOING ?

DOES IT HAVE THE RIGHT MEMBERSHIP ?

PAPER YES

HOW SHOULD IT BE STRUCTURED ?

PAPER - AS IS

SHOULD THE MISSION STATEMENT OF THE WCCCR BE CHANGED ?

PAPER - NO

SUMMARY OF MAJOR STRATEGIES :

PAPER

- 1. Municipalities have large role to play
 - source separation
 - education
 - facilitating process : putting users in touch with paper generators
- 2. True cost of waste disposal to be made known and recovered from ratepayers
- 3. Industry to work mtogether via contain price instability
- 4. Approach SABC MNET other media for lower advertising rates
- 5. Approach transporters including Transnet for concessions

GLASS

- 1. Grow the market through depots and bottle banks
- 2. Increase role of WCCCR- provide data base - transport cost subsidies
- 3. WCCCR should obtain funding from industry to promote recycling

WESTERN CAPE RECYCLING FORUM DIRECTORY OF Voluntary "Drop-off" Recycling Depots

This list has been drawn up in good faith. We apologise if anyone has been left out. For inclusion in the next directory, please phone: 462-2040.

P = Paper

PI = Plastic

G = Glass

M=Metal

Aanhouwen Club, Somerset West ph: 024-8521851	P, M
Athlone Workshop ph: 638-6593	P, G, M, PI
Bergvliet Primary ph: 756-988	P, G, M, PI
Bergvliet High ph: 720-284	P, G, M, PI
Cafda, 2nd Hand Books, Claremont: ph: 64-2230 Sea Point: - 434-6149	
Camps Bay Primary ph: 438-1397	P, G, M, PI
Durbanville High ph: 96-5401	P, G, M, PI
Edgemead Primary ph: 58-1007	P, G, M, PI
Edgemead High 58-1132	P, G, M, PI
Hermanus Recycling (Walker Bay) ph: 0283-22035	P, G, M, P1
Hout Bay ph: 462-2040	P, G, M, PI
Hottentots Holland High ph: 024-8521405	P, Cardboard
Kalk Bay (Outspan) ph: 788-7210	P, M, G
Muizenberg High ph: 788-7494	P, G, M
Michael Oak School ph: 696-5749	P, G, M, PI

Oasis Workshop ph: 61-5100	P, PI, M, G
Ocean View School ph: 783-1623	P
Pinelands Primary ph: 531-3674	P, PI, M, G
Pinelands North Primary ph: 531-3414	P
Rosebank Primary ph: 689-4069	P, PI, M, G
Sansouci ph: 794-3346	P, PI, M, G
Sacs Junior ph: 689-4001	P, PI, M, G
St Michaels Home: Wynberg ph: 797-4186	P, PI, M, G
Stellenbosch Night Shelter (Elma Swart), ph: 02231-78492	P, PI, M, G
Sweetvalley Junior ph: 72-3081	P, PI, M, G
Southfield Junior (Mr Kent) ph: 705-6156	P, G, M,
Simon's Town High ph: 786-1989	P, PI, M, G
The Palms Work Centre, Claremont ph: 683-1300	Cans only
UCT Sports Centre	P, M, G
Wildlife Centre, Tokai ph: 701-1398.	P, G, M

APPENDIX D Western Cape Recycling Forum directory of voluntary "drop-off" depots, commercial depots and recycling companies. Extract from Recycling Realities. Facts, Myths, and Choices (Fairrest Cape Association, 1993).

WESTERN CAPE RECYCLING FORUM DIRECTORY OF Commercial Depots and Recycling Companies

