

**AN INVESTIGATION INTO THE NEED FOR
ENVIRONMENTAL INFORMATION
IN SOUTH AFRICA:
A CASE STUDY OF THE ENVIRO FACTS PROJECT**

THESIS

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ABSTRACT

Growing awareness of the environmental risks associated with modernity has contributed to an increasing demand for information about the environment. Conservation and other environmental organisations receive many such requests for information. The research reported here was motivated first, by the view that these requests presented an opportunity for environmental education, and second, by a concern that this potential was not being realised. The research question was thus "How can environmental education be supported by optimally responding to requests for environmental information?"

It is argued that social change is the *raison d'être* of environmental education as a response to environmental risks. Further, it is proposed that this might be best achieved through an approach described here as socially critical environmental education.

The study comprised an historical review of the Enviro Facts Project, a recent attempt to meet the need for environmental information; a questionnaire survey; interviews; and workshops. Results were collected from 115 questionnaire responses; 23 telephone interviews and nine face-to-face interviews; and six workshops. The research design was participative. It aimed to answer the research question through co-developing practical solutions with participants. Further, it endeavoured to be of practical relevance to those participants.

Conclusions are drawn as to how the research question might be answered. Recommendations are made as follows. Responses to environmental information requests might best support socially critical environmental education through an approach characterised by:

- * a *recognition* of the importance of responding optimally to environmental information requests, as well as a recognition of existing structures and resource materials with which to respond;
- * the *mobilisation* of those structures and resource materials through, for example, the effective marketing and distribution of resource materials; informed and focused networking to make existing resources and capacities more accessible; and the effective use of libraries to provide environmental information.
- * the enhancement of the capacities of *local* sources of environmental information.

The findings of this study could usefully inform both resource development in environmental education, and those who in their line of work respond to requests for environmental information.

CHAPTER ONE

INTRODUCTION

1.1 WHY THIS RESEARCH?

Environmental education can be seen as both a response to increased awareness of environmental risks and as contributing to that awareness. An indication of this awareness is the increasing number of requests for environmental information received by a range of organisations, including government and non-government conservation bodies, libraries, museums and teachers' centres.

One attempt to meet this demand for environmental information was the Enviro Facts Project, of which I was the Project Coordinator. This project involved the development of 60 fact sheets of approximately 1000 words each (A 17)¹. *Enviro Facts* endeavoured to provide an overview of a range environmental topics that was succinct, accurate, up-to-date, easy-to-understand, and South African in perspective (see A 23 for examples). They were developed and published between September 1990 and November 1993.

At the end of 1993 the future of *Enviro Facts* was discussed by the Project Steering Committee. This discussion addressed problems with the Enviro Facts Project, including its limitations in addressing the need for environmental information. It was acknowledged that the development of *Enviro Facts* was only one strategy for improving responses to environmental education requests, and that others strategies should be considered. Several options were suggested, and the ensuing debate gave rise to the research reported here.

The research was motivated by a conviction that responding to environmental information requests presented an opportunity for environmental education to work towards its *raison d'être*, social change. In considering the nature of responses to requests for environmental information, I took the view that responses should support environmental education. Thus the research question became

"How can environmental education be supported by optimally responding to requests for environmental information?"

The rest of this chapter will describe the research by outlining the content of each chapter.

¹ A 17 refers the reader to the Appendix, page 17.

1.2 CHAPTER 2: ENVIRONMENTAL EDUCATION AS A RESPONSE TO THE ENVIRONMENTAL CRISIS

The environmental crisis is described as an outcome of modernity. Features of modernity that have contributed to this crisis are introduced. Growing awareness of environmental problems has contributed to calls for environmental education as a means of solving them. Such calls assume that environmental education can support processes of social change, the latter seen as a prerequisite to solving the environmental problems that beset the planet.

However, I argue that while the environment crisis is a product of modernity, so too is environmental education. Whereas it is commonly assumed that conventional approaches to environmental education can contribute to social change, I argue that, based as they are on modernistic assumptions, they are more likely to reproduce the modern society in which they occur. Features of an emerging, alternative approach to environmental education, socially critical environmental education, are described as perhaps more likely to work towards fundamental social change or transformation.

The research question is addressed in the light of the discussions of this chapter which consider features of conventional approaches to environmental education, and socially critical environmental education as a possible alternative, through a review of recent literature.

1.3 CHAPTER 3: METHODOLOGY

The research was designed to answer the research question through the following:

- a) An historical review of the Enviro Facts Project to record first, events precipitating the research reported here, and second, key aspects of the development of the resource.
- b) A questionnaire survey to establish trends in requests for environmental information, and in responses to those requests.
- c) Interviews to explore issues raised in the questionnaires.
- d) Workshops to develop strategies to address selected issues identified by the historical review and by questionnaire and interview data.

The research was designed to be participative and to occur **with** rather than **on** participants so that participants could benefit from their involvement, co-developing ways of enhancing their responses to environmental information requests.

1.4 CHAPTER 4: HISTORICAL REVIEW OF THE ENVIRO FACTS PROJECT

This chapter describes the origins of the Enviro Facts Project and explains how the research question arose. The process by which the fact sheets were developed is described, as are key issues that arose during this development process. A critical review of some of these issues is used to address the research question.

1.5 CHAPTER 5: RESULTS: QUESTIONNAIRES, INTERVIEWS AND WORKSHOPS

This chapter summarises and comments on the results of the questionnaire responses, interviews and workshops.

1.6 CHAPTER 6: KEY ISSUES: DESCRIPTION AND RECOMMENDATIONS

This chapter discusses key issues that have emerged from the historical review of *Enviro Facts* and the results of the questionnaires, interviews and workshops. Themes were selected on the basis of their recurrence, and their relevance in answering the research question.

1.7 CHAPTER 7: CONCLUSIONS

On the basis of the recommendations made in Chapter Six, this chapter draws conclusions with regard to the research question. Insights gained with regard to education theory and research methodology are also discussed.

CHAPTER TWO

ENVIRONMENTAL EDUCATION AS A RESPONSE TO ENVIRONMENTAL RISKS

2.1. THE ENVIRONMENTAL CRISIS AND MODERNITY

Growing calls for environmental education have resulted from increasing global awareness of what Beck (1992) described as the environmental risks accompanying modernity. The now familiar litany of risks includes ozone depletion by chlorofluorocarbons; global warming through the emission of 'greenhouse gases', acidification of water and destruction of forests as a consequence of sulphur dioxide emissions; widespread soil erosion and desertification; and the dangers of nuclear fission and the storage of radioactive waste.

Modernity, under the influence of the Scientific Revolution of Newtonian-Baconian-Cartesian thought, is characterised by *scientism* (Capra 1982, Beck 1992, Ekins 1992b), an unquestioning belief in science as the most acceptable means of understanding the world. *Rationalism*, an unquestioning belief that rational, value-free knowledge has a higher status than other forms of knowledge, such as intuitive or traditional knowledge, is another feature of modernity. Descartes' renowned statement "I think, therefore I am" reflects a perspective which values the rational mind above other aspects of being, for example, emotion, spirit, body. Rationalism is closely related to *reductionism* (the belief that complex phenomena can be understood by reducing them to their component parts), which has contributed to a view of the environment as consisting of discrete parts. This manifests, for example, in independent government departments for different aspects of the natural environment, a system which does not allow for the integrated management of ecosystems. Another example of reductionist thought is the common perception that environmental and conservation issues are apolitical concerns, best addressed through ecological management, with little if any consideration given to the point that they are also deeply embedded within the distribution of power and resources (Cock and Koch 1991).

Associated with both scientism and rationalism is *technicism*. A technicist perspective of environmental problems assumes that they can be solved by technical solutions without consideration of the underlying causes of those problems. The issue of human population growth has, for example, sometimes been addressed in a rationalist and technicist way: It is assumed that the birth rate will fall if contraceptives are made readily available and people are taught to use them. Little consideration is given to the role of poverty, infant mortality, and women's role in society in influencing the number of children a woman will bear.

The foundations of Western society and its prevailing economic system can be traced to the Industrial Revolution. Here the power of productive capital came to be regarded as a source of wealth and progress, the self-interested pursuit of which came to be seen as for the greatest good (Ekins 1992a). This economic system is supported by an *instrumental* view of the world where nature, for example, is valued only to the extent that it can be exploited for the benefit of humankind. Together with powerful technologies produced for industrialisation, instrumentalism has contributed to the over-exploitation of resources, such as the mining of pristine and unique areas.

Underpinning modern economics and its free-market orientation is the assumption that the pursuit of individual economic self-interest will serve the common good. This assumption reflects another facet of modernity, viz. *individualism*. Embodied in self-interest, individualism supports modern materialistic values and consumerism, the growth of which is seen as necessary for human progress. Ekins (1992a:182) describes this convincingly:

Economics, as Adam Smith knew, is a branch of moral philosophy. If today it seems more like financial idolatry, that is because its central moral value is self-interest ... Glorifying greed has led to the shopping mall on the one hand and gross exploitation on the other.

2.2. RECOGNITION OF THE ENVIRONMENTAL CRISIS AND THE NEED FOR ENVIRONMENTAL EDUCATION

Awareness of the environmental crisis, and an ensuing call for environmental education as a solution, gained momentum in the 1970's when environmental problems were addressed formally by international organisations. Landmark events include the 1972 United Nations Conference on the Human Environment which resulted in the establishment of the United Nations Environment Programme (UNEP) (Crump 1991). Together UNEP and UNESCO (United Nations Educational, Scientific, and Cultural Organisation) organised the Belgrade Conference in 1975 (UNEP 1977), and the Tbilisi Intergovernmental Conference on Environmental Education in the then USSR in 1977 (UNESCO-UNEP 1978). The latter conference resulted in the development of the twelve "Tbilisi Principles", commonly used to guide environmental education practice.

Other significant events which reflected growing concern about the environmental crisis and which called for environmental education include the publication in 1980 of the *World conservation strategy* (IUCN/UNEP/WWF 1980); in 1982, *The global 2000 report* (Crump 1991); and in 1987 *Our common future* (WCED 1987), the report of the World Commission on Environment and Development. More recently the IUCN, UNEP and WWF have produced a revised version of their 1980 publication, *Caring*

for the earth (IUCN/UNEP/WWF 1991). In 1992 the UN Conference on Environment and Development (UNCED) focused international attention on the environment crisis in what is regarded as the biggest inter-governmental gathering of its kind (Wynberg 1993). All of these gatherings and documents emphasised the need for and role of environmental education in bringing about global change.

2.3 ENVIRONMENTAL EDUCATION AND CHANGE

Environmental education as a response to the environment crisis has inherent within it the assumption (or hope) that it can promote change towards decreasing environmental degradation and sustainable lifestyles. This is illustrated by the following quotations:

Ultimately the behaviour of entire societies towards the biosphere must be transformed if the achievement of conservation objectives is to be assured. A new ethic, embracing plants and animals as well as people, is required for human societies to live in harmony with the natural world on which they depend for survival and well-being. The long-term task of environmental education is to foster or reinforce attitudes and behaviours compatible with this new ethic (IUCN/UNEP/WWF 1980 in Fien 1993:4).

... environmental education is a major vehicle for imparting global change instruction since ... the resolution ... of global change issues depends largely upon behaviour changes in humans brought about by proper education (UNESCO-UNEP 1993:3).

In many cases environmental education is seen as a process by which values and attitudes can be inculcated and behaviour changed to reduce environmental damage. This approach to environmental education is often characterised by:

- i) a reductionistic perspective on the environmental crisis which, in seeking to describe and find solutions for environmental problems, addresses only the biophysical dimensions of the crisis' symptoms;
- ii) a transmission approach to education, learning and social change, inherent within which are the beliefs that first, science is the most legitimate route to knowledge and truth, second, that the latter are absolute and immutable, third, that expert scientists know best the nature of the required change, and fourth, that it is education's task to communicate or transmit the necessary information;
- iii) features of individualism and behaviourism manifesting in an emphasis on individual responsibility for environmental problems, and on behaviour change as a solution as opposed to changes in wilful action. Both features are reflected in an emphasis on individual values and attitudes as determinants of behaviour.

The above is an indication that the very features of modernity which contribute to the environmental crisis viz. reductionism, technicism, scientism, rationalism, instrumentalism and individualism, are also evident in many approaches to environmental education. It would seem that conventional orientations to environmental education have been conceptualised within the same modernistic assumptions that gave rise to the environmental crisis. This is ironic, for it could be argued that education characterised by these features is more likely to replicate the modern society in which it occurs, as opposed to bringing about the hoped for social transformation.

The discrepancy between a vision of education as a means of social change and its enactment as reproductive of society relates to what Stenhouse described as the difference between "our ideas and our aspirations and our attempts to operationalise them" (1975, in Fien 1993:7), or more succinctly, the "rhetoric-reality gap" (Fien 1993:9).

The rest of this chapter will elaborate on the three features listed above, which characterise many international and South African approaches to environmental education. It will also suggest an alternative conceptualisation of environmental education, described in this study as socially critical environmental education, which, it will be argued, might be more likely to contribute to the social transformation aspired to in much of the rhetoric of environmental education.

2.3.1 Environmental education with a biophysical emphasis

Environmental education has often been conceptualised as a response to an essentially biophysical crisis. In these instances, environmental issues are regarded as technical problems which can be solved by technical solutions provided by scientific research and reasoning (Robottom 1991a). The outcome of this orientation is environmental education which draws almost exclusively on the natural sciences, particularly ecology, and on the communication of appropriate messages from experts (most often scientists) to specific target audiences (2.3.2).

Early definitions and descriptions of environmental education, such as the often quoted Tbilisi Principles (UNESCO-UNEP 1978), did point to the significance of an understanding of factors other than the biophysical². More recent literature reflects the recognition that meaningful environmental education

² The first of the twelve Tbilisi Principles states that "Environmental education should consider the environment in its totality - natural and built, technological and social (economic, political, cultural-historical, moral, aesthetic)" (UNESCO-UNEP 1978:1).

requires an examination of social, political, economic, historical as well as biophysical factors (O'Donoghue and McNaught 1989). Although international and southern African literature advocates this more comprehensive approach (Greenall 1987, Irwin 1989, O'Donoghue and McNaught 1989), environmental education practice in southern Africa still emphasises nature, particularly unspoilt nature (O'Donoghue 1993a). Schools and environmental education field centres often reflect this by teaching ecological principles with limited, if any, reference to how these help us understand environmental problems, or how those environmental problems are bound up in social, political, historical and economic dimensions. This point is illustrated by the content of the ecology component of several South African school text books (Claasens *et al.* 1985, Du Toit *et al.* 1985, Thienel *et al.* 1985), an issue of particular significance in view of the influential role text books play in guiding teaching in South African schools (Wagiet and Mackenzie 1991/1992).

The teaching of ecology removed from the world of environmental problems and their social underpinnings eliminates the need to grapple with the historical, political and economic complexities of environmental issues. This task might be daunting to many of South Africa's environmental educators who seem to have a predominantly natural science background, and possibly lack exposure to a broader debate around environmental problems. It is only more recently that popular literature has situated local environmental issues in a socio-political and economic context (Wilson and Ramphele 1989, EDA 1990-, Cock and Koch 1991, Ramphele 1991), perhaps coinciding with the process of political reform in South Africa.

2.3.2 Environmental education as "transmission pedagogy"³

Many local and international environmental education programmes have been characterised by the communication of conservation messages to defined target groups with the intention of promoting awareness and behaviour change (Robottom 1991b, O'Donoghue 1993a). Dunne and Johnston (1992:518) refer to an emphasis on message communication as "transmission pedagogy", which they link to a view of knowledge as objective and value-free. There are many examples of this somewhat naive approach to environmental education, for example, the Council for the Environment's (1984) definition of environmental education as "planned learning programmes which impart knowledge, skills and values to participants, in order to develop responsible lifestyles in harmony with the environment in its totality". The conventional wisdom reflected in the latter seems to assume a linear relationship between knowledge, attitudes and behaviour. This is spelt out in a publication of the Dolphin Action and Protection Group

³ The use of the term pedagogy follows the broad view of Giroux and Simon (1989:230): "Any practice which intentionally tries to influence the production of meaning is a pedagogical practice."

(DAPG, undated) which states that "The main thrust of conservation is education. A simple formula for this is as follows: knowledge + education = awareness, change of attitudes and ethics = caring and conservation."

Transmission pedagogy is problematic because " ... the idea of message communication to cause behaviour change is questionable as a strategy of education ... [which] cannot accommodate the realities of how people come to socially construct and to change the way they see the world" (O'Donoghue 1993a:30). As passive recipients of transmitted messages, people might be unable to comprehend, critically analyze and interact with the messages they receive, leaving them unable to question the underlying assumptions of those messages. Thus world-views and orientations which contribute to environmental risks are transmitted and reproduced, thereby entrenching the *status quo*.

Robottom (1991b:i), commenting on a workshop he had attended, reflected on an alternative to transmission pedagogy:

Education seemed to be perceived as a one-way delivery system from experts to lay people, rather than as a process whereby lay people could generate information, knowledge or understandings about the Greenhouse issue ... There was almost no consideration of how education could involve lay people, including students, in activities capable of actually contributing to an understanding, for example, of how people in particular communities contribute to or could ameliorate the Greenhouse problem.

Lay people are certainly not in the best position to generate information about the greenhouse effect, and expert knowledge does have a crucial role to play in this regard. However, education for change towards more sustainable lifestyles should recognise that useful insights about the causes and solutions of environmental problems can be generated out of people's everyday experience. To overcome a narrow scientific perspective, Ekins (1992b:207) suggested that we

... celebrate the knowledge and wisdom of common people. Compared to some such knowledge, for example the understanding of their habitat possessed by the indigenous dwellers of tropical rainforests, Western scientific knowledge seems deeply deficient. But the traditional knowledge of other people regarded as ignorant from the modern viewpoint, peasants, women, slum-dwellers, is increasingly coming to be viewed as a cultural resource as valuable and valid in its own way as anything emanating from a laboratory.

However, by itself the recognition of the value of different forms of knowledge is unlikely to contribute much to the resolution of environmental problems. Several authors have pointed out that active participation in addressing environmental problems is more likely when people have been involved in identifying suitable actions. Miller (1993:57), in commenting on the opportunity lost when established

decision-making structures failed to include the local community in dealing with issues of environmental concern, argued that the public are "... a source of useful ideas *and* a vehicle for social change" (italics added). Similarly Wynberg (1993:xxi), in reflecting on a strongly emerging theme of UNCED, concluded that "... real change is most likely to come from ordinary people." Ekins (1992b:208) pointed out that for knowledge, whether traditional or enriched by scientific and other forms of expertise, to be productive and contribute to social change, it must "deployed" - in Ekins' terms this means it can only "yield fruit through the processes of participation and democracy".

2.3.3 The authority of scientific knowledge

Inherent within a transmission approach to environmental education is a belief in the authority of scientists to produce the appropriate knowledge to be communicated to the users of knowledge, such as teachers, pupils and the public. This division between those that have the authority to produce knowledge, and those who are supposed to use it, legitimates the role of scientists in determining objective, ecological knowledge as the proper curriculum content for environmental education. The division between those that 'create' and those that 'receive' knowledge is, in turn, based on the belief that science is the best method for 'discovering' truths and that scientists have exclusive access to the means of doing so - a view that has been challenged in more recent times (Beck 1992, Dunne and Johnston 1992, Ekins 1992b, Goodman 1992). An approach to environmental education which relies solely and uncritically on science to both describe environmental problems and offer solutions for them is ironic in light of growing concern that scientism has contributed to environmental problems (Capra 1982, Beck 1992, Ekins 1992b, Orr 1992).