P = Paper

PI = Plastic

G = Glass

M=Metal

Atlantic Paper 7 Paarden Eiland Road ph: 511-3582	P, PI
Cape Waste Vrede Road, Beaconvale Elsies River ph: 931-7251	P, PI
Chicks Scrap Metal 107 Bofors Circle, Epping/Industria Ph: 54-4321 Cape Town, Rose St Ph: 23-5702 Landsdowne Flamingo Cres Ph: 7975862 Maitland, 278 Voortrekker Rd Ph: 511-1787 Parow RKaye Rd Ph: 934-0508	
E S G 52 St Georges Street Retreat Ph: 706-1092	P, PI, M, G
Express Waste (Athlone Workshop) cor. Johnson & Klipfontein Roads, Athlone Ph: 638-6593	P, PI, M, G
Mr Jooste Collects Camps Bay to Wynberg ph: 691-7223	P, G
Lothlorien Waste Paper Cradick Street Parow Industria ph: 931-5161	P
Mondi Paper Pick-up ph: 931-5107 Mondi Paper Banks 36 Glenhurst Street Parow Valley, Paarl ph: 02211-620110	P
Nampak Paper Bertie Ave, Epping Industria 2 ph: 54-5346	P

Northern Waste 100 Upper Canterbury St, Cape Town ph: 461-1498 29a Newchurch St, Cape Town 378 Albert Road, Salt River	P, PR, M
S A Metal Christian Ave., Epping Ph: 54-7127 125 Salt River Ph: 511-0739	
Sappi Waste Paper 4 Hawkins Ave, Epping 1 ph: 531-3077	P
Sappi WOW (War On Waste) Hotline ph: 0800-221-330	P
Saveall 19 Dorp Street, Cape Town 67 Roeland St, Cape Town 7 Section St, Paarden Eiland 2 York St, Wynberg Station Road, Claremont Birdwood Street, Athlone Main Road Kuils River	P, PI
Save Our Trees Collects door to door Kenilworth, Claremont ph: 790-3857pm	P, PI G
The Paperman Collects door to door S. Peninsula ph: 786-3391pm/789-1211	P
Waste Paper Retrievers Any area ph: 593-0703/4	P, PI
Consol Glass Sacks Circle, Bellville ph: 951-6291	G
Ecobott Micro St, Stikland ph: 940-2270	G

APPENDIX E

SERIES OF DRAFT FACT SHEETS ON ASPECTS OF WASTE MANAGEMENT

FACT SHEET 1: THE GENERATION OF WASTE IN GENERAL

The average household throws away about two bins of rubbish a week creating an annual pile that would weigh two tonnes or more. The amount of waste generated per person varies. Council for Scientific and Industrial Research statistics indicate that the average South African living in urban areas generates between 0,576 kg and 2 kg of waste every day. This means that South Africa has to get rid of about 65 000 tonnes of rubbish per day, in other words about 24 million tons per year.

It has been projected that South Africa will have a population of approximately 50 million by the year 2 000. Increasing population, urbanisation, availability of disposable items and products are all having an effect on the increase in the amount of waste generated. This waste has to be properly managed. If not properly handled and disposed of, it becomes amongst other things, a source of litter, pollution and a waste of natural resources. It must be remembered that some ways of handling wastes are better than others.

Our waste mainly consists of non-renewable natural resources. That means that once they are used up there will be nowhere else to go to look for more raw materials. We are literally burying tonnes of these resources every day in the form of dumped waste in landfills. It must always be remembered that any harm caused to the environment affects us all as all living things depend on the environment for survival.

Solid waste from urban areas is heterogenous and its composition varies considerably. It can differ from city to city, from suburb to suburb and from season to season. It comprises wastes from institutions of all kinds, households, flats, businesses, industries and gardens. The content ranges from food, bones, vegetable matter, paper, plastic, rubber, leather, wood,

textiles, metals, glass, ceramics, ash, to even stones. The compilation of waste can be seen as a mirror of the consumerism of the modern urban civilisation.

A fair amount of waste created is useful and could be recovered. Thereby resources could be saved, our environment conserved and South Africa made more self-sufficient. Waste management is the responsibility of all individuals, as well as industries and businesses. Each of us is responsible for creating waste; therefore we are individually responsible for handling it.

FOR FURTHER INFORMATION CONTACT:

The Recycling Network, Fairest Cape Association
3rd Floor, City Hall, Darling Street, Cape Town, 8000
Tel (021)462 2040

FACT SHEET 2: 3 Rs APPROACH TO WASTE MINIMISATION

REDUCE RE-USE RECYCLE

GOALS OF THIS APPROACH

- * Avoidance of waste production
- * Diversion of as much waste as possible from disposal to productive uses.