A 'message communication' approach to environmental education also assumes that the nature of the required changes is clear and undisputed, when this is not necessarily so. For example, Huntley *et al.* (1989) maintain that a free-market economy and sustained economic development are fundamental to environmental health, whereas Robertson (in Ekins 1992a:foreword) presents a convincing argument that "Economic progress, in the form we now know it, is doomed. It already threatens the ecosystems on which it depends."

2.3.4 Environmental education and individualism

Tesh (1988, in Robottom and Hart 1991:7) argued that the ideology of individualism, embodied in liberal education and aimed at creating "the conditions for each individual to achieve his or her full potential", could hinder social change. Although the following statement was taken from a discussion on the relationship between individualism and health education, the views reflected here are common to many environmental education programmes:

Individualistic ideology ... supports a politically conservative predisposition to bracket off questions about the structure of society -- about the distribution of wealth and power, for example -- and to concentrate instead on questions about the behaviour of individuals within that (apparently fixed) structure ... Unhealthy behaviour results from individual choice, the ideology implies, so the way to change such behaviour is to show people the error of their ways and to urge them to act differently.

Uzzell and Rutland (1993) attribute the emphasis on individual responsibility in environmental education to a dominance of learning theories which have focused on the individual's role in constructing reality, accompanied by a view of the child as separate from the external social world, and of human development as an individual process.

Individualism assumes that responsibility for one's behaviour lies exclusively with the individual (rather than with society or the community). I would argue that by focusing on individual responsibility and removing environmental problems from their social (including political, economic, historical) context, the nature and causes of environmental problems and possibilities for their resolution are misrepresented. The burden that results from the view that environmental problems are caused and should be solved by individuals lends itself to the creation of unproductive anxiety and helplessness (Uzzell *et al.* 1993).

Robottom and Hart (1991:9), in emphasising the significance of society as opposed to the individual in addressing environmental problems, suggested that it is more realistic to view environmental problems as

social constructions whose meaning and significance metamorphose, wax and wane according to changeable human interest. Fundamentally, environmental issues are political (rather than technical) in character: the majority of environmental issues ... are settled through processes of negotiation, manoeuvring, persuasion, the offer of inducements, the exertion of influence and so on. Environmental issues are almost always political struggles, and collective action is usually more productive than individual efforts in the resolution of political struggles.

2.4 Towards socially critical environmental education

i) Why socially critical environmental education?

It would seem that for environmental education to meaningfully address the environmental risks accompanying modernity, it needs to support a transformation of societal patterns of thinking about and acting in and on the environment, possibly through a critique of the often unquestioned assumptions and values of modern society. This would include a critique of education that sustains the *status quo*, and the development of forms of education that support processes of transformation in society. It is suggested here that the role of environmental education is not to transmit authoritative messages and knowledge, but to equip societies and communities to reflect critically on the structures and processes which underpin and

perpetuate local and global environmental problems (Harber 1990, Naidoo *et al.* 1990, Orr 1992, Wals in press), and to meaningfully address them. Such education is called here socially critical environmental education (Huckle 1991, Fien 1993, Greenall Gough and Robottom 1993).

ii) *The notion of socially critical environmental education: Contributions from critical pedagogy and social theory*

Socially critical environmental education draws partly on critical theory (Huckle 1991, Fien 1993). Critical theory has been described as "radically incomplete" (Nielsen 1992:283), because it does not give an account of how we can get from enlightenment about current conditions to an understanding of how they can be changed. Whilst critical theory aims to aid in our enlightenment through the development of reflective knowledge, it lacks a theory of social transformation (Nielsen 1992). Environmental educators drawing on critical theory do, however, overcome this weakness by, for example, promoting democratic processes and action, based on and leading to political literacy. The work of Australian environmental educators (Huckle 1991, Fien 1993, Greenall Gough and Robottom 1993) refers.

Kemmis (1986, in Greenall Gough and Robottom 1993:301) described socially critical schooling as intending "to provide students with a map of existing culture and society and a map of what a better society might be like." Greenall Gough and Robottom (1993:301) maintained that like socially critical education, environmental education is concerned with a "critical understanding of, and an informed commitment to, the improvement of society."

Our understanding of ways in which social transformation might be fostered by socially critical environmental education is enhanced by the perspectives of the sociologist Ulrich Beck (1992), and authors drawing on social theorists such as Giddens (1991), and Bourdieu (Jenkins 1992). The particularly useful process introduced by social theorists, for example O'Donoghue (1993a), is that of reflexivity.

Reflexivity has been described as "cultural reconstruction through critical social processes of experiential review" (O'Donoghue 1993a:37). Significant features of reflexivity include, first the recognition of the value of different epistemologies or forms of knowledge and, second, dialogue and negotiation between them (Beck 1992). The rest of this chapter will describe dialogue, encounter and reflection as processes of reflexive learning, and will highlight the importance of context and history in such learning (O'Donoghue *et al.*, in press).

2.4.1 Environmental issues to be contextualised in history and society

A simplistic view of the environment as essentially biophysical limits meaningful engagement with and critique of social structures, such as politics and economics. These structures mediate human relationships with the environment and contribute to the environmental crisis. In addition, an ahistorical perspective on environmental problems impoverishes one's insight into current events. It is crucial to consider environmental issues within the context of social, historical, political, economic *and* biophysical factors. These dimensions of the environment are outlined in Fig.1.

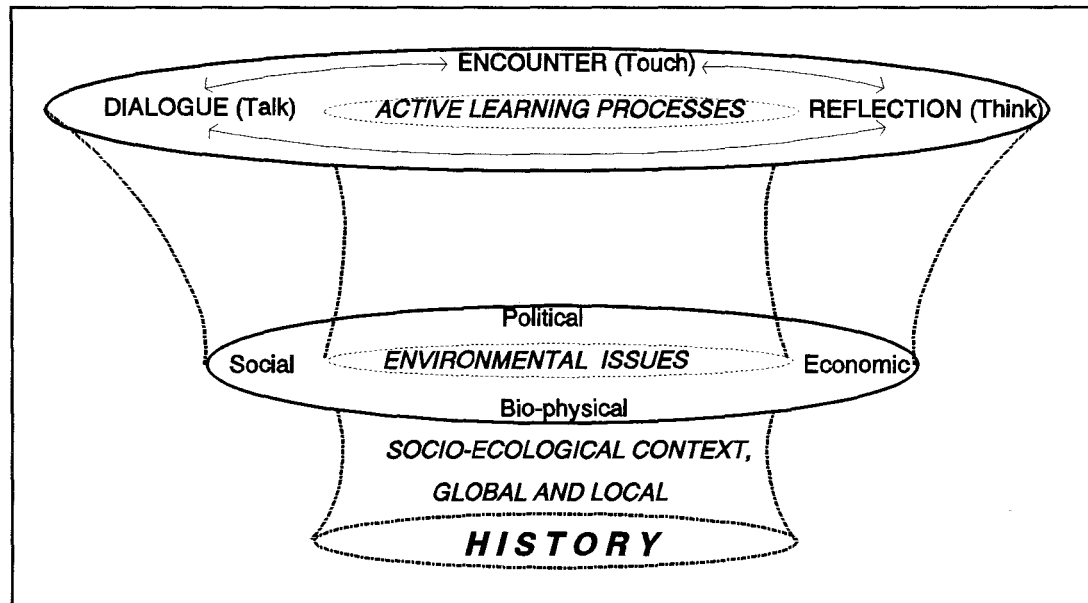


FIGURE 1. Environmental education (O'Donoghue *et al.*, in press).

Janse van Rensburg (1993:4), in supporting the need to consider the role of social factors in environmental problems, noted:

A socially critical approach to environmental education also does away with the burden of exclusively individual responsibility for environmental care - a futile responsibility, given the overwhelming odds of economic and political structures that foster relentless consumerism and development models based largely on unlimited industrial growth.

Thus, by taking a more holistic view of environmental risks and considering *inter alia* their social aspects, two problematic issues are addressed. The first is the reductionist view of the environment (2.3.1) and the second is the individualisation of the causes of, and solutions to, environmental problems (2.3.4).

2.4.2 Education and dialogue

Education should develop and mobilise a 'capital'⁴ of ideas and tools to support dialogue which plays a significant role in processes of reflexive learning (Fig.1). Dialogue can be seen as a vehicle for the development of better understanding between epistemologies, as well as an appreciation of the value of different forms of knowledge. In addition, dialogue plays a significant role in learning. Both of these points are discussed below.

2.4.2.1 Inter-epistemological dialogue

Commenting on a case of unresolved conflict between government scientists and farm workers on the issue of herbicides and health, Lash and Wynne (in Beck 1992:5) argued that

A reflexive learning process would have recognised the conditions underpinning the scientific conclusions ... and examined these with the benefit *inter alia* of different forms of knowledge held by people other than scientists. This reflexive learning process would have necessarily meant negotiation between different epistemologies and subcultural forms, amongst different discourses; and as such it would have entailed the development of the social and moral identities of the actors involved.

'Negotiation between epistemologies' will require that learners grapple with the myths of scientism, the notion of multiple narratives, and the perspective that these narratives, including the dominant scientific narrative, are socially constructed. Further, inter-epistemological dialogue would require an ability to 'talk the language' of various epistemologies. There would need to be particular efforts to learn the language of science as the latter is usually called upon to describe environmental problems and is often presented in an inaccessible form. This would require the demystification of the terminology and practices of science to allow people to more fully understand, grapple with, utilise and challenge scientific perspectives on environmental issues.

The presentation of scientific concepts and arguments in a form accessible to non-scientists is one means of demystification that allow non-scientists to engage with scientific issues and debate. Another approach to demystifying science is to 'give away', or share, the tools of science. In arguing for the latter Taylor (1992) suggested that it cannot be expected that social change will rationally and simply result from scientists giving their knowledge and findings away through clearly communicated messages. He suggests instead that change is more likely when people are able to share in the same sorts of enquiry that enable scientists to come to their understanding of environmental problems. It seems unlikely however, that in

⁴ The term capital is commonly used to describe financial assets with which one can participate in economic activity (2.1). It is used here to describe the symbolic capital or resources with which one can engage in dialogue. Bourdieu (in Haralambos and Holborn 1991:268) refers to the dominant culture as having "cultural capital because, via the educational system, it can be translated into wealth and power."

itself, sharing in scientific inquiry will lead to social change. Greenall Gough and Robottom (1993) described environmental education projects in some Australian schools where water quality studies using water-test kits are limited to the collection and analysis of water samples, and the scientific reporting of results. They pointed out that this process is unlikely to be transformative without attention being given to how students might address the resolution of problems raised during the process. Ekins (1992b) noted that knowledge can contribute to social change only through the processes of participation and democracy. It is argued here that sharing the tools of science to support inter-epistemological dialogue is a significant part of socially critical environmental education. It must, however, not be regarded as an end in itself.

2.4.2.2 Learning through dialogue

Dialogue is seen as playing a significant role in learning. Freire and Shor (1987, in O'Donoghue and McNaught 1989) pointed to the centrality of dialogue in emancipatory change. Vygotsky (Wertsch 1990) emphasised the role of social interaction mediated by language (both prominent features of dialogue), in promoting learning.

2.4.3 Education and encounter

Another significant aspect of learning and teaching for social change is called here 'encounter' (Fig.1) in reference to an experiential encounter with environmental risks in the real world beyond books and pictures (O'Donoghue 1994 pers. comm). Three aspects of encounter are discussed here, viz. an encounter with a real problem; an encounter which includes action; and encounters embedded in a social context.

2.4.3.1 Encounter with a real problem

Orr (1992:92) states that "Good thinking proceeds from the friction between reflective thought and real problems." Engagement with a real problem is also an essential feature of action research and community problem solving (AR&CPS)⁵, as proposed by Wals *et al.* (1990). In a more recent text, Wals (in press:15) stressed the importance of trying to solve real problems by arguing that learners need to not only *know about* their world, but to be *actively involved* with it:

Schools should do more than just prepare students for becoming responsible citizens in later life. Instead schools should acknowledge that students are already part of society and should provide them with opportunities to address social issues and to critically evaluate existing structures and values in our society and culture.

⁵ AR&CPS involves the identification of an issue or problem in the learners' community which is then addressed through a process of planning for action, implementing the plans and evaluating the action. Evaluation informs another cycle of planning, implementation and evaluation, and so on.

Likewise Kemmis *et al.* (1983, in Greenall Gough and Robottom 1993:305) argue that education should engage with society, social structures and issues immediately, rather than simply prepare students for later participation.

2.4.3.2 Action-based encounters

Wals *et al.* (1990) pointed out that understanding of a situation often comes only through action and evaluation of that action (2.4.4). I would suggest that through action, or active engagement with a problem, particularly a real problem, one comes to an enhanced understanding of the complexities of that problem, and of the potential for its solution.

2.4.3.3 Socially located encounters

Socially critical environmental education is social in the sense that, first, it takes cognisance of social factors influencing environmental problems (2.4.1). Second, social interaction mediated by dialogue is seen as a significant component of learning (2.4.2). The latter point is discussed here.

A socially critical approach to environmental education regards learning as a social process by which together people come to better understand environmental problems and work towards solutions. Stenhouse (1975:223), in emphasising the importance of social interaction in learning, maintained that "Communication is less effective than community in the utilization of knowledge". Similarly Taylor (1992:5) pointed to the importance of community in social change, stating that "community comes from shared experiences, dialogue and the building of mutual trust." The social nature of learning was also emphasised by O'Donoghue and McNaught (1989:21) who suggested that social change "occurs through complex processes of critical reflection and dialogue in contexts of everyday action and social interaction."

2.4.4 Education and reflection

Reflection refers here to the thoughtful consideration which enables a critique of the underlying causes of environmental problems. In addition to recognising the social dimensions of environmental problems, and the significance of social interaction in learning, socially critical environmental education endeavours to support societal as well as individual reflection and action. Individual and institutional reflection are deemed essential components of social transformation towards more sustainable living.

This chapter describes environmental education as a response to increasing environmental risks. A critique of some conventional approaches to environmental education is followed by a description of socially critical environmental education as possibly a more appropriate response to the environmental risks we face. The research question, i.e. how can responses to requests for environmental information support

environmental education, will be discussed (see Chapters Six and Seven) in the light of features of environmental education illuminated in this chapter. The following chapter (Chapter Three) describes how this question was researched.

CHAPTER THREE

METHODOLOGY

3.1 RESEARCH QUESTION AND AIMS

The research question addressed through this study was "How can environmental education be supported by optimally responding to requests for environmental information?" The study had two main aims:

- i) To describe (and critically reflect upon) the historical development of the Enviro Facts Project as a case study of a resource developed to respond to requests for environmental information.
- ii) To research ways in which responses to requests for environmental information can be improved.

3.2 RESEARCH TECHNIQUES

To address the research aims, a variety of research techniques were chosen. The reasons for the variety were first, to provide a range of opportunities for participation in the research; second to support the progressive clarification of the research question and answers to that question; and third, because some researchers regard the use of a variety of research techniques as one of the intrinsic characteristics of 'qualitative' or non-positivist research (Seidman 1991). The following research techniques were used:

3.2.1 Document analysis and unstructured interviews to review the historical development of the Enviro Facts Project

Document analysis (Scott 1990, Allan and Skinner 1991) contributed to a description of the historical development of the Enviro Facts Project. The latter had been regularly documented to meet the requirements of the Project funders. Documents analyzed (all of which were available to me) included minutes of meetings, workshop reports, correspondence and reports to funders. The analysis was descriptive and aimed to be critically reflective (Carr and Kemmis 1986).

Unstructured interviews (Burroughs 1975, Cohen and Manion 1989) were conducted with the Project initiators who were represented on the Steering Committee of the Enviro Facts Project. An early draft of the historical development of the Enviro Facts Project (Chapter Four) was used as a focus for the interviews.

3.2.2 A questionnaire and semi-structured interviews to develop an understanding of the nature of requests for environmental information, and responses to those requests

The questionnaire allowed a relatively quick and inexpensive survey (Zeisel 1984) of a large number of

organisations known to receive requests for environmental information, in widely spread geographical regions. This information was used to identify broad trends or patterns of requests and responses.

Semi-structured interviews (Burroughs 1975) were then used to clarify points raised in the questionnaires. This included the exploration in more depth of the problems and suggested solutions associated with responding to requests for environmental information. Initially it was planned to carry out only individual, face-to-face interviews. However, telephone interviews proved very informative, and were considerably less costly than travelling around the country to meet with interviewees. Thus a 20% sample of questionnaire participants⁶ were interviewed telephonically, allowing the inclusion of participants from widely distant geographical regions. Face-to-face interviews, either group or individual, were carried out with 9% of questionnaire participants.

The questionnaire and interview are standard data-collection techniques which can be used in a variety of ways depending on the research methodology (Keeves 1988, Ely 1991, Seidman 1991). I chose a participatory approach (Reason 1988, Allan and Skinner 1991, Ely 1991) as it conforms with the emerging perspective on environmental education and knowledge outlined in Chapter Two. Interviews (and workshops - see 3.2.3 below) provided research participants with opportunities to voice their experiences in responding to requests for environmental information. The interviews (and workshops) were used as an interactive method of inquiry, consistent with an emphasis on dialogue and social interaction as important features of learning and understanding (2.4.2 and 2.4.3.3).

3.2.3 Workshops to provide opportunities for people to meet and, informed by the results of the questionnaire survey, to cooperatively explore strategies for optimally responding to requests for environmental information

Although not a widely used research technique, workshops (Fabian 1990) were chosen because they provided the opportunity for the interactive sharing of ideas and development of strategies. One aspect of the research was the development of local solutions, i.e. cooperative initiatives amongst people in the same geographical area with a shared concern about the research question. Meeting other research participants and exploring solutions together was thus a vital part of the research. Literature on workshops, particularly as a research technique, was limited and I drew mostly on my experience in running workshops in non-formal education.

⁶ The term participant has been chosen to reflect the active and constructive role played by those people taking part in this research project, as well as to convey a sense of the perceived equity between researcher and respondents (Seidman 1991).

3.2.4 A research diary

The research diary (McKernan 1991) was used for recording aspects of the research process including relevant points arising from *ad hoc* discussions, and thoughts about the research question and process.

3.3 RESEARCH PROCESS

3.3.1 Stage one: The historical review

A first draft of the historical review of the Enviro Facts Project was written in January 1993. Ongoing modification of this and later drafts occurred for the duration of the research. Changes were made on the basis of, first, a series of unstructured interviews; second, document analysis; and third, my emerging views as to what aspects of the historical development of the Enviro Facts Project were significant. The latter was particularly influenced by a review of relevant literature, which also informed the writing of Chapter Two.

3.3.2 Stage two: The questionnaire

3.3.2.1 Description of the questionnaire

A pilot questionnaire was developed in January 1993. It was circulated for comment to: environmental educators and people without any formal background in education, who were receiving requests for environmental information; environmental educators experienced in resource development; and researchers experienced in using questionnaires. Changes and refinements made to the questionnaire addressed ambiguities in the questions; the inclusion of a cartoon to lighten the content and invite participation; and the addition of space for participants to respond with a written comment in addition to recording percentages in the tables provided.

The final questionnaire (A 3 - A 8) comprised two sections:

i) Requests for information

This section addressed the following: who requests information; in what form does the request come (e.g. letter, telephone call); from what provinces do requests come; do requests show a seasonal pattern; are requests reactions to specific events such as Environment Day and natural disasters; and what topics are commonly requested.

ii) Responses to requests for information

This section addressed the following: who responds to requests, and in what form (e.g. telephone, letter); what printed information was used to respond; was a charge levied for the service provided; was a record of requests kept, and if so how and for what purpose; what importance does the organisation attach to

responding to environmental information requests; and what would allow the organisation to respond better.

A total of 150 questionnaires were mailed to a range of organisations (Table 5.1), selected on the basis of my experience in environmental education. Those selected were known to receive requests for environmental information, e.g. a range of national and provincial, government-affiliated, conservation organisations, as well as those which were anticipated to receive requests, e.g. libraries and teachers' centres. In over 60% of cases the letters were addressed to a specific person within an organisation known to deal with requests for environmental information. If such a person was not known to me, the letter was addressed to either the head of the organisation, or to the head of the most relevant division, e.g. communications, within that organisation.

The questionnaires were sent out in the second week of February 1993. A covering letter (A 2) accompanied each questionnaire. Its purpose was to introduce the research to recipients, and to emphasise that the focus of the research was to "assist people, in **practical** ways, to respond to requests for environmental information" (A 2).

3.3.2.2 Questionnaire analysis

Questionnaire data was reduced by transcribing each response onto an analysis form (A 9 - A 14). Responses for each group (as listed in Table 5.1) were analyzed together, and a descriptive report was written for each group. Analysis of the questionnaires was qualitative (Zeisel 1984) and described trends such as who requested environmental information, and what motivated requests for information.

i) Questions for which a percentage response was required

The percentages awarded by each participant were recorded on the analysis table, and the three highest scores were ranked. The number of first, second or third rankings received by each category listed in the questionnaire was then determined. In addition, the average percentage awarded for each category was calculated.

ii) Open-ended questions for which a descriptive response was required

A preliminary content analysis of responses led to the establishment of categories, a process Zeisel (1984:162) refers to as "coding". The responses were then analyzed again and recorded under each category so that clusters and patterns could be identified. Following the preliminary analysis of the questionnaires, in which broad trends were described qualitatively, the data was lost as a result of the theft

of a suitcase. Unfortunately this precluded any further quantitative analysis. On the basis of the qualitative analysis a report was written for each group of organisations, and these were consolidated into one final report, reflected in Chapter Five.

3.3.3 Stage three: Interviews

3.3.3.1 Description of the interviews

The interviews were semi-structured (Burroughs 1975). Six individual, or one-on-one interviews (Hedges 1985) were held, and two group interviews (Hedges 1985, Watts and Ebbutt 1987) with three people each. Approximately one third of the interviewees took part in face-to-face interviews, and two thirds took part in telephone interviews.

i) Face-to-face interviews

The functions of the face-to-face interviews were initially defined as, first, the clarification of points raised in the questionnaires and, second, the exploration, in more depth, of the problems and potential associated with requests for environmental information. Based on my experience with the first interview, which was characterised by a rich and free flow of discussion around a shared problem, I realised that this research technique could also be meaningful in the following ways:

- * During the interview we shared problems, solutions and insights around the research question, a process that seemed beneficial to everyone involved. Thus the interviews could have more than simply a data-gathering function.
- * The interviews allowed for an exploration of the possible significance of responding optimally to requests for environmental information.
- * Group interviews with participants from the same organisation could be particularly productive as a result of their shared understanding of their situation. It seemed probable that such an interview could usefully inform discussion and decisions ‘back at the chalk face.’

The second interview was planned with the above in mind. An interview schedule was compiled on the basis of an analysis of all questionnaire responses from the interviewees’ organisation. The interviewees were invited to the forthcoming interview well in advance, allowing them time for preparation. Coupled with my own preparation, this contributed to a focused and productive interview. The constructive nature of this second group interview confirmed my decision to arrange group, rather than individual, interviews where possible.

The interview schedule for the third interview was drawn up in a similar way to that described above. Unfortunately the librarian of the organisation concerned, who was largely responsible for dealing with requests for environmental information, was not available and I interviewed only one person.

Although I had decided to arrange group interviews where possible, two more individual interviews were conducted, i.e. interviews four and five. In both cases group interviews were not possible as the interviewees were based at their respective head offices, and the other staff surveyed were located in regions geographically distant from the head office.

The fourth and fifth interviews were difficult interviews, but they did give rise to a number of useful points regarding methodology. First, I learned that I should establish a suitable atmosphere for the interview by avoiding, for example, the interviewee and I sitting on opposite sides of a desk; the interviewee's face being in a dark shadow; and interruptions from the telephone and colleagues. Second, I needed to direct and focus the interview more actively, and to ensure that questions are fully answered, without prompting the interviewee excessively (Seidman 1991).

ii) Telephone interviews

Twenty-three telephone interviews were carried out with participants whose questionnaire returns raised issues that warranted clarification and further discussion. During the research it had become apparent that libraries, teachers' centres and museums had the potential to respond well to requests for information. Thus seventeen of the twenty-three telephone interviews were conducted with representatives of these institutions.

3.3.3.2 Recording and analysis of interviews

i) Face-to-face interviews

Interviews were recorded on tape and were later transcribed using a dictaphone machine. To analyze the interviews I re-read them several times to identify relevant themes (Zeisel 1984). A 'relevant theme' was an issue that was raised several times, and was relevant to the research question.

ii) Telephone interviews

During the telephone interviews I made brief notes. Immediately after each interview I used these notes and my recollection of the discussion to write up a fuller description of the interview. Relevant themes were then identified, as described above.

3.3.4 Stage four: Workshops

3.3.4.1 *Description and recording of the workshops*

A total of six workshops (Table 5.2) were held, three of which utilized existing opportunities where research participants were gathered in one place. Three workshops were arranged specifically to consider aspects of the research question. The topics addressed by each workshop varied according to the progress of the research at that stage, the interests of the workshop participants, and the time available.

Workshop 1. 2 May 1993

At this early stage of the research I had the opportunity of attending a weekend workshop of the Environmental Awareness Officers (EAOs) of a provincial conservation organisation. All of the EAOs had returned a questionnaire for this study, and these were used to guide a one-hour workshop. I recorded points raised by making notes during the course of the workshop, and later compiled these into a report.

Workshop 2. 19 June 1993

Thirteen participants of the Gold Fields Environmental Educators Course⁷, including myself, met for a weekend workshop in Natal. Within the two-day programme I held a one-hour workshop during which I sketched the history of the research project and some suggestions for improving responses to environmental information requests, as had emerged during the research. I chose one of these suggestions, a directory of environmental education resource materials, as the focus of the workshop.

An outline of a proposed directory was given to each participant. This outline was discussed in groups, after which one spokesperson from each group provided feedback for general comment and discussion. I made notes during the proceedings. Participants recorded their comments on the draft outline and these were handed to me at the close of the workshop.

Workshop 3 (7 July 1993) and workshop 4 (8 July 1993)

These two workshops were held during the annual meeting of the Environmental Education Association of Southern Africa (EEASA). They involved fifteen and fourteen participants respectively, some of whom I had invited and others who had chosen to attend because of an interest in the subject of the workshop.

The format of both workshops was the same: The background to the research project was sketched and

⁷ The Gold Fields Environmental Educators Course is a one-year correspondence course which aims to support participants in improving their environmental education practice by introducing them to relevant aspects of education theory.

issues that had emerged from the questionnaire were described. One of these issues, the need for a directory of environmental education resource materials, formed the focus for each workshop. A draft directory was circulated and this was discussed in groups, after which feedback from each group was shared with all participants.

Both workshops were recorded using a tape recorder, in addition to which I made notes. A scribe in each group also recorded comments on the draft directory.

Workshop 5. 28 September 1993

The seventeen participants in this workshop were selected on the grounds of their questionnaire responses; telephone interviews in which they had participated; their potential role in addressing issues raised during the research; and their geographical location. Most of the participants had completed the questionnaire, and all had participated in one or more telephone discussion with me. They were therefore familiar with the research question at the outset of the workshop.

This two-and-a-half-hour workshop was recorded on tape; one participant made notes during the workshop; and I made notes of relevant points when possible. Transcription of the tape recording was augmented by both sets of notes, and a report compiled after the workshop by one of the participants (Di Maggio, undated).

Workshop 6. 29 September 1993

This workshop was run during a morning session of the environmental education elective of the Higher Diploma in Education (HDE) students at the University of Natal (Pietermaritzburg). The seven participants worked in groups to address one issue that had arisen during the research process, i.e. the need for an organising framework for the *Enviro Facts* (4.5,iii). A spokesperson for each group reported on their activities, and this stimulated discussion by the whole group. I made notes of relevant points made during the workshop.

3.3.4.3 Workshop analysis

The records of each workshop were read through several times to identify relevant themes. These are discussed in Chapter Five.

3.4 COMMENT ON RESEARCH METHODOLOGY AND DESIGN

3.4.1 Participation

The research occurred with rather than on participants (Reason 1988, Ely 1991). The participants were regarded as co-researchers, and I, the researcher, was in turn a co-practitioner with the participants. This participative approach to the research was based on the following: First, the development of *Enviro Facts* was an early attempt to answer the research question. As Project Coordinator of *Enviro Facts* I thus had a keen interest in the research question. Second, I had in common with many of the other participants the experience of having dealt with requests for environmental information whilst at the then South African Nature Conservation Centre (4.2.1). The research question was, to a large extent, a shared question, not just 'mine' or 'theirs'.

The research techniques were chosen and used so as to encourage participation and interaction. An example of this was my decision when drawing up the questionnaire, to ask for an "informed estimate" (A 4) in answering the questions as opposed to accurate figures. I thought this would encourage people to respond more readily. Broad participation was regarded as more important than the statistical analysis which accurate figures would have afforded.

Participation was vital because the research aimed to support people in developing their own solutions. Ely (1991:229) argued convincingly that the research process should enable co-researchers or participants to better deal with the issue being researched.

... it is no longer ethically acceptable to study people in such ways that they provide the data for our major stepping stones - to earn degrees, write books and articles ... while we provide them with far fewer and certainly more distanced benefits.

The participatory approach followed allowed the possible benefits of the research to be shared during the research process, as opposed to findings being reported only at the end of the study.

3.4.2 Interaction

Interaction through dialogue between participants was encouraged in light of the view that learning is enhanced through dialogue (2.4.2). Examples include:

3.4.2.1 Group interviews (Hedges 1985) with staff of the same organisation were conducted where possible, in preference to interviews with only one staff member. The interaction associated with the group interview allowed participants to work together in developing solutions for their particular situations. Solutions or strategies developed in this way seemed to be, first, more appropriate, and second, more likely to be adopted than those developed by only one member of a group or organisation.

3.4.2.2 During the interviews and workshops I frequently shared with other participants insights and ideas gathered and developed earlier on in the research process. The interviews and workshops were not used as just data-gathering tools, but allowed participants to benefit.

3.4.2.3 The workshops brought together people with a common concern, many of whom worked in the same geographical region, to share insights and interactively conceptualise resources and strategies for responding optimally to requests for environmental information. During the workshops a concerted effort was made to support this process by, for example, beginning each workshop with people introducing themselves and their work; supplying workshop participants with names and addresses of delegates; and telephoning some participants after the workshops to follow-up on cooperative initiatives that had been suggested during the workshops.

3.4.3 Progressive clarification

The research design allowed for the progressive clarification of the research question and possible answers to that question. By employing a series of methods to study the same issue, and by involving some participants in all of these, the research question could be revisited. This 'revisitation' was interspersed with dealing with the problem in practice, sometimes called experiential review.

The progressive clarification described here included the development of the 'capital' (2.4.2) to productively engage with the research question and develop means of optimally responding to requests for environmental information. Such capital included a more focused and informed understanding of the problem; a heightened awareness of the potential that requests for environmental information may present; a growing knowledge of role players, both local and national, that could support enhanced responses; and knowledge of resources that could be used or adapted to respond to requests for information.

The development of such capital during the research was certainly the case for myself and possibly for those participants involved with more than one of the research stages, viz.

- * **an historical review of the Enviro Facts Project** - to describe its origins and explain how the research question arose;
- * **a questionnaire survey** - to survey trends in requests for environmental information and responses to those requests;
- * **interviews** - to clarify issues raised in the questionnaires and discuss means of optimising responses to requests; and
- * **workshops** - to address significant issues arising out of the questionnaire and interviews and to

interactively develop cooperative strategies for improved responses.

3.4.4 Action-centred learning

Finally, action-centred research such as this can be seen as a process of learning through doing. Effective learning occurs through dealing with a real problem (Orr 1992). Thus during this research other participants and I actively engaged in identifying and implementing practical strategies for optimally responding to requests for environmental information.

The results of the four research stages structured through the techniques described above, are reported in Chapters Four and Five.

CHAPTER FOUR

HISTORICAL REVIEW OF THE ENVIRO FACTS PROJECT

4.1. INTRODUCTION

Increased awareness of environmental risks and the associated emergence of environmental education as a perceived solution have contributed to a growing demand for information about the environment. One attempt to meet this need was the Enviro Facts Project. This project involved the development of 60 fact sheets of approximately 1000 words each in length. *Enviro Facts* endeavoured to provide an overview of the environmental topics covered that was succinct, accurate, up-to-date, easy-to-understand, and South African in perspective. They were developed and published between September 1990 and November 1993, in three phases:

- i) Phase I - The development of fact sheets numbered 1 - 60.
September 1990 - November 1992 (SANF 1990 correspondence).
- ii) Phase II - The revision of fact sheets numbered 1 - 40. December 1992 and July 1993 (SANF 1992a correspondence).
- iii) Phase III - Research into how to improve responses to requests for environmental information.
January 1993 - November 1993 (SANF 1992b correspondence).

This chapter will describe the evolution of the Enviro Facts Project through these three phases. Relevant events precipitating the initiation of the Project will be recounted, as will the process by which the fact sheets were developed. Pertinent issues that emerged during the Project's evolution will be described and critically reviewed. The latter will be drawn upon in a discussion of the research question (Chapters Six and Seven).

As described in the previous chapter (3.2.1), the historical review of *Enviro Facts* reported here was carried out through document analysis and unstructured interviews with members of the Project's Steering Committee.

4.2. EVENTS PRECIPITATING THE INITIATION OF THE PROJECT

4.2.1 South African Nature Conservation Centre

From January 1986 to May 1990 I worked at the then South African Nature Conservation Centre (SANCC), an environmental education centre in suburban Johannesburg. The SANCC received many

requests for environmental information, particularly from school pupils who were doing projects⁸ which had been set by their teachers. My colleagues and I found it difficult to deal with these requests for environmental information for the following reasons:

- i) The project topics set by teachers were frequently not clearly defined and were often very general in nature, e.g. "Conservation", "Wildlife", "Endangered Species".
- ii) The instructions given to the children were generally inadequate.
- iii) There was a dearth of appropriate resource materials with which we could respond.

Through discussions with colleagues in conservation agencies such as the Endangered Wildlife Trust (EWT), I became aware, first, that many other organisations were struggling to deal with an ever-growing number of requests for environmental information. Second, staff from these organisations also reported that school projects were generating many information requests.

It was encouraging to find that teachers were setting environmental projects. However, I was concerned about the ill-defined nature of many of the topics set, and the inadequate instructions given to the pupils. The setting of environmental projects in schools seemed to be an area of potential for environmental education that might be enhanced if teachers could be supported to set better projects.

Ongoing discussion with the EWT about this potential, and our shared concern about the inadequacies of some approaches to project work, resulted in the two organisations joining forces to address the issue. The result was a workshop entitled "Environmental Projects: Pleasure or Problem?", which took place in October 1989 (A 15). The workshop was attended by approximately 150 people, including the then Director of Education of the Southern African Nature Foundation (SANF). Feedback during and after the workshop indicated that it was well received and appeared to have addressed a real need amongst teachers. As a result of this workshop, four further workshops were held, three in KaNgwane and one in Johannesburg. In addition two publications were produced, viz. "Environmental projects: Pleasure or problem?" (Paxton 1992) and "Environmental projects: Some ideas for teachers" (Paxton 1993a).

The original workshop "Environmental Projects: Problems or Pleasure?" addressed primarily points 4.2.1 (i) and (ii) above, i.e. it endeavoured to support teachers in both the choice of project topics, and in the

⁸ The term 'project' is used throughout this thesis to describe school work that required some degree of independent study on the part of pupils. It is taken to include *inter alia* the terms 'assignment', 'self-study' and 'independent study'. For a more precise interpretation of these terms, including 'project', see Van Harmelen (1991).

manner in which projects were set. The dearth of suitable environmental information, (4.2.1,iii) received limited attention during the workshop. Existing resources were displayed in the foyer of the SANCC, and producers or distributors of these, and other resources, described them to workshop participants during a 30-minute plenary session. Although this session had been scheduled to take only ten minutes, it was allowed to run over time because of the interest it arose.

4.2.2 Share-Net

In September 1988 a workshop was convened by the Wildlife Society of Southern Africa (WLS) and the Natal Parks Board (NPB) at the WLS's Umgeni Valley Project in Howick, Natal (Wildlife Society of Southern Africa 1988). The workshop had been convened on the recommendation of research by O'Donoghue (1990). The aim of the workshop was to promote cooperation in the development and implementation of environmental education resource materials. The recommendation from the workshop was that this be achieved through the establishment of a network, to be called Share-Net. During the workshop it was stressed that if established the network should not function as a library of resources but should facilitate local (as opposed to centralised), cooperative resource development and implementation.

4.2.3 The Southern African Nature Foundation and the Wildlife Society of Southern Africa

The dearth of environmental information appropriate for school pupils was again addressed in early 1990. The then Director of Education of SANF, and the Head of Extension Services of the WLS, met to discuss *inter alia* the WLS's need for environmental information as a result of ever-growing numbers of requests for information (Taylor 1993 pers. comm.). In response to this need the WLS had developed the Postal Facts File. This was simply a hanging file in which a collection of photocopied articles from books and magazines were kept (for examples of material used in the Postal Facts File see Gowar 1991). When a request for information was received, the relevant article was photocopied and posted out. During this meeting some of the drawbacks of the Postal Facts File were discussed, viz:

- i) The information in the file was of a variable standard, i.e. some of the articles were not well written, and few were suitable for use by school pupils.
- ii) The source of the information was seldom cited, thus it was difficult for the reader to gauge the credibility of the material, or to assess any possible bias.
- iii) The reporting in some of the newspaper and magazine articles was sensational and emotive.
- iv) Information about environmental issues in South Africa was in short supply.
- v) Many of the articles were photocopies and of a poor quality which made them difficult to read.

The two participants in the meeting acknowledged that the main strength of the Postal Facts File was that each topic was on loose-leafed paper, and could be easily photocopied to meet the 'single topic' nature of most environmental information requests received by the WLS. They deliberated over ways in which the strengths of the Postal Facts File could be enhanced, and its weaknesses addressed. This led to the conceptualisation of a series of single-leafed information sheets dealing with environmental issues.

Following this meeting, the SANF's Director of Education investigated the possibility of his organisation funding the development of such information sheets. In the early stages of this investigation he discovered that a supermarket chain, Pick 'n Pay (PnP), were in the process of compiling environmental information sheets as part of their "Green Environmental Friendly" marketing campaign. Swift negotiation in mid-1990 between PnP and SANF led to the establishment of a cooperative project to produce and distribute the environmental fact sheets. It was agreed that SANF would fund the production of the information sheets, and PnP would be responsible for translation of the text into Afrikaans, and for the typesetting, printing and distribution of the resource to their stores countrywide. One of the conditions of this agreement was that twenty information, or 'fact' sheets be produced urgently to comply with PnP's timetable.

4.3 PHASE I: SEPTEMBER 1990 - NOVEMBER 1992

4.3.1 Fact sheets 1 - 20

In June 1990, after I had left the employ of the SANCC, I was contracted by the SANF to work with their then Director of Education and produce the first 20 fact sheets (A 16) during a two-week period in September 1990. The demands of meeting this deadline affected the Project in the following ways: The topics chosen were those that could most easily be written within the available time; consultation with specialists on specific topics, and with potential users, was limited; no diagrams were included, nor were the information sheets dated or numbered; and proofreading prior to printing was limited. These factors contributed to the development of a resource that required extensive revision. This was carried out over two years later, in 1993 (4.4).