This approach to waste management requires a change in production, consumption and disposal methods. It involves a fundamental change in the way we deal with waste. All the aspects of manufacturing, packaging and distribution need to be taken into account when considering the impact of a product on the environment.

REDUCE

In the hierarchy of waste management reduction of waste comes first. In general, waste must be avoided and waste must be reduced by both industry and the consumers. It is time that we take a serious look at what we buy and take home in the first place. What we buy is directly related to what we throw away.

RE-USE

The concept of 're-using' comes second in the waste hierarchy. It involves using an item again in its original form for the same or a different purpose. To re-use items successfully the relevant infrastructure must be available. With little creativity any containers, boxes, clothing or household appliances can easily be re-used.

RECYCLE

In the hierarchy of waste management recycling should be used as the last resort before ultimate disposal. Recycling involves conserving resources and reducing waste for disposal by eliminating potentially valuable materials entering the waste stream. The life supporting process of planet earth depend upon the constant recycling of matter. To be a successful recycler you need to learn what is recyclable in your community.

TAKE NOTE

The 3Rs approach to waste management must not be considered a nuisance but must become a way of life.

FOR FURTHER INFORMATION CONTACT:

The Recycling Network, Fairest Cape Association
3rd Floor, City Hall, Darling Street, Cape Town, 8000
Tel (021)462 2040

FACT SHEET 3: REDUCE WASTE

In the hierarchy of waste management reduction of waste comes first. Waste reduction helps keep products from entering the waste stream. In general, waste must be avoided and waste must be reduced by both industry and the consumers. It is time that we take a serious look at what we buy and take home in the first place. What we buy is directly related to what we throw away.

We can reduce the amount of waste by modifying production methods and by changing or substituting products. Packaging and

disposable items make up over a third of the waste that goes to landfills. This makes them prime targets for any waste reduction.

FUTURE ACTION

INDUSTRY COULD:* reduce material and energy use

- * change product design
- * change production process
- * examine distribution practices

CONSUMER COULD:* make a habit of buying to last

- * buy in bulk
- * maintain appliances
- * care for goods so that they last
- * sell or give away unwanted goods
- * avoid buying overpackaged goods

USEFUL TIPS TO FOLLOW

- * General rule is use less and re-use more
- * If using paper for writing/printing, use both sides
- * Instead of paper towels, use rags or sponges
- * Encourage the family to only dish up what they can eat, so as not to waste food
- * Use containers for keeping food in the fridge, instead of wasteful foil or plastic wrapping
- * Use washable cloth serviettes instead of paper ones
- * Get your name off junk mail lists by sending your mail back to them without a stamp on it
- * Tell your friends, neighbours and family to do the same!

REMEMBER

Each individual can reduce the amount of waste generated by modifying personal behaviour and by participating in one or more alternative waste management practices.

FOR FURTHER INFORMATION CONTACT:

The Recycling Network, Fairest Cape Association
3rd Floor, City Hall, Darling Street, Cape Town, 8000
Tel (021)462 2040

FACT SHEET 4: RE-USE HOUSEHOLD WASTE

In the hierarchy of waste management re-using of household waste material comes second after the reduction of household waste.

RE-USING ITEMS MAKES SENSE

Almost 80% of what we throw away is re-usable or recyclable. With landfill space rapidly filling up and natural resources becoming even more scarce, making full use of what we have makes common - and financial- sense.

Many things that come into your household, like paper, bags and envelopes can be used more than once. Packed lunches can be transported in re-usable containers instead of in wax paper, foil or plastic. Avoid buying items that are made to be thrown away after only a few uses. Rather look for products you can use over and over again.

EXAMPLES OF RE-USING HOUSEHOLD ITEMS

There are many other examples of items which can be re-used:

- * Refillable glass bottles and many other containers
- * Rechargeable batteries
- * Cloth nappies
- * Steel and plastic drums and buckets used for bulk distribution of consumables
- * Cardboard boxes
- * Shredded paper for cushioning material in packaging
- * Linen serviettes
- * Old clothing can be turned into rags for cleaning
- * Plastic cooldrink bottles as sprinklers or mini-hothouses
- * Tell your friends, neighbours and family to do the same!