During September 1990 *Enviro Facts* was chosen as the name for the proposed resource. The SANF approached other conservation agencies to participate in the Project. This was in accordance with the ethos of promoting collaborative resource development projects established during the first Share-Net workshop (4.2.2). Seven conservation agencies, in addition to SANF agreed to endorse the Project, and to support it in kind where possible. The Enviro Facts Project thus carries the logos of the SANF, WLS, EWT, NPB, National Parks Board, Botanical Society and Oceanographic Research Institute.

4.3.2 Fact sheets 21 - 60

Following the production of the first 20 fact sheets, I was contracted by the SANF to coordinate the Project and produce a further 40 fact sheets, i.e. numbers 21 - 60 (A 16). A Steering Committee to guide the development of *Enviro Facts* was established. It comprised: The Director of Education for the SANF; the Senior Professional Officer for Communications for the NPB; the Head of Extension Services for the WLS; and myself. During the course of the Project, the Media Liaison Officer of Pick 'n Pay joined the Steering Committee (*Enviro Facts* 1992a).

SANF and PnP decided that fact sheets 21 - 60 would be released in four batches of ten each. This allowed PnP to achieve a marketing objective by having four releases to attract people to their stores. The staggered release benefitted the development of the resource in that it allowed for the improvement of successive releases of fact sheets as the Steering Committee gained experience with each release.

4.3.3 The aims of the Enviro Facts Project

The aims of the Enviro Facts Project were influenced by:

- i) the needs of conservation agencies in responding to environmental information requests;
- ii) the strengths and weaknesses of the Postal Facts File; and
- iii) the experience gained during development of the first 20 fact sheets.

These factors contributed to the decision that *Enviro Facts* should provide information on "southern African environmental issues that was concise, easy-to-understand, accurate and up-to-date" (Paxton 1990b correspondence).

4.3.4 Development of the fact sheets

There was some debate within the Steering Committee as to which of two routes to follow in developing the fact sheets. These routes were, first, either teachers (or myself) write the material, which I would then edit; or second, a specialist in each topic writes the material following which I would edit the fact sheets and review them during a workshop process with potential users. I chose the latter option as I felt that direct input from specialists would be the most pragmatic way of compiling information that was current, and which would accurately summarise the significant issues within each topic. I felt that it would be too arduous a task for any non-specialist to write information with these features. The process by which the *Enviro Facts* were developed is described in Appendix H (A 18 - A 21).

4.3.5 Key issues raised during Phase I

4.3.5.1 Introduction

The issues described below were regularly reviewed, either during workshops or in discussion with the Steering Committee, colleagues and writers of the fact sheets. These issues were not neatly raised, discussed, resolved and 'put to bed'. At times no clear decision was reached as to how they should be handled. Despite this, production continued as printing deadlines necessitated a pragmatic approach to developing the resource. The available time, funding and technology, as well as the needs of the different personalities and organisations involved, all played their part in guiding the Project.

Some members of the Steering Committee believed that the best way to deal with many of the dilemmas that presented themselves was through taking action whilst constantly reflecting on that action. However, this perspective was not shared by all Steering Committee members, some of whom felt that clarity and understanding should be achieved prior to taking action. The resulting tension was probably most acutely felt by myself, and it was only with hindsight that I was able to understand more clearly the uncertainty and dissatisfaction with which I left many Steering Committee meetings. I had a sense of being 'in the dark' about the Project when, as Project Coordinator, I felt I should have been able to clarify problematic aspects of the resource's development and the project's management. Nevertheless at the end of the day the inevitable deadline loomed ahead and the fact sheets had to be written. Pragmatism ruled and the job was done.

4.3.5.2 Issues raised

i) Enviro Facts as a book

In considering how the fact sheets could be made more useful, a member of the Steering Committee suggested that they be published as a book. However, feedback during the workshops indicated that the loose-leaf format was favoured as it allowed for easy photocopying of individual topics, for example, for each child in a class. In addition, participants suggested that the loose-leafed format would allow for the updating of selected fact sheets, as opposed to the whole series (Paxton 1991).

Towards the end of 1993 the merits of publishing *Enviro Facts* as a book were again discussed, this time with a view to improving their distribution which was seen as inadequate. Two members of the Steering Committee and I met with a publisher of school text books to explore the possibility of their publishing *Enviro Facts* as a book, and distributing it through their extensive distribution network. In the course of discussions we decided that the most useful way in which the information in *Enviro Facts* could be made more widely accessible was to rework the text into dictionary format. The working title given to this book was "A dictionary of South African environmental terms and concerns" (Paxton 1993b). Production of this

book is currently underway.

ii) *The target group*

During an early workshop a journalist asked who the target audience was for the fact sheets. She argued that it was not possible to write something when you did not know who was going to read it (Paxton 1991).

This issue had indeed concerned me whilst developing the resource. Discussion about the target audience, or group, at this workshop was informed, first, by feedback we had received on those fact sheets already published. This feedback indicated that they were being used in a range of contexts with a variety of age-groups. For example, correspondence received by Share-Net and discussions with participants in earlier workshops indicated that the fact sheets were being used by, *inter alia* primary school children under the guidance of their teacher; secondary school pupils as a resource for project work; editors as a source for environmental articles; teacher education institutions; and as supplementary material for popular natural history courses. Second, discussion was informed by the knowledge that environmental information of the sort *Enviro Facts* endeavoured to supply, was not available. This information should first be developed, and could subsequently be adapted to meet differing needs.

In the light of the above, a guiding principle for writing the material was established, namely that it should be presented as clearly as possible, in simple language. This would hopefully make it suitable for a wide range of English reading abilities, in differing contexts. This decision diffused our anxiety about the target groups for *Enviro Facts*.

In a similar vein, the accessibility of the text to English second language (L2) readers was raised. This issue too concerned me throughout the Project, as I felt that the *Enviro Facts* should be rewritten for L2 readers. There was some tension between my view and that of a Steering Committee member who did not think that rewriting for this purpose was necessary. Subsequent negotiations between Share-Net and READ (Read, Educate and Develop) Educational Trust have investigated the possibility of a collaborative venture to produce reworked *Enviro Facts* suitable for L2 readers (O'Donoghue 1993 pers. comm.). Similarly, a meeting with Shell Education Services in December 1993 led to the decision to rewrite a selection of fact sheets for primary school children.

iii) *Topics for debate*

As I grappled with writing and editing the fact sheets I realised that many dealt with contentious issues about which specialist scientists had differing opinions. Discussion with the Steering Committee confirmed the importance of reflecting contention and uncertainty in the fact sheets (SANF undated). The dilemma as to how this might be achieved within the limited space available for each fact sheet was resolved by the inclusion, where appropriate, of a section called "Topics for Debate". In this section differing viewpoints could be succinctly reflected and raised for debate (see for example *Enviro Facts* "Conservation", "Sustainable development", "Rhino" and "Human numbers" A 23).

This was a turning point for me in the development of the resource. I realised that an important role for *Enviro Facts* should be to illuminate areas of contention and uncertainty where they existed, rather than to attempt to provide the last word on these issues. Instead of 'putting the lid on' an issue, *Enviro Facts* should attempt to 'take the lid off' and expose the issues perplexing our understanding of environmental problems.

iv) *Numbering and dating*

From number 21 onwards the recommendation that fact sheets be numbered and dated (SANF 1991, *Enviro Facts* 1991b) was implemented. This made it possible to file the loose-leafed resource by number, and dated material allowed the reader to place the information in an historical perspective.

v) *Distribution*

Although thousands of fact sheets were released through PnP stores (*Enviro Facts* 1992a), a persistent problem throughout the course of the Project was the inadequacy of this distribution channel (*Enviro Facts* 1991a, 1991b, 1991c, 1991d, 1992b, 1992c). Feedback at workshops (Paxton 1991) and correspondence received by Share-Net indicated that the supply through PnP stores was inadequate. This was due to the following: PnP stores held only the ten fact sheets of the latest release, when people frequently wanted the whole set; not all PnP stores stocked the fact sheets; and not everyone requiring the fact sheets had access to a PnP store. Growing evidence of inadequate distribution was confirmed by Gowar (1991).

vi) *Translation of Enviro Facts into African languages*

The possibility of translating the fact sheets into, for example, Zulu and Xhosa was raised several times in the course of the Project. It was decided that such translation would be too big a task for the current management of the Project. Should somebody else wish to translate the material they would have received the support of the Steering Committee (SANF, holders of *Enviro Facts* copyright, made the resource

available copyright free for educational purposes).

vii) *The sale of Enviro Facts*

The fact sheets were provided free of charge by PnP stores. Some members of the Steering Committee recommended that the material be sold, first, to generate income which would reduce the cost to PnP and increase the likelihood of their ongoing involvement in the Project; and second, to increase the perceived value of the resource in the eyes of the public (*Enviro Facts* 1991c, 1992a). The latter was based on the suggestion that material given away at no charge might be perceived as being of limited value, or as propaganda. To date the materials have never been sold through PnP stores as PnP management were adamant that they should be supplied at no charge.

4.4 PHASE II: DECEMBER 1992 - JULY 1993

4.4.1 Introduction

Towards the end of 1992 the development of fact sheets 21 - 60 came to an end and the Steering Committee addressed the future of *Enviro Facts*. It was agreed that the Project was meeting an important need but that it was not fulfilling its potential as a resource with which to respond to requests for environmental information. The reasons for this were understood as follows:

- i) The first 20 fact sheets included inaccuracies and some did not deal with what was perceived to be the most significant issues pertaining to the topics covered. The reasons for this have been outlined above (4.3.1).
- ii) Similarly, problems with the translation, typesetting and proofreading of fact sheets 21 - 40, outlined above (4.3.4), contributed to their being riddled with errors.
- iii) Although distribution through PnP stores had made thousands of fact sheets available to the public, it had become apparent that many potential users, such as teachers, resource developers, and, significantly, conservation agencies, did not know of *Enviro Facts*, or did not know how to acquire them.
- iv) As the resource did not have an index, it was likely that potential users might be unaware of the information available in the complete set of fact sheets.

In an attempt to address points (i) and (ii) above, Phase II of the Project was established (*Enviro Facts* 1992c, SANF 1992a correspondence). This involved the revision of fact sheets 1 - 40. Phase III was established to address *inter alia* points (iii) and (iv) above. The latter phase formed the basis of the research reported here, and is introduced more fully below (4.5).

4.4.2 Revision of fact sheets 1 - 40

4.4.2.1 Introduction

The revisions of fact sheets 1 - 40 to address the problems described above (4.4.1,i and ii) began in December 1992. I was in the part-time employment of the NPB at the time and this allowed for relatively easy access to the scientific and other expertise of their staff. In particular, the fact sheets underwent a final editing by a NPB scientist. In addition, I was able to work closely with a member of the Steering Committee, himself a NPB employee. Our ongoing dialogue around the role of *Enviro Facts* and how this should influence the revision process greatly enriched the redevelopment of numbers 1 - 40.

Having at this stage completed the development of all 60 fact sheets, Phase II was an opportunity to stand back from the absorbing detail of that process, and consider the Project as a whole. This reflection, enriched by discussion with colleagues in the NPB and members of the Steering Committee, centred on two issues:

- i) First, I considered if there were any subject areas not represented that should be included in the 60 topics. The original topics (A 16) had been selected primarily on the basis of the demand for environmental information, and not as representative of environmental issues facing the planet, to which my focus had then shifted. Consequently nine topics were replaced (A 17).
- ii) Second, I considered how the resource could be augmented so as to provide the reader with a framework within which the 60 seemingly discrete topics could be better understood. When the Project was originally conceptualised, each fact sheet was intended to stand alone. Now that all 60 had been developed, the value of providing a framework within which they could make coherent sense became apparent. Thus the following orienting fact sheets were developed: "What are *Enviro Facts*?", "Conservation" and "Sustainable Development" (A 23). These fact sheets described overarching or central issues and made extensive reference to other fact sheets.

4.4.2.2 Key issues raised during Phase II

During the course of rewriting existing titles and developing new titles the following issues emerged:

i) The significance of history

In writing the fact sheets "Conservation" and "Sustainable Development", it became clear that there was no absolute definition of these concepts and that meanings had arisen out of historical contexts. It seemed appropriate to describe the historical context in which differing meanings had emerged and thereby provide a clearer understanding of these concepts.

ii) The primacy of the scientific narrative

As described (A 18), the fact sheets included a section called "What you can do" which outlined ideas for action. Whilst working on the fact sheet "Precious water", I consulted the contributing author, a limnologist, for suggestions for this section. He acknowledged that "we need to give people meaningful things to do about environmental issues", but did not think that my suggestion of starting "a local catchment management project in your area" was realistic as it required specialised knowledge and coordinated effort. Further on, the "What you can do" section in this fact sheet suggested that affected communities use readily available water test kits (O'Keefe and Day 1992) to investigate water quality, and then follow-up on any findings such as signs of high human faecal contamination. The contributing author felt that, bearing in mind the personal and sensitive nature of this issue, one should not "let people loose - they may not handle things as best possible". Advice on both points seemed to suggest that remedial action could only occur under the direction of experts, most likely scientists, and that the very people who were most affected by the problem had little to offer to its resolution.

It could be argued however, that problems associated with the use of water resources (e.g. faecal contamination, pollution from users upstream) might be most effectively addressed in collaboration with people in affected communities. Such a collaborative effort might promote inter-epistemological dialogue (2.4.2.1). Beck (1992) sees the latter as a key feature of reflexivity and significant in meaningfully resolving environmental problems.

iii) View of knowledge and education

In rewriting the fact sheet "Ozone" I came across a statistic that reflected an increase in ultra-violet (UV) radiation with the rise in altitude. Thus UV radiation was significantly greater on the South African highveld than on the coast. This did seem to raise doubts as to the seriousness of ozone depletion, the main thrust of the fact sheet. A specialist scientist consulted on this matter was adamant that this statistic, in his terms a "*non sequitur*", should be omitted, although correct. This suggested an approach to education that was message oriented, i.e. we needed to get a clear message (uncluttered by confusing facts!) across that ozone depletion was serious and must be halted. Implied here was that people would then act, on the basis

of the clear message, to halt depletion. This approach to education as the rational management of behaviour has been discussed (2.3.2). It was only in retrospect that I came to better understand this incident. At the time I took the line of least resistance, knowing that I had the support of an 'authority', and left the vexatious statistic out.

A similar 'message transmission' approach to education was reflected in correspondence from a scientist commenting on the fact sheet "Ozone". The relevant extract reads as follows:

I don't doubt your sincerity, but you are taking chances in manipulating the population [by 'misrepresenting the facts']. I got a letter this week from a Cape matric pupil who is having an argument with his geography teacher because the teacher believes the information [in the fact sheet] and the pupil is disagreeing. The pupil's position is correct and I had to send him pages of information to correct his geography teacher.⁹

This quote seems to indicate, first, a view that knowledge was absolute and immutable, and where there were contradictory views, there was inevitably a correct and incorrect stance¹⁰. Second, it suggests that education should endeavour to represent only the 'correct' facts, and certainly should not portray contention and disagreement. This view appears to reflect a lack of recognition of the value of debate in education (4.3.5.2,iii). This is ironic in the light of the writer's apparent concern about "manipulating the population". The latter is more likely when only one perspective is presented, thereby quelling debate.

4.5 PHASE III: JANUARY 1993 - NOVEMBER 1993

At the end of 1992 the future of *Enviro Facts* was discussed by the Steering Committee. It was acknowledged that the development of *Enviro Facts* was only one aspect of supporting enhanced responses to requests for environmental information, and that other strategies for improving responses should be considered. Four of these deserve particular mention here:

⁹ The following quote is taken from my letter of response:

I was delighted with your closing description of the argument between a Cape matric pupil and his teacher - a fine example of the type of education that has been sadly lacking in this country, and that deserves our support. An important role of the fact sheets is to encourage informed debate about environmental issues, an exceptionally sound approach from an educational perspective. If the *Enviro Facts* are able to contribute to such processes of open debate and discussion, we will have gone a long way to achieving our objectives.

¹⁰ The author of this letter takes the view that CFCs have been misrepresented as the villains in ozone depletion. This is at variance with other specialists consulted in compiling the fact sheet "Ozone", which reflected the more popular view.

- i) First, an effective distribution network for *Enviro Facts* should be established.
- ii) Second, it was noted that there were many resources other than *Enviro Facts* which could be used to respond to environmental information requests. In order to make these resources more widely known and easily accessible, a directory of environmental education resource materials should be developed.
- iii) Third, it was suggested that an index or organising framework for *Enviro Facts* be developed to give users a better idea of the information included in the resource. The index and organising framework were initially conceptualised as the same thing, but later came to be seen as two different ways of 'making sense' of the resource.
- iv) Fourth, it was suggested that a "central letter-writer" (Macdonald 1992 correspondence) should be instituted. This person would have the task of responding to the requests for environmental information received by many conservation organisations.

The latter suggestion was not seen as a viable option by some members of the *Enviro Facts* Steering Committee (Taylor, undated, correspondence). The ensuing debate stimulated by the "central letter-writer" suggestion, resulted in a draft project proposal (Paxton, undated). This proposal developed into Phase III (SANF 1992b correspondence) which researched how responses to requests for environmental information could be enhanced.

I took the view that an enhanced response should support environmental education. Thus the research question became "How can environmental education be supported by optimally responding to requests for environmental information?" This question was addressed by the research reported in this thesis. Points (i) to (iv) were pursued in the course of the research as possible, but not the only, solutions to this question. It was acknowledged at the outset that answers to this question might include *Enviro Facts*, but there would no doubt be strategies for enhancing responses that did not include that resource.

CHAPTER FIVE

RESULTS: QUESTIONNAIRES, INTERVIEWS AND WORKSHOPS

5.1 INTRODUCTION

This chapter describes the results of the questionnaires and telephone interviews (5.2); face-to-face interviews (5.3); and workshops (5.4). These three stages of the research took place between January 1993 and September 1993. Data-collection began by surveying 150 people in a relatively superficial way. It became more selective in terms of choice of participants and topics discussed as the research progressed through the three stages.

Two general observations about the data-collection process are warranted. First, the research participants tended to respond enthusiastically to the invitation to participate. Some returned their questionnaires with examples of resources they found useful in responding to environmental information requests; material which described their organisation's work; or a page of additional notes describing their experience of issues raised in the questionnaire. During interviews and workshops participation was in general eager, and information and ideas were offered willingly.

A second observation was that responses frequently reflected participants' frustration in not being able to respond to environmental information requests as well as they would have liked. They were generally keen to discuss strategies and resources which might allow them to provide a more satisfactory response. Thus the research appeared to address a real concern of the participants.

The results reported here reflect trends that were seen as significant in terms of the research question. The results of each questionnaire item, interview and workshop are followed, where appropriate, by a brief "Comment" to highlight significant issues and cross-reference to other sections of the research. A more complete discussion of the results occurs in Chapter Six.

5.2. QUESTIONNAIRES AND TELEPHONE INTERVIEWS

5.2.1 Introduction

A total of 150 questionnaires were mailed to a range of organisations¹¹ (Table 5.1). Follow-up calls were made to those people who had not returned their questionnaires after five weeks, and they were

¹¹ The term 'organisation' is used throughout this report in place of, for example, conservation 'authority' or 'body'.

encouraged to respond. These telephone discussions tended to yield useful data which was recorded in the research diary.

Of the 150 questionnaires sent out, 112 were returned. A further three people responded with either a telephone call or a letter. A return of 77% was achieved.

After a preliminary analysis of the questionnaires I telephoned some of the respondents to explore points made in their responses. In addition to being effective in dealing with the issues needing clarification, these conversations also confirmed that the issue of responding to requests for information was of concern to many research participants, and they provided insights into the research question. I decided to make more extensive use of telephone interviews than originally intended. Thus 20% of questionnaire respondents were interviewed telephonically. A further 9% took part in face-to-face interviews, either as individuals or groups (Table 5.1).

The return of 77% of the questionnaires was very encouraging, and supported earlier indications (5.1) that the research was of relevance to participants. Other factors which might have contributed to the high response rate were first, that most of the questionnaires were mailed to specific people whom I knew dealt with environmental information requests, and with whom, in some cases, I also had an established working relationship. Second, the covering letter of the questionnaire emphasized that the research would address practical solutions to the research question. Third, the instructions to the questionnaire asked for only an "informed estimate" (A 4) as opposed to detailed statistics. This might have made it easier for people to respond. Finally, the follow-up telephone calls undoubtedly prompted responses.

The questionnaire returns from two groups in particular warrant special mention, i.e. development agencies and libraries. Of the development agencies surveyed, only half of the questionnaires were returned. Follow-up telephone conversations with two of those who did not respond, and a letter from a third, indicated that they did not see the provision of environmental information as of concern to them. A respondent involved with a food-gardening project said that her organisation would not be responding because they were not concerned with environmental issues, but with issues of poverty and food production. Similarly, a telephone conversation with a respondent representing a rural socio-medical project indicated that he did not see the scope of their work (including health, nutrition, agriculture, soil and water conservation, and appropriate technology) as falling within the definition of "environmental information" given in the questionnaire, viz. "Environmental information can be regarded as information dealing with environmental issues, ecological processes or plant and animal species" (A 4).

These responses reflected a seemingly narrow interpretation of the term "environment" on the part of respondents. This may have been linked, first, to the questionnaire being posted in a NPB envelope, and second, to a statement in the covering letter that the research was funded by the SANF. It is possible that some recipients might have associated these organisations with 'wildlife and conservation' on the basis of their historical involvement with environmental concerns. Thus this project might have been erroneously perceived as taking a similar approach which would have been of limited relevance to organisations concerned with broader environmental concerns such as poverty and primary health care.

The number of responses received from libraries were almost double those posted out. This was because the central libraries to whom I had posted questionnaires, photocopied and distributed them to all branch libraries, all of whom responded. The effective distribution and over 100% return of librarians' questionnaires; the detail of the librarians' responses; and their timeous return of questionnaires reflected noteworthy efficiency on the part of the librarians.

Unfortunately, after a preliminary analysis of the questionnaires and the follow-up telephone interviews, theft of a suitcase resulted in the loss of all completed questionnaires and telephone interview notes. This affected the analysis of this data, as discussed below (5.2.2).

TABLE 5.1. Number of questionnaires posted to and returned by each group surveyed, and interviews carried out.

| <i>Groups to which questionnaires sent</i> | <i>No. of quest. sent</i> | <i>No. of quest. returned</i> | <i>Face-to-face interviews</i> | <i>Telephone interviews</i> |
|--|---------------------------|-------------------------------|--|-----------------------------|
| The Wildlife Society of Southern Africa | 18 | 15 | Group: 2 groups of 3 people each 5.3.2 and 5.3.3 | 1 |
| Other non-government conservation organisations | 35 | 24 | Individual: 1 5.3.4 | |
| National- and provincial-government conservation organisations | 35 | 25 | Individual: 2 5.3.5 and 5.3.6 | |
| Department of Environment Affairs | 3 | 2 | | 1 |
| Universities | 6 | 4 | | 1 |
| Museums | 10 | 7 | | 4 |
| Zoos | 2 | 2 | | 1 |
| Development Agencies | 16 | 8 | | 2 |
| Teachers Centres | 15 | 10 | | 5 |
| Libraries | 10 | 18 | | 8 |
| TOTAL | 150 | 115 | 9 | 23 |
| Percentage response to questionnaire | | | 77% | |
| Percentage of respondents interviewed - face-to-face | | | 9% | |
| Percentage of respondents interviewed - telephone | | | 20% | |

5.2.2 Results of questionnaire responses and telephone interviews

The loss of the questionnaire and telephone interview data influenced the research in that the main trends identified in the preliminary analysis could not be quantified. Thus they have been described generally using terms such as "most", "few" and "majority". Loss of the questionnaires and telephone interview data also precluded greater use of quotes and referral to specific questionnaires, features which could have enhanced the description of the results.

The results of the questionnaires and telephone interviews, discussed below (5.2.3), follow the order of the questionnaire items. The page number given after each questionnaire item, e.g. (A 5), refers to the

page in the Appendix where that item can be found.

5.2.3 Requests for environmental information

5.2.3.1 Who requested environmental information? (A 4)

i) Report

In the majority of responses, requests for information from children and teachers were ranked first, and this category had the highest average percentage. In several cases it was noted that parents frequently sought information on behalf of their children, a point raised again during a later workshop (5.4.6.2,v). In retrospect, it would have been useful to have separated children and teachers into two categories in this question. However, responses to other sections of the questionnaire (5.2.3.5,i) and discussions during some of the interviews (5.3.2.2,i and 5.3.4.2,i) indicated that, in fact, children formed the bulk of this category.

Two groups, however, reported that they received most of their environmental information requests from people other than children and teachers. These were universities, where requests were mainly from tertiary students and other environmental educators; and a conservation organisation which received requests most frequently from tourists. No clear trend emerged amongst the development agencies.

ii) Comment

The finding that most requests for information originate from children corresponds with the finding that most requests were associated with school project work (5.2.3.5,i).

5.2.3.2 In what form were requests received? (A 5)

i) Report

Most respondents stated that their requests for information came in the form of letters and telephone calls. Libraries, including those of the National Botanic Institute (NBI) and University of Cape Town, Department of Geographical and Environmental Sciences, and museums, however, reported that the majority of their requests came from visitors to their facilities. Visits were also the source of a significant number of requests for teachers' centres, an urban environmental education centre, and the conservation organisation which received most requests from tourists. Some respondents mentioned in the open-ended section of the questionnaire that going out to give talks and slideshows also generated requests for further information.

5.2.3.3 From what geographical region did most requests come? (A 5)

i) Report

In all except five cases the majority of requests originated in the province, or part of the province, in which an organisation was located. Organisations which received most of their requests from outside of the province in which they were located were: Share-Net, *Toktokkie*, the WLS's magazine for junior readers; and the following non-government conservation organisations (NGOs), EWT, SANF and Rhino and Elephant Foundation (REF).

ii) Comment

It was to be expected that Share-Net, as a mail-order service, would receive requests from all provinces. Similarly *Toktokkie*, sent to WLS members countrywide, would receive requests from all provinces. NGOs such as the EWT, SANF and REF might receive requests from all provinces as a consequence of the high visibility associated with their membership and fundraising campaigns.

5.2.3.4 Did requests for information show a seasonal pattern? (A 6)

i) Report

Few respondents recorded a seasonal pattern, and many noted that requests came in a steady flow through the year. Where a seasonal pattern was noted, it was evident that requests from children and teachers had been greatest during term time; and that requests from tourists had been greatest during the holidays. Although many respondents noted specific times within the school year when requests were most frequent, no overall trend could be identified. Natural cycles, such as the change of seasons and increased animal activity, associated in some cases with breeding cycles, were also reported to prompt an increase in requests for information.

ii) Comment

The need for information about the natural history of a region, often linked to a particular season, might indicate the need for sources of local information, which in turn might suggest a need for regional directories to support regional networking, e.g. *Resource guide for environmental education facilities* (ECF/D'MOSS, undated).

5.2.3.5 Did requests for information come as a reaction to specific events? (A 6)

i) Report

The most commonly cited events stimulating environmental information requests were the environmental days, e.g. World Environment Day, Arbor Day, Marine Day. Although not strictly speaking an event as described in the questionnaire, many respondents noted that school projects generated environmental

information requests. Several libraries and museums reported that school projects were the primary motivation for information requests. A respondent from the Department of Environment Affairs (DEA) estimated that 30 - 40% of the requests they received were as a result of school projects. Follow-up telephone interviews with questionnaire respondents indicated that teachers set projects to coincide with environmental days, so requests were often associated with both an environmental day and a school project.

Other events which were reported to prompt requests for information included:

- * media coverage of natural disasters;
- * publicity events such as media campaigns and competitions;
- * personal experience, e.g. finding a seal on the beach, sighting an unusual bird.

ii) Comment

Responses to this question suggest that environmental education could be supported through optimally responding to the many requests associated with environmental days. The significance of school projects in prompting environmental information requests was also raised in other sections of the questionnaire (5.2.3.1,i), during the interviews (5.3.2.2,i and 5.3.3.2,i), and during the workshops (5.4.3.2,ii and 5.4.6.2,v). School projects are discussed more fully below (5.2.4.7,i,p.56).

5.2.3.6 What are the most common topics about which people request environmental information? (A 6)

i) Report

Although most people responded to this question, some did not list topics, noting that they received requests on too wide a range of topics to list. I categorised the topics given as follows (in no particular order):

Plants - general

Animals - general

Identification of plants and animals

Threatened species (mainly animals)

How to deal with problem animals

Animal behaviour

Environmental problems (e.g. pollution, ozone depletion, global warming)

Ecosystems (e.g. rivers, coastal dunes)

Utilization of natural resources (e.g. fishing and hunting regulations; environmental management)

Conservation

Careers in conservation
Ecology
Recycling
National environmental days
General education queries (e.g. teaching resources; suitable venues for field trips)

The topics requested most frequently fell into the categories of "Environmental problems" ("Pollution" was the most frequently requested topic in this category) and "Animals". "Education queries" were also a common request, particularly at teachers' centres and museums. Museums were also frequently asked to identify plants and animals. As noted above (5.2.3.5,i), information about national environment days was also a common request.

5.2.4 Responses to requests for environmental information

5.2.4.1 Who responded, within each organisation, to requests for environmental information? (A 7)

i) Report

This question asked for a description of the responsibilities of the person/s responding to information requests. The responses fell into three broad groups:

- * *Staff responding to information requests who had this as their primary function - librarians.*
- * *Staff responding to information requests who had primarily an education function*
Teachers' centres, museums, zoos, universities: although staff responding to information requests in these organisations frequently had administrative responsibilities, their main role was educational. Respondents from teachers' centres indicated that their education activities included curriculum development and enrichment through *inter alia* resource development, the provision of in-service programmes for teachers, and the operation of a media centre. The educational staff of museums and zoos reported that they frequently relied on support from their scientific staff (i.e. researchers, zookeepers, veterinarians) in responding to information requests.
- * *Staff responding to requests for information who had numerous responsibilities, sometimes including education*
~ The majority of staff responding from *national or provincial organisations* had an education function. Their other duties included administration, law enforcement, museum management, public relations and media liaison, and librarianship.

- ~ Staff members from *NGOs* who responded to requests for environmental information had numerous other functions, in some cases education related. Non-education functions included administrative and secretarial work, planning, research, management, librarianship, law enforcement, museum management, public relations, media liaison, editorial functions, shop assistance and desk-top publishing. In one case a volunteer was responsible for handling requests for environmental information, and this was her primary function.
- ~ Staff responding to requests for information in the *DEA* had numerous other functions which were not linked to education, viz. arranging exhibitions, photography, administrative work, management and liaison services.
- ~ Staff of *development agencies* responsible for responding to environmental information requests had administrative, research and field-work responsibilities, but did not report an education function.

ii) Comment

Organisations in the first two categories listed above, particularly libraries, museums, and teachers' centres, had primarily information and education functions and might thus be able to play a significant educational role by enhancing their provision of environmental information. Indications that libraries could play a significant role in the provision of environmental information prompted an approach to the Natal Provincial Library Services with a view to improving the provision of Share-Net resources, including *Enviro Facts*, to libraries under their jurisdiction (Taylor and Paxton 1993 correspondence).

5.2.4.2 How did people respond to requests for environmental information? (A 7)

i) Report

Most research participants responded by mailing out the required information. Libraries, of course, responded by allowing people to make use of their books and other resources. Museums usually handed out the required information, as most of their requests came from visitors. Museums also made their staff libraries available although these seldom had resource materials suitable for pupils, teachers and members of the public. Teachers' centres responded mainly by dealing with the query in person, i.e. a discussion with the person seeking information. They also mailed and handed out information, and often ran courses rather than making books and other resource materials available. Similarly, some development agencies responded to the need for information on topical issues by offering seminars. They also published books and articles in existing publications. Some respondents mentioned events such as workshops, slide-shows

and talks, as means of responding to requests for information.

ii) Comment

In general these results correspond with those of point 5.2.3.2 above. The form in which requests are received, as might be expected, seems to influence the nature of the response.

5.2.4.3 What type of information was used to respond? (A 8)

i) Report

Resources used to respond to requests for environmental information included:

* *Photocopies*

A common response amongst the organisations surveyed was the photocopying of information. Some organisations managed a collection of material often photocopied by filing articles on a particular topic together and photocopying them when needed. Thus Share-Net had a Postal Facts File, and a regional branch of the WLS had "project files". Libraries referred to a "cutting collection", and to "project files", similar organising systems for managing loose sheets of information.

These results focused my attention on the need for a suitable technique for storing and displaying *Enviro Facts*, and thereby making them easier to use and promote. Sharing this concern with a Steering Committee member led to the development of a simple cardboard stand for this purpose (A 22).

* *Published materials from respondent's organisation*

Some respondents, such as the DEA and some conservation organisations, reported publishing resources specifically to respond to information requests. Materials produced by the respondents' organisations for other purposes, e.g. annual reports, newsletters and magazines, were also used to supply information.

* *Published materials from other organisations*

Respondents reported frequently using resources produced by organisations other than their own. The DEA, for example, distributes its resources to national and provincial conservation organisations, thus making them widely available for responding to environmental information requests. Some respondents mentioned the use of resources produced by Shell Education Service and Share-Net.

* *Other types of information used by participating organisations included:*

- ~ A bibliography or reference list of sources of environmental information. This was either a personalised list to deal with a particular enquiry, or a standard list, as produced regularly by libraries to coincide with current events.
- ~ Names and addresses of people and organisations that could provide further support or information; either personalised and produced *ad hoc*, or a more general document for widespread use such as the *Resource guide for environmental education facilities* (ECF/D'MOSS, undated) and *Clubs and societies* (Durban Municipal Library, undated). Participants cited these simple directories as particularly useful resources.

The referral of people to other sources of information, sometimes called "networking"¹² by respondents, seemed to be a common response strategy, particularly for those development agencies that took part in the study.

A WLS branch provided an example of a standard letter used to refer people to local libraries. The letter included the Dewey classification numbers for botanical, zoological and ecological information, and a list of standard plant, and animal reference books.

- ~ A "pamphlet collection", an A4 exercise book into which one librarian had pasted loose sheets of information such as pamphlets and brochures, was used to complement and extend the library's existing resources. This was useful when several people needed similar information, as often happened when a whole class required project information.
- ~ Personalized responses, for example, a letter providing information.

Only eight respondents mentioned using *Enviro Facts* in their responses to environmental information requests. This was a significant response as *Enviro Facts* were produced to support organisations, particularly conservation organisations, in responding to environmental information requests.

¹² The term *networking* is used in this report to describe the processes by which people locate resources for responding to environmental information requests, or refer information requests to a more appropriate source of information.

ii) Comment

This open-ended question elicited responses that tended to need clarification during interviews and workshops. In many cases people simply listed the examples given in the question. On reflection, it would have been better to have listed categories of information, such as "specially prepared information" and "photocopies", and then asked respondents for examples of materials used in each category.

The limited use of *Enviro Facts* for responding to environmental information requests was expected (4.3.5.2,v) and was one of the motivations for the research reported here (4.5,i): Respondents' networking strategies are discussed further below (5.2.4.7,i, p.57)

d) Was a charge levied for the provision of information? (A 8)

i) Report

Most groups reported levying a charge for the direct costs of photocopying and, less frequently, postage. Only one organisation, an environmental education centre, charged for the service of supplying information in addition to photocopying and postage costs. The charges were R5 for using the library and R10 for their librarian to carry out an information search and mail out material. A follow-up interview indicated that the R10 fee was waived if responding to the request required relatively little time. Some published resources were sold, e.g. materials produced by Share-Net and Cape Nature Conservation.

ii) Comment

Respondents did identify lack of funding as a constraint on responding to information requests (5.2.4.7,i, p.57). It seems unlikely, however, that charges rendered for the supply of information could ever generate sufficient income to compensate for this. For example, it was reported that although an invoice was included when information was posted off, payment was seldom forthcoming. There may, however, be benefits to the responding organisation other than recouping the cost of responding (5.2.4.5,i and ii).

5.2.4.5 Were any records kept of requests for environmental information? (A 8)

i) Report

In the majority of cases no records were kept of people requesting information. Where records were kept, it was not always clear to what use, if any, they were put, except for the compilation of a mailing list used variously to notify people of forthcoming activities or publications; to recruit donors; and to provide ongoing support to projects such as wildlife clubs. Other uses of records included the compilation of reports; the identification of trends to inform resource development; financial auditing; and the location of loaned material.

ii) Comment

There might be some benefit in keeping records of environmental information requests. People requesting information might be a source of the following: membership; an audience for the organisation's publication/s; donors; information to inform resource development; purchasers of gifts or publications; and participants in programmes, courses or competitions offered.

5.2.4.6 Was it regarded as important to respond to requests for environmental information? (A 8)

i) Report

The majority of respondents felt it was important to respond to requests for information. This response was, however, frequently accompanied with qualifications such as, "not our primary function", "important but not a priority", "important, but we are not geared for it". Many respondents noted that although it was important to respond, this function was neglected in the face of other demands on their time and funds.

Dealing with requests for information was the primary function of libraries, although requests for environmental information were deemed no more important than any other requests. Respondents from a particular provincial conservation organisation reported that responding to environmental information requests was of low priority for their organisation, although as individuals they felt it was important to respond well. Amongst the responses from development agencies were several references to the importance of networking.

ii) Comment

Although responding to environmental information requests was not reported as a priority (except by librarians), most respondents regarded it as an important function. The results suggested that respondents needed strategies which would allow an effective response to information seekers, but not require much time, effort or money. Examples of such strategies developed through this study are discussed later (6.6).

5.2.4.7 What would have allowed you to respond more effectively to requests for environmental information? (A 8)

i) Report

Responses to this question have been categorised as follows: Types of information required; The nature of requests for information; Networking; and Funding and Staff. Comment does not occur at the end of this section, but follows each category.

* *Types of information needed*

The majority of suggestions centred around the type of information which would allow for improved responses to environmental information requests. These suggestions are described below:

- ~ Respondents needed to know of existing resources and their suppliers. Several respondents suggested that a directory or database of resource materials was necessary, some regarding it as a priority. Knowledge of low-cost resources in particular was required.
- ~ Information that was "easy-to-understand" was another clearly articulated need, as was current or topical information. The need for the latter was expressed particularly by librarians.
- ~ There were requests for more resources, but no specific topics were identified. Two key respondents expressed a need for resources related to environmental issues noted in the school syllabus. Follow-up interviews with both respondents indicated that although text books do deal with syllabus topics, they seldom reflect significant or current issues. The primary school syllabus, for example, required that a contagious disease was studied. The interviewee noted that a common text book example given for this was athlete's foot. She pointed out that the teachers with whom she was working were desperate for information on AIDS, a more topical and certainly more significant contagious disease.
- ~ Questionnaires indicated frequent requests for posters. Follow-up discussions with one questionnaire respondent indicated that in her experience posters were used mainly for decoration, or occasionally to introduce a theme, such as Arbor Day.
- ~ One respondent from a provincial conservation organisation expressed a need for information in Zulu.