GENERAL RULE

The general rule is use less and re-use more. Be resourceful! Think before you throw out furniture, electrical appliances, equipment, industrial waste etc. Someone, somewhere else can use it!

FOR FURTHER INFORMATION CONTACT:

The Recycling Network, Fairest Cape Association
 3rd Floor, City Hall, Darling Street, Cape Town, 8000
 Tel (021)462 2040

FACT SHEET 5: RECYCLING OF DOMESTIC WASTE - PART 1

In the hierarchy of waste management recycling should be used as the last resort before ultimate disposal.

ONCE IS NOT ENOUGH

List the things you have thrown away yesterday.

DO YOU KNOW?

80% of household waste is reusable and we put it into holes in the ground.

OBJECTIVE OF RECYCLING OF DOMESTIC WASTE

The objective of recycling is to eliminate potentially valuable materials entering the waste stream. Thereby resources can be conserved and waste for disposal reduced. Favourably it should also result in a reduction of local government's waste management and disposal costs as well as a reduction of energy consumption and greenhouse gas emissions. Recycling involves the conversion of a particular material into another marketable product.

WHY RECYCLE? WHAT ARE THE BENEFITS?

- * it conserves natural resources
- * it saves landfill space
- * it is economical
- * it saves energy
- * it saves foreign exchange
- * it reduces litter and pollution
- * it offers employment opportunities
- * it is anti-inflationary
- * it yields income to charities, welfare and community organisations

- * it regenerates the environment
- * it creates profitable industry

EXAMPLES OF DOMESTIC WASTE ITEMS WHICH CAN BE RECYCLED

- * Glass
- * Paper
- * Tinfoil
- * Metal
- * Aluminium
- * Plastic
- * Organic materials
- * Oil

FOR FURTHER INFORMATION CONTACT:

The Recycling Network, Fairest Cape Association
3rd Floor, City Hall, Darling Street, Cape Town, 8000
Tel (021)462 2040

FACT SHEET 6: RECYCLING OF DOMESTIC WASTE - PART 2

Recycling is a lengthy circular process which has to include transporting the collected materials to a processing facility where they must be cleaned and sorted. The 'new' raw material which is produced must then be manufactured into a new product which must comply with all the same safety, health and hygiene regulations as a product from virgin materials. The new products must then be distributed to wholesalers from where they are sent to retail outlets for sale. Only when the products have been purchased can we really say that the original item has been recycled.

Before deciding to collect materials that would otherwise have been discarded, it is necessary to make sure that those materials can be recycled, that someone will want to buy them when they have been recycled, and that doing so does not involve the use of more resources than it saves.

WHAT CAN I DO?

- * buy recycled products and try to persuade the people at your workplace to do the same
- * join a recycling project in your community
- * if no scheme or project exists, why not start one?

WHAT DO I NEED TO HAVE A SUCCESSFUL RECYCLING SCHEME?

- * a regular supply of recyclable materials
- * a system to collect and sort the materials
- * end-use applications
- * markets for waste-derived products
- * favourable economics

SOME IDEAS ON STARTING A RECYCLING PROJECT

- * decide what you want to recycle
- * phone companies for information and determine feasibility
- * organize big enough storage space eg. garage
- * appoint enthusiastic person to promote awareness
- * list people prepared to help with project
- * two or three leaders would be needed to run depot
- * leaders should keep contact with companies, keep records of payments, draw up circulars and generally ensure smooth running of depot
- * share the load; don't try to do everything yourself
- * encourage sorting at source
- * everything must be clean
- * thank your supporters regularly and keep them informed of progress

FOR FURTHER INFORMATION CONTACT:

The Recycling Network, Fairest Cape Association
3rd Floor, City Hall, Darling Street, Cape Town, 8000
Tel (021)462 2040

FACT SHEET 7: COMPOSTING OF DOMESTIC WASTE

Composting is nature's way of recycling.