Comment on the type of information required

The questionnaire results clearly illustrated a need for knowledge of existing environmental resources, which supported an earlier suggestion by members of the Enviro Facts Steering Committee for the development of a directory of low-cost environmental education resource materials (4.5,ii). This suggestion was also made in some interviews and workshops and was discussed in detail in workshops three and four (5.4.4 and 5.4.5).

As noted earlier (4.3.3), the Enviro Facts Project was an attempt to provide information with a number of the features described above (5.2.4.7,i). The fact that such information was still perceived as lacking supported the rationale for this research to explore how the need for environmental information could be met. In several telephone interviews with librarians, and during a later workshop (5.4.6), I described *Enviro Facts* to participating librarians. They responded positively to the Project and were eager to obtain a set of the fact sheets. The supply of *Enviro Facts* to libraries throughout the country could improve the distribution of the resource and support librarians in improving their responses to environmental information requests (5.2.4.1,ii).

Although frequent reference was made in the course of this research to material that was "easy-to understand" or of "a suitable level", it was not possible to ascertain precisely what was needed (see, for example, 5.4.6.2, iii, p.81).

* *The nature of requests for environmental information.*

As recorded above, the majority of requests to the organisations surveyed came from children, and less frequently from parents on their behalf, in response to projects set by teachers (5.2.3.1,i and 5.2.3.5,i).

Respondents indicated that these requests were difficult to deal with because:

- ~ they were often vague, and dealt with broad topics such as "Wildlife" or "Conservation";
- ~ they were sometimes beyond the ability of the child concerned, often because of their scope and vagueness;
- ~ children seemed to lack the skills required to find and use a variety of sources of information, frequently a pre-requisite for the projects set;
- ~ the necessary information was not always readily available.

Several recommendations were offered, both in questionnaires and telephone interviews, as to how projects could be set better and thus facilitate improved responses to information requests. These suggestions, listed here, were supported in a subsequent workshop (5.4.6.2,i).

- ~ Project topics should be more clearly defined.
- ~ Project topics should be appropriate for the ability of the child.
- ~ Clear guidelines should be given to children as to what was expected of them.
- ~ Teachers should liaise with a likely source of information, e.g. the museum or library, prior to setting the project to ensure that sufficient copies of relevant information was available.
- ~ Teachers should avoid the indiscriminate distribution of addresses to their pupils as this could result in organisations receiving requests beyond their field of operation, thus frustrating all

parties.

Comment on the nature of requests for environmental information

Chapter Four (4.2.1) records that concern over inadequacies in the way in which school projects were set led to, first, a workshop "Environmental Projects: Pleasure or Problem" (A 15), and second, the development of the fact sheet "Environmental Projects - a guide for teachers" (Paxton 1993a). Problems with the manner in which projects are set, as outlined here were raised repeatedly during the Durban workshop (5.4.6.2,i,v).

* *Networking*

Several questionnaire respondents, in considering what would enhance their responses to environmental information requests, indicated that they would like to know of people and places which they could approach for specific information, or to which they could refer information seekers. A librarian suggested cooperation between libraries and conservation organisations, through, for example, ongoing programmes in which the latter placed an exhibit in a local library, perhaps to coincide with an environmental day. One respondent suggested that it would be beneficial if she could refer all requests to "someone more equipped to handle them", and another noted that "someone else should answer these requests, my organisation will never be able to handle them".

Comment on networking

The need to know of organisations and resources could possibly be met by local or regional directories (national directories exist, e.g. *The green pages* (1991/1992)) of people and places that can provide environmental information, and by a directory of low-cost environmental education resource materials. The latter option, suggested at the inception of this research (4.5,ii), was discussed at some length in workshops three and four (5.4.4 and 5.4.5).

The suggestions that all requests for information should be referred to another organisation is similar to the "central letter-writer" idea suggested at the inception of this research (4.5, iv). It is discussed in more detail in Chapter Six (6.4).

* *Funding and staff*

Several respondents indicated that additional funding and staff were needed, although how these would be used was seldom specified in the questionnaires. Telephone and postage costs were seen as constraints on responding, and one follow-up interview indicated that additional funds would be used to meet these costs.

Comment on funding and staff

As increased funding and staff are unlikely in South Africa's current economic climate, a more practical option might be to make better use of existing resources. This line of thought is explored in Chapter 6 (6.6).

5.3 FACE-TO-FACE INTERVIEWS

5.3.1 Introduction

Five face-to-face interviews (Table 5.1) were held with the aim of clarifying points raised in the questionnaires, and exploring in more depth the problems and suggested solutions associated with responding to environmental information requests. The interviews were also an opportunity to share with participants research insights developed at that stage.

Interviewees were selected on the basis of the following: their questionnaire responses; their representation of conservation organisations (both government and non-government) known to receive numerous environmental information requests; and their geographical location, and hence the ease with which I could meet with them. The education officer of the environmental education centre interviewed was selected because of the centre's development of a library specifically to meet the need for environmental information.

5.3.2 Interview 1. The Wildlife Society of Southern Africa, regional branch.

12 July

5.3.2.1 Context

This was the first interview of the research project. Three staff members of a regional branch of the WLS were visiting Natal and I capitalised on their visit by arranging an interview at short notice. The interview participants were two education officers (EO¹ and EO²) and a member of the editorial staff (ED) of *Toktokkie*, the WLS's children's magazine. Two participants (EO¹ and ED) had completed the questionnaire, and their responses were used to guide the interview.

5.3.2.2 Relevant issues raised during the interview

i) School projects

Participants confirmed the questionnaire finding (5.2.3.1,i and 5.2.3.5,i) that most requests came from children who had been set environmental projects at school. We discussed the inadequacies of some current approaches to setting environmental projects, and the need to support teachers in setting better environmental projects, possibly by producing a booklet with guidelines for teachers.

ii) *Marketing and distribution of environmental education resource materials*

Participants expressed a need for improved distribution of resource materials. It was suggested that teacher's subject study-groups might provide a useful opportunity for publicising environmental education resources. I mentioned an earlier suggestion by members of the Enviro Facts Steering Committee, that a directory of environmental education resource materials be produced (4.5,ii). This was met with enthusiasm.

iii) *Making better use of libraries*

On the basis of recent negotiations with the Natal Provincial Library Services (5.2.4.1,ii), I suggested some possible benefits of placing environmental education resource materials in libraries. This idea was well received by the participants. They were, however, unsure about their ability to establish such an initiative in their region and requested my support to do so.

iv) *Central or local information supply*

Frustrated by their inability to respond adequately to the requests they received, the group was initially compelled by the idea of a centralised bureau, or "central letter-writer" (4.5,iv) onto which they could shift the problem. However in the course of discussion, participants came to express doubt as to the wisdom of this option, as illustrated by the following exchange:

EO¹ I believe we will never really be able to address this mountain [i.e. environmental information requests] ...

EO² I think we would be shooting ourselves in the foot if we got someone else to do it.

EO¹ We haven't prioritised it in terms of our activities, we see it as very low on the level of activities.

EO² Yet it is the centre of our existence.

EO¹ Yes, another of the paradoxes.

5.3.2.3 Comment

During the interview I felt anxious about where the discussions would lead, and the apparent lack of enthusiasm of the interviewees. At the end of the interview I was disappointed as nothing definite had been resolved. However, review of the interview transcript and subsequent feedback from EO¹ indicated that the interview had, in fact, been meaningful because participants had engaged with the issue under discussion and come to question some of their perspectives on it. Further, the interview stimulated participants to challenge their own and each other's views on the issue of responding to requests for

information, and seemingly set in motion ongoing development of their ideas on the issue (see below). The interviewees questionnaire responses and the initial stages of the interview indicated a mixture of indifference towards the issue of responding to information requests, and the perception that this was a problem they should rid themselves of. The latter reflects the views of EO¹ in particular, indicated by her concluding comment in the questionnaire that her organisation would never be able to address this problem and it should be handed over to someone else. My suggestions of supplying libraries with environmental education resources; using a volunteer to help with responding to information requests; and developing a standard letter to ease the burden of responding, elicited similar sceptical responses from EO¹. However, during a later telephone conversation she said that issues raised during the interview had been discussed during the group's drive back home. EO¹ also invited me to run a session addressing the issue of improved responses during the WLS's annual staff workshop. This seemed to indicate that she had come to see the optimisation of responses to environmental information requests as of some significance.

This interview highlighted the value of a group interview, particularly with participants of the same organisation. In addition to providing an opportunity to address together the issue of improved responses, having the interview in common made it easier for participants to subsequently discuss points raised. The interview was clearly not just a data-gathering exercise for my benefit, but a useful and perhaps illuminating experience for the other participants.

5.3.3 Interview 2. Wildlife Society National Office and a regional branch.

5 August

5.3.3.1 Context

Drawing on the experience of the first interview, I arranged a group interview with staff of the WLS National Office and a regional branch. The three participants in this interview were the Conservation Assistant (CA), the Wildlife Clubs Organiser (WCO), and the Public Relations Officer (PRO). Unfortunately the volunteer responsible for handling requests for information was unable to attend. (Of all the groups that responded to the questionnaire, this was the only one that made use of a volunteer to handle responses to requests for environmental information). The participants were well prepared for the interview: the CA had drawn up a list of issues she wanted to address, and the WCO had brought to the meeting examples of the information they used to respond. In addition, the CA had had the foresight to invite the PRO. These factors seemed to indicate the participants' interest in this issue, and contributed to a productive interview.

5.3.3.2 Relevant issues raised during the interview

i) *School projects*

This interview confirmed earlier findings that school projects provided the main motivation for environmental information requests. The most difficult questions to respond to were those of a general nature. As CA commented:

CA ... the hardest questions that they ask, they say things like, can you give me some info [*sic*] on wildlife, or can you give me some info on conservation - and that's it!

CA I had a 'phone call the other day from a woman who wanted pictures on wildlife, and I asked her 'what specifically?', and she said 'just wildlife'. That means I can send her pictures of polar bears, arctic fox, lemmings, and it is still wildlife - and it might not be applicable to her needs! ... and I actually think the fault lies with whoever gave the project, because the project said just wildlife.

The WCO felt teachers frequently set projects out of laziness as they could get away with relatively little preparation. Similarly, she felt that children sometimes approached the WLS for information because they were too lazy to go to a library. The two quotes below make these points. The second quote also alludes to a concern that getting information directly from the WLS might reduce the educational value of a project:

WCO ... They [teachers] don't have to set projects for anything [i.e. the syllabus], most of them do it because it is an easy way of getting marks. They have less work in preparing the whole thing ...

WCO I feel that in a sense it is a bit of laziness. It is too difficult to go to the librarian and ask for books on endangered species or whatever, and then sit and pull out what you need, whereas if they write or 'phone in they get everything handed to them on a plate.

Interviewees thought that teachers needed guidance on what would constitute more appropriate topics (e.g. specific as opposed to general topics), and that they should be encouraged to liaise with the WLS prior to setting a project. They suggested that the WLS should supply teachers with relevant information which teachers could then distribute to their pupils.

ii) *Information reflecting more than one opinion*

Participants discussed the need for information about the mining of the St. Lucia dunes¹³. Although the WLS had an anti-mining stance, all participants indicated that in an educational context it was important to provide both pro- and anti-mining information (although they found such information difficult to come by). The following quotes illustrated this perspective, which indicated a valuing of the educational dimension of information responses:

WCO And now we have developed a pack [about dune-mining at St. Lucia] that develops both sides of the story ... They should actually read up and weigh up the odds themselves.

PR ... when you talk to reporters, journalists - then you are anti-mining, I take your point, but when it is children, you can give them both sides.

iii) *The need for information on topical issues*

The participants pointed out that current issues, such as the mining of St. Lucia's dunes, had not yet been documented in books and thus libraries were able to help with only general aspects of the issue, e.g. dune-mining, titanium. Librarians and the public approached the WLS for more specific information. The WLS in turn, made extensive use of articles from *African Wildlife* (WLS magazine) for information, as these were up-to-date. Prompted by the use of a magazine as a source of information, we discussed the possibility of approaching the editor of other magazines, such as *Toktokkie* (the WLS's magazine for children), and possibly also newspapers, with suggestions of topics that they could publish. This would make topical information readily available, and extra copies could be used by conservation organisations to respond to information requests.

iv) *Centralised vs localised information supply*

I raised the option of a central information bureau or "letter-writer", to handle the environmental information requests for several organisations (4.5,iv). Interviewees did not support this idea as they felt that they might lose touch with the public if such a procedure was instituted. This was reflected in the words of the CA: " ... if all those letters went out of here we would probably lose contact ... we wouldn't know that teachers were even setting projects".

¹³ In 1989 Richards Bay Minerals applied for mining rights of the titanium-rich Eastern Shores of Lake St. Lucia, part of the proposed Greater St. Lucia Conservation Area in Natal/KwaZulu. Ensuing public resistance to mining of this area pressured the government to call for a comprehensive Environmental Impact Assessment (EIA). During the lengthy EIA, public concern about mining of the St. Lucia dunes was stimulated by regular press coverage and lobbying against the proposed mining by pressure groups.

The value of having a local source of environmental information was emphasised when the CA said that she preferred it when people were able to visit their offices to get information, as this provided an opportunity to find out exactly what was needed. In addition, it allowed staff to promote WLS membership and their shop.

v) *Networking*

The participants indicated that they frequently referred people to a more appropriate source if they could not help with a request for information. To this end they used *The green pages* (Weekly Mail 1991/1992), as well as a list, compiled by themselves, of people who were prepared to address groups such as wildlife clubs, on particular topics.

vi) *Making greater use of libraries*

The participants felt that pupils seeking information should make greater use of libraries, and we identified and discussed a need to liaise with libraries to ensure that they hold appropriate information. This would allow WLS staff to refer information seekers to libraries with confidence. However, concern was also expressed that by referring people to libraries the WLS would lose opportunities to promote itself. At the time of the interview, the participants were investigating the possibility of placing an environmental information file in a selection of local libraries. It was seen as important that this file would have a WLS identity. I shared my experience of arranging for the distribution of *Enviro Facts* to all libraries of the Natal Provincial Library Service (5.2.4.1,ii).

vii) *Educational and public relations significance of responding*

The interviewees reported that they felt responding to requests for information was important for both educational and public relations reasons. In this regard, they expressed a need for interaction and coordination between staff from the public relations, education and conservation divisions within their organisation. This was illustrated by the following comments:

PR What is happening is that each department is doing its own thing. They all get different letters, so you just send the information and you don't really know what the other ones are sending out.

WCO ... If the education and the PR departments could form a strong committee on this whole information thing, and work together on it, so that we are all aware of exactly what is coming in and going out ... I think it will have greater potential.

5.3.3.3 Comment

This group interview yielded useful information and perspectives. It was characterised by a rich exchange between participants as they reflected on their own situation. The involvement of both education and public relations staff was particularly useful in view of the interviewees' shared opinion that responding to environmental information requests was important for education and public relations reasons. This perspective was shared by several other participants (5.3.4.2,iv and 5.3.6.2,i). I would tentatively suggest that if the public relations benefits to the responding organisation could be enhanced, personnel might be motivated to provide improved responses. Public relations staff could usefully collaborate with education staff in this regard, a process that might have been supported through this interview.

This was a very full interview and many issues were discussed in addition to those listed above. The interview was usefully informed by the research to date and the CA made frequent notes as suggestions and ideas flowed.

5.3.4 Interview 3. Education Officer of an environmental education centre.

5 August

5.3.4.1 Context

The interviewee was the education officer of a non-government, urban, environmental education centre. This centre was of particular interest to me as they had developed a library to meet the need for environmental information. A librarian had been employed to run the library and deal with information requests. The centre endeavours to generate income from the services that it offers, and it was the only organisation of those surveyed that charged for supplying environmental information (i.e. over and above photocopying and postage costs).

Unfortunately the librarian, largely responsible for responding to requests for information, was not available for the interview. The interviewee had completed the questionnaire, and this was used to draw up an interview schedule.

5.3.4.2 Relevant issues raised during the interview

i) School projects

The interviewee reported that most environmental information requests came from pupils motivated by the need to complete projects set by teachers. Television programmes and a desire to start wildlife clubs at schools also prompted requests.

The interviewee noted that some features of project-generated requests made it difficult to respond. The

problematic features noted were: the impression that teachers gave out addresses indiscriminately, resulting in pupils approaching inappropriate places for information; the general nature of requests, for example, "Wildlife", "Nature Conservation" and "Pollution"; and requests did not specify the educational level for which the information was required, or the age of the child.

ii) Centralised vs localised information supply

In discussing the merits of a local supply of environmental information, the interviewee commented on the value of being able to discuss a person's environmental information needs with them as it allowed one to establish their requirements more clearly.

iii) Networking

Referring people to a more appropriate source of information was noted as an important part of responding to requests for information, and to this end the centre had compiled a list of organisations to which people could be referred. In this regard the role of *Info* (the electronic 'yellow pages' directory) and SANGONET (a proposed computer network for South African NGOs) were discussed briefly .

iv) Education and public relations significance of responding

The interviewee noted that it was important to respond to requests as it was part of the centre's educational function and it also enhanced the "image" of the centre. A brochure promoting the centre was distributed with all responses to environmental information requests mailed out.

v) Text books

Although topics such as "Conservation", "Wildlife" and "Endangered species" were specified in the school syllabus, the interviewee felt that they were not dealt with adequately in text books. She felt that this contributed to the number of enquiries for this information.

vi) Marketing and distribution of environmental education resource materials

The interviewee explained that teachers found it difficult to locate environmental education resource materials. She responded with enthusiasm to the suggested directory of resource materials as a possible solution to this problem.

5.3.4.3 Comment

The efficient management of this centre's resource materials seemed to be significant in allowing the librarian, or any other staff member, to respond to information requests with ease. The efficient manage-

ment of resources appeared to be a result of dedicating one staff member to the function of responding to information needs, which in turn reflected this centre's standpoint that the provision of environmental information was an important function.

5.3.5 Interview 4. A provincial nature conservation organisation.

6 August

5.3.5.1 Context

Three questionnaires, including one from the interviewee, had been returned by this conservation organisation. The questionnaire responses indicated that individual respondents saw responding to environmental information requests as important. However, they reported that they received little, if any support from their superiors in this regard.

5.3.5.2 Relevant issues raised during the interview

i) School projects

As in earlier interviews, requests were reported to come most frequently from children busy with school projects. Requests of a very general nature were again reported to cause difficulties, as illustrated by the following quote: "... what do you send somebody when they want something about 'Conservation'? Are you talking about wildlife conservation, are you talking about environmental management, what are you really talking about?"

ii) The need for information on topical issues

The interviewee noted that much of the information that people asked for was not in books, but in magazine and newspaper articles, which were frequently difficult to locate. He felt that a school version of *Caring for the earth - South Africa* (Yeld 1993) would be very useful for responding to environmental information requests.

5.3.5.3 Comment

This was a particularly difficult interview which did not yield the same richness of results as the previous three. The interviewee frequently deviated from the topic under discussion, and some of his responses were incoherent. This might have indicated that the issue was not of concern to him, and he had thus not given it much thought. I found it difficult to focus the interview. This was exacerbated by our positions opposite each other across a large desk, and disruptions from incoming telephone calls and the interviewee's colleagues.

5.3.6 Interview 5. Head of education, national government conservation organisation.

6 August 1993

5.3.6.1 Context

As the only national government-associated conservation organisation in the country, and the custodian of all of South Africa's national parks, this organisation could play a significant role in responding to environmental information requests. The interviewee, based at the head office, had completed the questionnaire, as had six regional education officers. The latter, situated throughout the country, received many environmental information requests, primarily from tourists. Their head office also received requests from tourists as well as from international fact-finding missions, local and overseas politicians, and the media. Furthermore, the organisation was involved in the production of an environmental education television series. This gave rise to many requests from people wanting to get involved with the projects filmed, as well as more general requests such as "send me anything about conservation".