The scientific description for composting would be the biological decomposition of organic wastes under controlled conditions. This biological decomposition is carried out by micro-organisms which break down the complex organic substances into carbon dioxide, water and the residue; compost.

Mature compost is a valuable substance. It can act as a soil conditioner; improving the soil structure of especially heavy clay soils. It also helps to improve light sandy soils through its moisture retaining characteristics. Compost also reduces soil erosion and helps to bind nutrients. Compost can encourage a vigorous root system through its action as a soil fertilizer.

WHAT IS IN IT FOR ME?

Kitchen and garden wastes can be composted and used by householders and farmers to enrich their soil. This is a simple, cost-free way of recycling. It saves buying topsoil and fertilizer.

WHERE TO START?

Separate your organic domestic waste for composting. All fruit and vegetable peelings, sawdust, grass clippings and leaves can easily be made into compost. Dig a trench in which to deposit the organic waste. Cover each layer of waste with soil and water periodically. Turn the soil occasionally to allow air to circulate. The organic material will gradually break down and become crumbly and brown-black in colour. Now it is ready to add to your garden.

DECOMPOSITION

For decomposition to occur, the following components must be present:

- * soil
- * organic waste

- * nitrogen
- * organisms
- * worms
- * water
- * air
- * time
- * heat
- * mass

REMEMBER

Backyard composting does require space and proper maintenance.

FOR FURTHER INFORMATION CONTACT:

The Recycling Network, Fairest Cape Association
3rd Floor, City Hall, Darling Street, Cape Town, 8000
Tel (021)462 2040

FACT SHEET 8: HAZARDOUS HOUSEHOLD WASTE

WHAT IS HAZARDOUS HOUSEHOLD WASTE?

It can be defined as any material discarded by a household which could put human health or the environment at risk because of its chemical or biological nature. Hazardous household waste (HHW) is generated in small amounts at a very large number of locations. This makes it particularly difficult to deal with its proper disposal. HHW is also much less well regulated than industrial waste. A surprisingly wide range of chemicals for everyday purposes are used in the average household. Garden chemicals, household cleaners, and car care products may be flammable, corrosive, oxidising or toxic. Products such as batteries and fluorescent lights contain heavy metals.

LIST OF POTENTIALLY HAZARDOUS PRODUCTS

- * **Paint and related products**
Emulsion and gloss paints; stains and varnishes; paint strippers and thinners; wood treatments and preservatives

- * **Garden and pet products**
Pesticides and pest repellents; herbicides and fungicides; fertilisers
- * **Motoring products**
Engine oil; brake and transmission fluid; anti-freeze; waxes and polishes; fillers and body repair materials
- * **Household cleaners**
Cleaners, bleaches, disinfectants; air fresheners and deodorisers
- * **Pharmaceuticals**
Medicines and medical waste; cosmetics and toiletries
- * **Water treatment chemicals**
Softeners and hardeners; pool and pond chemicals
- * **Other household items**
Fluorescent tubes; household batteries; smoke alarms

IMPACT ON THE ENVIRONMENT

The environmental significance of HHW is difficult to assess because products intended for domestic use are usually more dilute and do not contain the most hazardous ingredients as some of the industrial products do.

CURRENT DISPOSAL METHODS

HHW are usually disposed of with other domestic refuse to incineration or landfill sites. A proportion is also disposed of by householders through pouring it down the sink or drain. All of these methods can have serious negative consequences for the environment.

DISPOSAL OPTIONS

There are options through which HHW can be safely disposed of. In accordance with a hierarchy the options are re-use, recycling, recovery and safe disposal. Paint is a good example of such a hazardous product which can be re-used. Don't throw excess paint away; rather donate it to community organisations or exchange it for something else.

FUTURE ACTION

The cost of remedial action is often higher than that of prevention. The most effective HHW management schemes of the future will involve comprehensive educational programmes, product substitution and the avoidance or reduction of HHW. The remaining problem materials can be dealt with through collection services based on re-use and recycling.

FOR FURTHER INFORMATION CONTACT:

The Recycling Network, Fairest Cape Association
3rd Floor, City Hall, Darling Street, Cape Town, 8000
Tel (021)462 2040

APPENDIX F
BEGIN 'N HERWINNINGSPROJEK BY JOU SKOOL

Brosjyre vertaal uit die oorspronklike Engels (Le Grange, undated) deur Landsdiens Beweging, Tygerberg Hoërskool, 1993.

Maak jou gemeenskap bewus.

Voorsien 'n afset vir huishoudelike afval.

Vorder fondse in vir die skool.

HOE OM TE BEGIN

- * Bespreek met onderwysers en betrek hom/haar in die beplanning en bestuur van die program.
- * Stig 'n herwinningsorganisasie.
- * Kry toestemming van die skoolhoof.
- * Begin met een handelsartikel soos bv. papier. Wanneer dit suksesvol bestuur word, kan na ander handelsartikels oorgegaan word.
- * Lig 'n herwinningsmaatskappy in dat jy herwinbare produkte sal versamel.
- * Jy sal 'n droë area soos bv. 'n motorhuis nodig hê. Organiseer dit vooraf met die skoolopsigter.
- * Stel die brandweer in kennis van jou voornemende aktiwiteite.
- * Stel een dag per week vas as herwinningsdag sodat almal op dieselfde dag elke week bv. papier na die skool kan bring.
- * Kies toesighouers wat in beheer kan wees en die verantwoordelikheid kan deel. Almal moet op een of ander manier betrokke wees.
- * Goedere moet netjies gestoor word en gereeld weggestuur word vir herwinning. Die raad moet verantwoordelik wees vir die kontak met herwinningsmaatskappye.
- * Ontwerp plakkate om ander leerlinge se belangstelling te prikkel om aan te sluit by jou herwinningsprojek. Gebruik die internasionale herwinnings-simbool op jou plakkate.
- * Besluit op iets spesifiek vir geldinsameling. 'n Grafiek kan die hoeveelheid geld ingesamel aandui.

- * Jy kan 'n kompetisie loods en die klas wat die meeste insamel wen 'n prys. Die hoofdoel is om soveel as moontlik van jou vriende te betrek om jou te help om jou doel te bereik. Daardeur sal jy nie alleen rommel beweeg nie, maar ook geld insamel vir jou skool.

PAPIER HERWINNING

- * Maak seker dat alle papier skoon, droog en nie deur voedsel besmet is nie.
- * Alle kartonverpakkings is geskik. Dit moet plat gedruk en in bondels vasgemaak word.
- * Bind boeke, tydskrifte, telefoongidse ens. saam.
- * Koerante moet apart van karton en tydskrifte gehou word.
- * Wanneer papierherwinning suksesvol verloop, kan uitgebrei word na herwinning van glas.

GLAS HERWINNING

- * Alle glas, gebreek of heel, kan versamel word, behalwe draadversterkte glas, splintervaste glas, gloeilampe en buisligte.
- * Waar moontlik, word verkies dat bottels teruggegee word vir hervulling.
- * Jou plaaslike drankwinkel sal bier- en mineraalwater bottels, wynbottels met kurkproppe of skroefdoppies en plaaslike spiritus bottels aanvaar.
- * Medisyne bottels en konfytflesse kan gebruik word in dierehospitale.
- * Maak gebruik van bottelbanke in jou omgewing.
- * As glas herwinning suksesvol verloop, kan oorgegaan word na plastiek herwinning.

PLASTIEK HERWINNING

- * Sorteer die materiaal. Gemengde plastieke kan nie gebruik word nie en is van geen waarde nie.
- * Daar is vier verskillende soorte plastiek:
 1. Lae digtheid polietileen bv. sagte plastiek soos broodsakkies en ander sagte buigbare verpakkingsmateriaal.
 2. Hoe digtheid polipropileen bv. melk en vrugtesap bottels, vullissakke en inkopesakke.
 3. Polipropileen bv. plastiekkratte, sommige jogurt- en margarien houers.
 4. Polivinielchloried bv. draad- en kabelisolasië, sommige tuinslange en swembadpype, vinielleerdoeke vir stoffeerwerk of bekleding.
- * Alle items moet gewas en te alle tye droog wees.