5.3.6.2 Relevant issues raised during the interview

i) The education and public relations significance of responding

The interviewee felt that responding to requests for environmental information was "very, very important", first, because it was in line with their stated environmental education objectives, and second, for the "image" of the organisation. Staff in the regions produced their own resource materials, resulting in resources of variable quality which the interviewee felt harmed the image of the organisation. He felt that this could be avoided by centralised resource production by a staff member dedicated to this function.

ii) Networking

Networking, in form of referring information seekers to other organisations, was a significant part of responding to information requests. Although several years' experience helped the interviewee in doing this, he did not always know to whom information seekers should be referred.

iii) The need for information on topical issues

Topical events gave rise to requests for information, e.g. the recent drought in some regions of the country. Political change in South Africa had contributed to debate over the role of national parks in a new political dispensation, and this was reported to have given rise to numerous requests for information, frequently from the media.

iv) Resources used to respond

The interviewee reported that he drew heavily on the expertise located within the organisation to respond

to requests for information. Corporate publications such as annual reports and magazines were used extensively. In some cases information existed within the organisation, but not in a form suitable for public distribution. Commercially produced guide books to the national parks were also used to respond, as were books from a large library in one of the parks. In addition, a commercial publisher produced resources for visitors to one of the national parks. The publisher was responsible for research, development, design, and also for finding sponsorship. Scientists within the interviewee's organisation advised on content. In spite of the involvement of commercial publishers, personnel found contributing to resource production demanding on their time.

A personal response in the form of a letter was also provided where appropriate, and this sometimes included a reference list drawn up for specific requests. There was no indication that the interviewee used *Enviro Facts* to respond, although he noted that they were kept by the editorial office of the organisation's magazine.

The interviewee suggested that access to the following information might support better responses from his organisation: A computer database of in-house and other information; and information that presented a diversity of opinions on environmental issues. The interviewee regarded the latter point as significant given South Africa's dynamic socio-political climate.

v) *Developing the capacity to respond better*

The interviewee thought that the strengthening of regional capacities to respond to information requests would be beneficial. Two points were made in this regard: The need to train staff about the many parks falling within the jurisdiction of the organisation; and guidance for staff in how to develop and manage a small resource centre.

5.3.6.3 Comment

This was a long interview with frequent digressions on the part of the interviewee. In retrospect I should have guided the interview more actively. Most of the interview was spent describing the activities of the organisation with regard to responding to requests for information. Discussion of possible solutions was limited.

Whereas the four previous interviews were characterised by discussions of school pupils, teachers, libraries and their needs, this was not the case in this interview which had more of an adult orientation. General themes running through the discussion were first, that considerable expertise was located within the

organisation, and second, this was not always easily accessible to a wider audience. Third, socio-political change in South Africa, and its effects on the organisation, was reported to stimulate numerous requests for information.

5.4. WORKSHOPS

5.4.1 INTRODUCTION

This section reports on the most relevant issues, in terms of the research question, that emerged from six research workshops. The workshops occurred in various contexts, with a variety of participants. A resumé of each is provided in Table 5.2.

TABLE 5.2 A summary of the six research workshops

| DATE | VENUE | PARTICIPANTS | PURPOSE |
|------------------|--|---|---|
| 1. 2/5 5.4.2 | St. Lucia Village, Natal | Six Environmental Awareness Officers | A 1 hour workshop to explore issues raised in participants' questionnaire returns |
| 2. 19/6 5.4.3 | Mkuze Game Reserve, Natal | Eleven participants in the Gold Fields Environmental Educators Course | A 40 minute workshop to gain feedback on an outline of the directory of environmental education resources |
| 3. 7/7 5.4.4 | Eunice School for Girls, B'fontien, OFS. | Fifteen participants, the majority directly involved with environmental education | A 2½ hour workshop to gain feedback on a draft of the environmental education resources directory |
| 4. 8/7 5.4.5 | Eunice School for Girls, B'fontien, OFS. | Fourteen participants, the majority directly involved with environmental education | A 3 hour workshop to gain feedback on a draft of the environmental education resources directory |
| 5. 28/9 5.4.6 | Durban Natural History Museum, Durban, Natal | Seventeen participants from the Durban/Pietermaritzburg region, representing conservation agencies, libraries and museums | A 3 hour workshop to address issues emerging from questionnaire responses, and to support regional cooperation to improve responses to environmental information requests |
| 6. 29/9 5.4.7 | University of Natal, Pietermaritzburg | Seven HDE students | A 4 hour workshop during which participants endeavoured to develop an organising framework for <i>Enviro Facts</i> |

5.4.2 Workshop 1. Environmental Awareness Officers of a provincial conservation organisation.

2 May

5.4.2.1 Context

The purpose of this workshop was to explore in more depth issues raised by participants in their questionnaire responses. As all participants came from the same organisation their shared experience allowed for productive interaction which might have supported improved practice.

I began the workshop with a sketch of the background to the research and what it hoped to achieve, after which I gave participants the opportunity to ask questions and discuss any issues raised. Spontaneous discussion followed, directed by a workshop guide based on their questionnaire returns.

5.4.2.2 Relevant issues raised during the workshop

i) The need for information on topical issues

Participants expressed frustration in being unable to locate information on topical issues (mining of the St. Lucia dunes and "neighbour relations"¹⁴ were cited as examples). They suggested that the need for such information should be anticipated, and a strategy for its production should be established within their organisation. The latter might include production of an information brochure, regular press coverage and staff manning a telephone 'hotline' to deal with queries.

ii) The need for "easy-to-understand" information

Participants reported that the information sheets and technical guides drawn up by scientists within their organisation were usually too technical for the public and school pupils. They expressed a need for information suitable for these two groups which accounted for a large number of information requests received.

iii) Production of resources by staff in regions

I suggested that information brochures, such as *Enviro Facts*, should be made available on computer disc so that regional staff could localise them. However, participants thought that this might result in an undesirable lack of control by head office. Nevertheless, it was noted that the existing process of obtaining head office approval for the production of resource materials was very slow, especially as at that time,

¹⁴ This term is used to refer to the relationship between a nature reserve and the people who live on its boundaries, commonly subsistence farmers. This conservation organisation had recently developed a neighbour relations policy, thus the issue was particularly topical.

the post of Information Officer (responsible for shepherding publications through the various channels of approval) was vacant. In addition to the above, resource production by education staff was inhibited in some cases by their lack of computer (particularly desk-top-publishing) skills.

iv) Resource materials in Zulu

There was an intense exchange about the need for resource materials in Zulu. Participants reported that this suggestion had been made in the past, when it had come to the notice of this organisation's directors. Certain directors had objected on the grounds that, just as apartheid had suppressed people by not encouraging them to learn English, so the production of resource materials in Zulu could be construed in the same way. Consequently no Zulu environmental education resources were available. This frustrated the EAOs who worked with Zulu speakers.

v) Literacy materials

I asked participants for their views on the potential, if any, of producing resource materials on environmental topics, for use in literacy programmes. Participants expressed great interest in this possibility, as many of them worked with illiterate people.

5.4.2.3 Comment

The EAOs contributed enthusiastically to the workshop. It was difficult to make notes of the many points made in quick succession. I regretted not having a tape-recorder for this workshop, as it would have worked effectively in the small room, with the small group of participants, all of whom spoke out loud and clear! The short duration of the workshop meant that issues raised were discussed fairly superficially. As I live close to this organisation I intend to follow up with them some of the issues raised.

5.4.3 Workshop 2. Participants in the Gold Fields Environmental Educators Course¹⁵

19 June 1993

5.4.3.1 Context

An earlier review of *Enviro Facts* by the Project Steering Committee (4.5.4,ii), supported by research findings from the questionnaires (5.2.4.7,i,p.55) and interviews (5.3.2.2,ii, 5.3.4.2,vi), indicated that a directory of environmental education resource materials might support improved responses to information requests. I chose to explore this idea further during this workshop as all participants were active practitioners of environmental education who might have found such a resource useful, and who could

¹⁵ See 3.3.4.1, Workshop 2 for a description of this course.

provide insightful recommendations.

I began the workshop by sketching the background to the research, and introducing the concept of the directory, a draft outline of which was given to each participant. The workshop focused on reviewing this draft.

5.4.3.2 Relevant issues raised during the workshop

i) Content of directory

Most of the discussion addressed the content of the proposed directory, with participants suggesting *inter alia* that the scope of the directory should not be too wide; that it should possibly refer to other directories; and that it should include a description of the resources listed.

ii) School projects

In my description of the research findings thus far I reported that school projects played a significant role in motivating requests for environmental information. Workshop participants supported this finding, and expressed their frustration with what they described as the "poorly organised" nature of these projects.

One of the participants (working in an administrative position at Sodwana Bay, a seaside resort popular for both recreation and educational excursions) found herself having to take charge of visiting school groups and both set and supervise projects on site. She requested advice on how to go about this.

iii) Libraries

Several participants noted that libraries were not well stocked with environmental education resource materials.

5.4.3.3 Comment

This was the first time that the concept of a directory of environmental education resource materials had been discussed by such a large and varied group of environmental educators. Their support for the concept encouraged me to continue with its development. The workshop also confirmed findings relating to school projects and libraries' lack of environmental education materials.

5.4.4 Workshop 3. Workshop prior to the annual EEASA workshop, Bloemfontein.

7 July

5.4.4.1 Context

I had invited the fifteen participants in this two-hour workshop to attend on the basis of their questionnaire responses and their possible role in addressing the research question. Some were residents of Bloemfontein and others were in the city to attend the annual EEASA (Environmental Education Association of Southern Africa) meeting. Participants included education staff from a range of conservation agencies; teachers; a resource developer involved with environmental education at a tertiary level, and representatives of READ Education Trust and ELMAP (English Language Methods and Programmes).

The purpose of the workshop was to seek feedback on the first draft of the proposed directory of environmental education resource materials, developed on the basis of an earlier workshop (5.4.3). The directory was introduced within the context of the research question, consequently the outcomes of the workshop also relate to the latter.

5.4.4.2 Relevant issues raised during the workshop

In general, participants wanted to include an unrealistic range of information in the directory. The following issues were discussed.

i) School projects

Some of the resources listed in the draft directory were grouped together as suitable for project work. A workshop participant remarked that the term "project" had different meanings in the primary and the high school. In the high school, project work was regarded as essentially independent study, either by individual pupils or groups of pupils. In the primary school it was often used to denote theme work, in which the teacher played a significant role. These different meanings should be acknowledged in the directory.

ii) Posters

One of the participants asked " ... do teachers contribute to the development of posters - or do they only receive them?" This led to a discussion of what some participants regarded as the limited educational value of many posters, specifically those produced without teacher input. A participant from the DEA pointed out that their posters were produced by their public relations department, and not, as might be expected, by their education department. It was noted that during the EEASA meeting due to start the following day there would be a session addressing the educational merits of posters, reported by Ashwell (1993).

iii) Publishing resources in magazines and newspapers

A chart depicting southern African biomes, created by the DEA and published in *Earthyear* (1993), was brought to the attention of the gathering. Two points arose from the ensuing discussion. First, as *Earthyear* was a free publication offering useful resources, it was recommended that it should be listed in the directory, together with other similar resources. Second, the principle of using existing publications to make available environmental information was discussed. Such an approach might offer a solution to the economic constraints on environmental education resource production, as well as address distribution difficulties.

iv) Description of organisations

It was suggested that a short description of the work of each organisation listed might encourage people to request information from the most appropriate source, and not post letters to every one listed. This was a response to feedback that information seekers who obtained lists of addresses tended to write to all of them:

MR ... people will write for the whole lot ...

SE ... they just write to everyone ... they have got the addresses from a directory ...

v) Distribution of directory to teachers

One of the participants commented that " ... if this [the directory] lands on the teacher's desk from the post it won't help them ...". This participant recommended that, in view of many teachers' unfamiliarity with environmental education, the directory be distributed through curriculum development initiatives such as the Primary Science Project (PSP). He felt that this would improve the chances of teachers using it effectively, especially if the directory was introduced within the context of an environmental education workshop.

vi) Guidelines for environmental education

There were many suggestions for the inclusion of information about the concept of environmental education (see also 5.4.5.1,vi), e.g. What is environmental education? What are the key debates in environmental education? Other related suggestions called for information on the following: Principles of environmental education; courses in environmental education; and details of organisations offering in-service environmental education support for teachers.

vii) Networking

Participants highlighted the need for local contacts to support teachers in their environmental education

practice (see previous point). This need was illustrated when one of the teachers present asked if it was possible for the provincial nature conservation organisation to address his pupils.

viii) Content and structure of directory

The following recommendations were made on the content and structure of the directory: the subject covered by the resources listed must be given; extensive cross-referencing between a subject index and resources, and between resources themselves would make the directory more useful; in the draft under review resource materials were lost in the description of how they could be used - many suggestions on how this could be rectified were made; there were suggestions of published materials and sources of materials which could be listed; and it was suggested that guidelines for adapting the many free resources available should be included.

5.4.4.3 Comment

Comment on workshops three and four is made below (5.4.5.3). As the format, focus, participants and outcomes of these two workshops were similar, their results are most meaningfully reported together.

5.4.5 Workshop 4. Workshop during the annual EEASA workshop, Bloemfontein.

8 July

5.4.5.1 Context

The fourteen participants in this one-hour workshop were education officers with NGOs and government-linked conservation agencies; a teacher; editors of two environmental magazines; and two representatives from Namibian NGOs. The latter were planning to produce a similar directory for that country. All participants were attending the EEASA annual workshop, and had they chosen to attend this "directory" session (clearly promoted as such) over five other options.

As with workshop three (5.4.4), the purpose of this workshop was to seek feedback on an early draft of the proposed directory of environmental education resource materials. The directory was introduced within the context of the research question, consequently the outcomes also relate to the latter and not to the directory alone.

5.4.5.2 Relevant issues raised during the workshop

Once again the general tendency was for participants to want to include too much in the proposed directory, e.g. hiking and nature trails; a list of all people involved with environmental education; and lists of libraries, universities and resource centres. Other suggestions made are described below.

i) Guidelines for environmental education

As in the previous workshop, participants suggested that the directory should help the user clarify their view of environmental education by providing: an introductory discussion on the topic; references to key readings in environmental education; and a description of different perspectives on environmental education. One participant noted that "There are so many approaches, we need to shake people up if they think they are doing it [environmental education]". Similarly it was suggested that the directory should include helpful hints for environmental educators, as well as stories of those who have " ... done successful things and would like to share ideas." The importance of using " ... language accessible to many people ..." was pointed out, and it was suggested that a glossary of " ... words commonly used and never understood!" should be included.

ii) Language

It was suggested that the directory should be produced in English as well as African languages. I reflected the contention that had arisen earlier in the research (5.4.2.2,iv), that this might reflect an apartheid approach of oppressing people by not giving them the opportunity to learn English. During the ensuing discussion, one participant commented that "People have gone beyond the apartheid business". Options for addressing the translation issue were suggested, e.g. the inclusion of more than one language in a single directory, and the use of diagrams in English text to make it more easily understood by L2 readers.

iii) Distribution

Distribution of the directory was discussed in the light of inadequacies with the existing distribution of environmental education resources. One of the editors present suggested that the distribution of resources produced by his magazine would be improved if they could be marketed through a central distribution point, such as Share-Net. This seemed a likely option for distributing the directory.

iv) Content and structure of the directory

The following suggestions were made about the content and the structure of the directory: the directory should be updated regularly; extensive cross-referencing would enhance its usefulness; references to other directories should be included; the description, in the draft, of how resources might be used made the identification of resources themselves difficult and should be changed.

5.4.5.3 Comment on workshops 3 and 4

In both workshops the concept of a directory of environmental education resources was well received and supported. Many of the points raised were significant to both the development of the directory and to the

broader issue of improving responses to environmental information requests. In addition to the obvious benefit of allowing people to access existing resources more readily, the directory could possibly address some of the broader concerns associated with responding to requests for information. For example, by providing an annotated list of resource materials and sources of information, information seekers would be able to approach the institution most likely to meet their needs. This might prevent them from approaching many inappropriate organisations, a common occurrence which seemed to frustrate all parties concerned.

It was clearly not practicable to include in the proposed directory all information suggested during the two workshops. Nevertheless, the suggestions did indicate specific information needs. Of particular relevance to supporting environmental education was, first, the need for information about environmental education *per se*, and, second, for local contacts to support the practice of environmental education. These findings could usefully inform the development of other resources.

5.4.6 Workshop 5. Durban Natural History Museum.

28 September

5.4.6.1 Context

The purpose of this half-day workshop was to support regional cooperation to enhance the supply of environmental information by bringing together participants from the Durban/Pietermaritzburg region. The workshop was held after an analysis of all the questionnaire returns, and was usefully informed by those results.

The seventeen participants were invited on the basis of their questionnaire responses; telephone interviews in which they had participated; their potential role in addressing issues that had been raised during the research; and their geographical location. Participants included librarians, museum education officers, staff of the WLS and the NPB, lecturers involved with pre- and in-service teacher education and one teacher. The coordinator of TRANSLIS¹⁶ was able to attend for the first half of the workshop.

Some participants came prepared to share resource materials useful in responding to information requests, and examples of resources used to teach independent study skills. All of the Share-Net resources including *Enviro Facts* in their recently produced stand (A 22) were displayed.

¹⁶ TRANSLIS (Transformation of South African Libraries) is an organisation borne out of the National Education Policy Initiative. The function of TRANSLIS is to develop a policy for library services in South Africa and lobby the Government of National Unity to legislate that policy, and implement a programme of redress and redevelopment with regard to library services in South Africa.

I gave a brief historical account of the research and explained the role of each research technique (3.2), and of this workshop in particular. I summarised the results of the questionnaire responses, selecting four issues for consideration during the workshop. These issues were chosen on the basis of their occurrence in the questionnaire responses; and the perceived relevance of that issue in addressing the research question. Throughout the workshop I shared with participants ideas for improved responses that I had learnt of during the research.

The following were the four issues selected:

- i) How could teachers be supported to set better projects?
- ii) How could the organisations and individuals involved in providing environmental information collaborate towards improved responses to information requests?
- iii) How could such organisations and individuals best be informed of existing resources with which they could respond to information requests?
- iv) How could we use the demand for information associated with national environment days to support environmental education?

The participants worked in four groups, each group focusing on an issue of their choice. Each group was provided with supporting material to stimulate and focus discussion, e.g. guidelines for setting projects; resources used to teach pupils how to do projects; examples of directories; a draft of the proposed directory of environmental education resources; information on the three national environmental days; and existing resources for those days.

5.4.6.2 Relevant issues raised in each of the four discussion groups

- i) *How could teachers be supported to do better project work?*

The following points emerged from the report-back of the group discussing this question:

- * *Teachers did not set and support projects as well as they could.*

The consensus in this group was that project topics set by teachers were often vague and loosely defined, making it difficult to locate appropriate resource material. Furthermore, pupils were seldom taught the necessary independent study skills required for project work. Innovative ideas for teaching these skills were offered by a primary school teacher in the group.

- * *Pupils, and in some cases teachers, did not know how to use libraries.*

In addition to not knowing precisely what information they were looking for, pupils often did not know

how to find information in a library. This was exacerbated, in some cases, by the teacher's limited library skills.

* *Teachers did not liaise with possible sources of information, such as libraries, in planning project work.*

It was suggested that teachers should liaise with 'resource providers', such as librarians, in planning project work. This would allow the latter to better assess the needs of teachers and pupils and to provide a more appropriate service. Librarians said that they would like to know from teachers in advance what topics had been set, so that they could gather the required information and make copies where needed. This was desirable when pupils visited a library *en masse*, all requiring the same resources. The librarians present expressed frustration with their inability to make contact with teachers. As a result they had resorted to an informal pupil-network to establish the topics covered by project work.