METAAL HERWINNING

- * Alle gebruikte blik kan versamel word. Vuil blikke ruik sleg en lok rotte en miere.
- * Tinfolie en pasteiplaatjies is lonend om te versamel.
- * Enige ooglopend "waardelose" metaal kan versamel word bv. geroesde spykers, bottels se doppies, stukkie draad, skroewe, bote en moere.

INDEKS VAN KAAPSE HERWINNINGSMAATSKAPPY

MAATSKAPPY	TELEFOONNOMMER (KODE 021)
Nampac	545346
Cape Waste	9317251
Lothlorien Wastepaper	9315161
Northern Waste	4611498
Sappi Waste Paper	5313077
Mondi Paper	9315107
Saveall	4346691
Atlantic Transport	5113582
Polywood	5103453
Cycloplast	254341
Waste Tech	9462660
Consol Glass	9516291
Ecobott	9462270

ANDER NUTTIGE KONTAKTE IN KAAPSTAD

ORGANISASIE	ADRES	TEL.NO.
Fairest Cape Association	Posbus 6884, Roggebaai, 8012	216958
Earthlife Africa	Posbus 176, Observatory, 7935	643801
Houtbaai Museum	Posbus 238, Houtbaai, 7872	7903270
Wildlife Society	Posbus 30145, Tokai, 7966	7011397
Bergvliet Laerskool	Children's Way Bergvliet, 7945	720284

BOTTELBAK LOKALITEITE IN DIE KAAPSE SKIEREILAND

VOORSTAD	LOKALITEIT
Athlone	Laer Lawrence weg
	Kollege weg, Greenhaven
Bellville	Swembad, Bellville Suid
	Charl Malan Straat
	Stellenberg Hyperette
	Tygervallei Winkelsentrum
	Welgemoed Hyperette
Bergvliet	Bergvliet Laerskool
Blouberstrand	Blouberg Winkelsentrum
Bothasig	Shoprite Sentrum
Brooklyn	M.O.T.H. Saal, Koebergweg
Claremont	Stegmannweg
Constantia	Constantia Drop Inn
	H\v Vineyard en Dreyer str.
Crawford	Drop Inn, Kromboomweg
Houtbaai	Shoprite Sentrum
Kaapstad	Oriental Plaza parkeerarea
	Parade
Kalkbaai	Kalkbaai Uitspan
Kampsbaai	Die Wandelpad, Victoriaweg
Kenilworth	Kenilworth Winkelsentrum
Landsdown	Drop Inn, Landsdownweg
Maitland	Maitland Stadsaal
Mannenbergr	Vistula Lagunge
Meadowridge	Winkelsentrum
Milnerton	Pick 'n Pay Middelpunt
Mitchellsplain	Lentegeur Winkelsentrum
	Town Centre
	Westridge Town Centre
	Rocklands Winkelsentrum
Montana	Montana Winkelsentrum
Moulliepunt	Oorkant lighuis
Mowbray	H\v Durban en Strubensweg
Newlands	Newlands Swembad

Observatory	Nuttall weg
Oranjezicht	H/v Durban en Strubenstraat
Paardeneiland	Section straat
Parow	Avondale Winkelsentrum
	Parowvallei Winkelsentrum
	Ravensmead Winkelsentrum
	Sonnendal Winkelsentrum
Pinelands	Central Square
	Howard Sentrum
Rondebosch	Pick 'n Pay, Gabriel straat
	Sawkinsweg
Seepunt	Kusweg, oorkant SAUK
	Pawiljoen, Kusweg
	Protea Ritz Hotel
	Sunset Beach, Kusweg
Simonstad	Valsbaai Seljagklub
Strandfontein	Strandfontein Pawiljoen
Sun Valley	Sun Valley Winkelsentrum
Table View	Table View Sentrum
Tokai	Blue Route Winkelsentrum
Vishoek	Valyland Winkelsentrum
Vredehoek	Jutland Rylaan
Woodstock	Woodstock Stadsaal
Wynberg	Piersweg