* *Teachers did not make optimal use of libraries.*

As specialists in the supply of information, librarians offered a range of services which could be very useful for teachers and environmental organisations, viz:

- ~ Librarians will explain to a whole class at a time how information in a library could be located.
- ~ Librarians will support a class in finding resource materials for a particular project.
- ~ Libraries will cooperate with other interested parties to arrange a display about a particular topic.
- ~ Libraries publish their own bibliographies for particular topics.
- ~ Libraries can act as distribution points for information produced by environmental organisations, interest groups and education bodies. For example, information supplied to a central point could be distributed to all 30 municipal libraries in Durban.

* *Working with teachers and librarians*

Workshop participants that took part in this 'project work' group included representatives from the Science Education Project (SEP) and the PSP. This group agreed that it would be fruitful to work through these in-service teacher education projects to address the matter of project work with teachers. The monthly meeting of Durban Municipal Libraries' staff was identified as an opportunity for communicating with local libraries about the issue of project work, and any other issue relating to improving the supply of environmental information.

ii) *How could the organisations and individuals involved in providing information collaborate towards improved responses to environmental information requests?*

The group struggled to address this question, described by a participant as a difficult to answer. Part of the difficulty might have been that the question was couched in general terms, when a more productive strategy might have been to look at how the organisations represented in the group could work together, although this does seem rather obvious. In addition, based on my observations and feedback from group members, one dominant member of the group took the lead and seemed to have played a significant role in confusing the others. In retrospect I should have been more vigilant in monitoring this group and supporting them to address their question.

The following points were raised by this group:

- * Directories and newsletters played a role in publicising the activities of various organisations. However, the value of meeting and getting to know others and discussing common problems and possible solutions was also emphasised. The function of the workshop in progress in doing exactly this was noted and supported.
- * The confusing and unclear nature of requests for information was emphasised. The need for teachers to provide clear guidance for their pupils was stressed.
- * Participants noted that conservation organisations and others involved with environmental education appeared to have overlooked the services offered by libraries and the significant role they could play in environmental education. For example, libraries should have been included in the *Resource guide for environmental education facilities* (ECF/D'MOSS, undated). In addition, libraries should be supplied with environmental education resource materials (see 5.2.4.1,ii for a brief description of an attempt to achieve this).

iii) *How could organisations and individuals best become informed of existing resources with which to respond to environmental information requests?*

This group was given a draft directory of environmental education resource materials which had been reworked in the light of earlier feedback (5.4.4 and 5.4.5). The draft provided a focus for much of their discussion, and gave rise to the following observations:

- * An appropriate organising framework for the resources included in the directory generated much discussion. The approach taken in the draft, i.e. grouping resources according to teaching methods such as project work and field work, was seen as useful for teachers, but impractical for other directory users such as pupils and librarians. Nevertheless participants pointed out that this "teaching methods" approach should not be discarded as it lent insight into innovative uses for resources.
- * The resources must be topic-linked so that the reader would be able to identify resources concerned with, for example, water, soil or pollution. This could be achieved by a comprehensive subject index with extensive cross-referencing to the resources listed.
- * An annotated list of books covering environmental issues, suitable for use by pupils, should be included.
- * The age or standard for which the resources were suitable should be included.
- * The dates of environmental days and acronyms of environmental organisations should be included in the resources directory. In response to this I mentioned their possible inclusion in the proposed book, "A dictionary of South African environmental terms and concerns" (Paxton 1993b) for use by pupils and teachers (4.3.5.2,i). The concept of such a dictionary was well received.

Feedback from the librarian in this group was particularly useful as she had extensive experience of using directories and was able to reflect on the strengths and weaknesses of a variety of formats.

Some participants commented on the perceived dearth of appropriate resources with which to respond to requests for environmental information. It was noted that there was a shortage of material, first, with a South African focus, and second for particular age groups. The librarian in this group suggested that there was a shortage of material for senior secondary pupils. However, my experience indicated a need for information for senior primary and junior secondary pupils. Although this issue was not discussed at length, it warrants further investigation as it could give useful direction to resource production initiatives.

iv) How could the demand for information associated with national environment days be used to promote environmental education?

* A recently published resource on activities for Arbor Day (Kelly 1993) was reviewed. It provided a useful focus for making recommendations for the production of similar resources. The following feedback on this resource was given:

- ~ The list of over 80 activities presented should be categorised in some way.
- ~ The age or standard for which activities were suitable should be indicated.
- ~ The educational value of some of the activities was questioned. It was suggested that teacher guide books, such as this, should promote activities of educational significance, with meaningful links to the particular environmental day, rather than somewhat superficial games.

Points made with regard to the environmental days themselves were as follows:

- * It was suggested that the themes chosen for the environment days should be topical and broadly relevant, particularly to school pupils. The theme for Environment Day in 1993 was "Integrated Environmental Management". Participants considered this to be of marginal relevance to many school pupils.
- * The dates of the environmental days should be widely and timeously publicised, particularly to libraries.
- * Resource materials for environmental days produced by the DEA often reached distribution points (such as conservation agencies and libraries) after the specific 'day'. Timeous distribution could contribute to their more effective use.

v) ***General***

The following points were considered in the general discussion following each of the four groups' reports:

- * I outlined the possibility of a central bureau or "letter-writer" to which several organisations could refer written and telephonic requests for environmental information. This was not seen as a viable option by the majority of the group, because of the need for local or regional support for people seeking information, and because participants thought it unlikely that anyone would want to do the job! In emphasising the former point, one participant gave a lengthy account of the importance of being able to invite information seekers to one's office where questioning and discussion could

clarify their information needs.

Just prior to this workshop I had visited the Share-Net office and, together with the staff member responsible for handling information requests, had perused a number of recently received letters. The ensuing discussion led to our conclusion that information seekers frequently seem to need, in addition to information, moral support and encouragement. The latter are more likely to be provided by local sources of information rather than a centralised information supply.

- * The issue of project work generated further discussion. In particular, participants expressed the concern that in many cases the educational value of project work was not realised. First, project topics were not well conceptualised. Second, pupils were frequently ill-equipped to fulfil the requirements of independent study. Third, parents, seemingly with less idea than their children of what was required, became involved with information seeking to the extent that their children were denied the opportunities for learning that this provided.
- * Participants indicated that in addition to information about environmental days, they received many requests for speakers to address topics pertinent to environmental days.
- * Librarians, once again, encouraged everybody to make better use of libraries, and expressed their willingness to collaborate in joint ventures. They described examples of cooperative projects in which they had been involved, which had addressed the issues of dune-mining and voter education.

5.4.6.3 Comment

The mood of this workshop was one of enthusiasm and commitment. It was clear that coping with requests for information was a shared problem. Workshop participants had much to contribute and we could have made productive use of a whole day which would have allowed us to deal more fully with the issues raised. The workshop was characterised by the sharing of information and ideas, for example, copies of *Caring for the earth - South Africa* (Yeld 1993), the *Resource guide for environmental education facilities* (ECF/D'MOSS, undated), and the Share-Net catalogue were made available for participants to take away with them. Where people had experienced problems with obtaining *Enviro Facts*, we were able to supply them directly.

The workshop was constructive in that it supported the development of local initiatives to address the

improved supply of environmental information. Within one week after the workshop the following collaborative efforts had been initiated:

- i) The PSP had made preliminary arrangements to run a workshop in December to plan a series of teacher workshops for 1994 to address project work in KwaZulu schools. Participants will include Shell Education Services, READ Education Trust, SEP, Share-Net, teachers experienced in using project work and librarians (Vilakazi 1993 pers. comm.).
- ii) The Durban Natural Science Museum was liaising with the Durban Central Library regarding the inclusion of a library activity during the 'Museum Course' that the museum runs for school pupils. The main purpose of this activity would be to introduce pupils to libraries and library skills (Di Maggio, undated).
- iii) I liaised with the NPB with a view to setting up a workshop similar to the one described here, for their head office staff in Pietermaritzburg.

In addition to the specific actions listed above, the workshop was useful for the following reasons:

- i) Many outcomes of the questionnaire (5.2) were verified.
- ii) I was able to share with participants possibilities for improving requests that had emerged from the research at that stage, e.g. the use of a standard letter and the use of volunteers to handle information requests.
- iii) A range of useful resources were promoted and, in some cases, distributed. This was significant as existing distribution was inadequate.
- iv) Participants were able to learn of the complementary activities of other groups represented. The most significant observation in this regard was the underutilised potential of libraries in responding to requests for environmental information. Librarians, as professionals in the supply of environmental information, were able to provide an invaluable service in this regard. They were enthusiastic and willing to cooperate with teachers and conservation agencies in improving their service with regard to environmental information.

The museum staff and librarians attending the workshop realised that in some regards they were doing similar work, and saw the potential of enhancing their effectiveness by working together. Ironically, Durban Natural History Museum and Durban Central Library were located in the very same building, but it was not until this workshop that they recognised the possibility of cooperating in aspects of their work.

**5.4.7 Workshop 6. HDE students of the University of Natal, Pietermaritzburg.
29 September**

5.4.7.1 Context

The workshop was run during a morning session of the environmental education elective of the HDE (Higher Diploma in Education) students, University of Natal, Pietermaritzburg. Seven students from a range of academic backgrounds, including Geography, Fine Art and the Biological Sciences, participated. By way of introducing students to a range of environmental problems, the course coordinator (a colleague with whom I worked in the development of environmental education resources) and I asked the students to develop an organising framework for the 60 *Enviro Facts* topics.

In addition to being a beneficial exercise for the students, the need for such a framework had arisen earlier in the *Enviro Facts* Project (4.5,iii). During participation in questionnaires, interviews and workshops, no participant had explicitly suggested such a framework. Nevertheless I was frequently led to consider the need for such a tool by teacher's apparent lack of understanding of environmental problems, as reflected in their poor choice of project topics. In addition, the framework could enhance the usefulness of *Enviro Facts* as a resource for responding to information requests by making the information in each fact sheet more accessible.

5.4.7.2 Relevant issues raised during the workshop:

The students, joined by the course coordinator, addressed the task in four groups of two each. Each of the four groups developed a different strategy for organising *Enviro Facts* topics. Each group struggled with this exercise, and every proposed categorisation had serious limitations.

5.4.7.3 Comment

This was not the first time that a group had attempted to develop an organising framework for *Enviro*

*Facts*¹⁷, and a colleague and I had also attempted to do so, with limited success. During this workshop the reason for the seeming intractability of this task became clear. The *Enviro Facts* topics had been chosen primarily on the basis of people's information needs, and little attempt had been made to ensure that they were a balanced representation of environmental problems (A 16). It was therefore understandable that they were difficult to organise into a coherent picture of environmental problems as there was some overlap and several gaps. (This confirmed an outcome of this study that requests for information motivated by school project work reflected a limited understanding of the nature of the environmental crisis.)

I realised that what was needed was an organising framework, not simply for *Enviro Facts*, but for southern African environmental problems. Such a framework might need to highlight key words which would also appear in an index for environmental education resource materials, including *Enviro Facts*. Such a framework could usefully appear in the planned resource directory, together with the index.

This reconceptualisation of the organising framework arose out of a discussion between the myself and the course coordinator. The discussion led to a consideration of how the environmental education resources that we were developing could be designed to complement each other, and so support improved responses to information requests.

Selected issues reported in Chapters Four and Five are discussed in the following chapter.

¹⁷ This exercise had been given to participants of the Gold Fields Course for Environmental Educators (1992/1993) during the first national workshop of the course, held at the Umgeni Valley Project, Howick, Natal, 20 - 21 July 1992.

CHAPTER SIX

KEY ISSUES: DESCRIPTION AND RECOMMENDATIONS

6.1 INTRODUCTION

The issues discussed in this chapter have been identified through the research as important on the basis of two factors. First, their re-occurrence in the historical review of the Enviro Facts Project and in the results of the questionnaires, interviews and workshops. Second, they have been chosen because of their relevance in answering the research question. Each issue selected for discussion here is dealt with in two parts. The first describes the issue in point form, and the second makes recommendations with respect to relevant aspects of the issue. Limited space has restricted the number of issues discussed in this chapter.

6.2 SCHOOL PROJECTS

6.2.1 Description of issue

6.2.1.1 Projects generate requests

The research results demonstrated that country-wide, school projects played a leading role in prompting requests for environmental information to the organisations and institutions surveyed (5.2.3.1,1; 5.2.3.5,i; 5.3.2.2,i; 5.3.3.2,i). This also emerged from the historical review of *Enviro Facts* (4.2.1).

6.2.1.2 Projects are set inappropriately

Research participants indicated that certain features of project-linked requests made them difficult to answer (5.2.4.7,i,p.56; 5.3.3.2,i; 5.4.6.2,i), a point which also emerged in the historical review (4.2.1,i,ii). These features also raised doubts as to the educational value of the projects (5.3.3.2,i; 5.4.6.2,v).

The problematic features raised were:

- i) Project topics set by teachers were frequently too broad and non-specific for meaningful project work, e.g. "Conservation", "Wildlife" and "Endangered Species" (5.3.3.2,i; 5.3.4.2,i; 5.3.5.2,i). This might have indicated a limited understanding of environmental issues and terms amongst many teachers.
- ii) Pupils were given limited, if any instructions about what was required of them, or how to execute their projects (4.2.1,ii;).

- iii) Pupils were not equipped with the self-study skills needed for project work (5.4.6.2,i,p.78). The latter two findings are supported by Van Harmelen (1991) in an investigation of independent study in secondary school Geography.
- iv) Teachers seemed to give out addresses of environmental organisations indiscriminately, resulting in pupils approaching inappropriate sources for information (5.4.4.2,iv). Again this might reflect a limited understanding, on the part of teachers, of the environment and conservation arena in South Africa.

6.2.1.3 Participants willing to support improved project work

Participants, particularly those from conservation agencies and libraries, said they would appreciate contact with teachers in order to establish their information requirements and thus provide a better information service. Participants also indicated their willingness to support teachers in setting better environmental projects (5.3.3.2,i; 5.4.6.2,i,p.83).

6.2.2 Towards improved environmental projects: Some recommendations

The setting of environmental projects, despite the weaknesses described above, has the potential of supporting reflexive learning through the opportunities projects offer for encounter, dialogue and reflection (2.4.2; 2.4.3; 2.4.4). For this potential to be realised, however, these weaknesses must be rectified. The most obvious means of doing so are teacher education and the development of resource materials to support project work. In addition, to realise their potential for socially critical environmental education, projects should focus on environmental issues in the pupils' local environment. These three points (i.e emphasising the local environment, teacher education and the development of resources) are discussed below.

6.2.2.1 Project work and the local environment

The recommendation that school projects be locally-based is motivated by the following:

- i) The study and resolution (when appropriate) of a local environmental concern, is clearly more practical than taking on a national or international issue. It is also more likely to be familiar to the pupils, and thus to enable the mobilisation of non-scientific, experiential knowledge (2.3.2,p.9).
- ii) By working on an issue such as the pollution of a local river, rather than, for example, water pollution in South Africa, pupils are more likely to encounter the issue in its social context. The

social features (history, economics, politics) of that issue are thus likely to become evident, and through engaging with them, inter-epistemological dialogue (2.4.2.1) might be stimulated.

- iii) By focusing on local environmental issues pupils will be encouraged to work with members of their own community. This might foster group concern and remedial action in the community, circumstances likely to bring about meaningful change in that community (2.3.4).
- iv) The project design should encourage and support pupils to develop solutions to environmental problems. This approach recognises the value of local knowledge and solutions and does not assume that an externally located 'expert' knows the required solution (2.3.2 & 2.3.3). Social change seems more probable if people 'on the ground' participate in developing and implementing solutions to environmental problems, rather than the change being imposed from outside (2.3.2). Developing solutions is important for a second reason, viz. learning and understanding would be enhanced through the action-taking associated with the attempted resolution of real problems (2.4.3.2). Third, social change toward the resolution of environmental problems is the *raison d'être* of environmental education (2.3; 2.4,i).

6.2.2.2 Project work and teacher education

For teacher education to support improved environmental project work the following should be included in both pre- and in-service programmes:

- i) guidance on the methodology of project work and the benefits of that methodology to motivate teachers to make full use of the potential it presents;
- ii) instruction on the nature of the environment crisis to enable teachers to choose meaningful and appropriate project topics (6.5.1.5);
- iii) exposure to organisations active in environmental matters to enable teachers to contact or refer their pupils to appropriate sources of support for project work;
- iv) exposure to resource materials which could support project work.

6.2.2.3 Project work and resource materials

i) Existing resource materials

Existing resources, such as *Enviro Facts*, should be marketed and distributed more effectively (5.2.4.7,i,p.55). The proposed directory of environmental education resource materials would contribute to improving the accessibility of resources.

ii) *New resource materials*

For resource materials to support socially critical environmental education through project work it is recommended that they incorporate the following features, where relevant:

- * Resources should guide pupils and teachers in becoming active participants in the democratic functioning of local life. This might include mention of the democratic structures in their community and insight into democratic processes. This recommendation is motivated by the view that learning and knowledge can most usefully contribute to social change through the processes of participation and democracy (2.3.2,p.10).
- * Resources should support pupils and teachers in their choice of project topics by including ideas for practicable projects in their local environment. In particular, examples of successful projects should be included, as these may provide an inspiring vision of what is possible, as argued by Bardwell (1991) and raised in section 6.5.2.4.
- * Resources should be developed to help information seekers respond appropriately to environmental days. The development of such resources should take cognisance of the recommendations made here, as well as those made in "Features of environmental information: Some recommendations" (6.5.2). It is crucial that resources developed to support national environmental days are effectively marketed and distributed (5.4.6.2,iv).
- * A small handbook should be developed to guide teachers in setting environmental projects (5.3.2.2,i). Its development could be usefully informed by the points made above (6.2.2.1,i-iv).

Additional guidelines for the development of environmental education resource materials are described under 6.5.2.

6.3 NETWORKING

6.3.1 Description of issue

Networking was identified as a key response strategy amongst participants, and they frequently suggested that an improved ability to network would enhance their responses to requests for environmental information (5.2.4.3,i; 5.2.4.7,i,p.57; 5.3.3.2,v; 5.3.4.2,iii; 5.3.6.2,ii; 5.4.4.2,vii). Various requirements identified in the study could be addressed, in part at least, by more effective networking. These are described below.

6.3.1.1 *The need for topical information*

Participants reported that there was a demand for current and topical information. Such information was difficult to locate as it was not available in book form, and only occasionally appeared in magazine articles (5.2.4.7,i; 5.3.3.2,iii; 5.3.5.2,ii; 5.3.6.2,iii). The source of such information was often a specialist in an environmental organisation, museum or university. Finding out who to contact was a prerequisite to obtaining the information.

6.3.1.2 *The need for knowledge of existing resources*

Participants needed to know of existing resources in order to respond to information requests (5.2.4.7,ip.55). It would seem that the marketing and distribution of environmental education resources has been neglected by developers (5.3.2.2,ii; 5.3.4.2,vi). This was clearly the case in the Enviro Facts Project (4.3.5.2,v).

6.3.1.3 *Organisations could have complementary roles*

Of those organisations surveyed, museums, teachers' centres and particularly libraries, appeared to be in the best position to provide environmental information (5.2.4.1,i). For libraries, information location and provision was their *raison d'être*. However, the results showed that this function of libraries was underutilised by the research participants (5.4.6.2,i). Libraries could effectively support those organisations for which responding to environmental information requests was not a priority.

Staff of museums, teachers' centres and libraries dealt with most requests on a face-to-face basis (5.2.4.1,i). The study showed that face-to-face responses were important, because they allowed for the clarification of poorly articulated information needs (5.3.4.2,ii; 5.4.6.2,v). In addition, such personal contact could support socially critical environmental education through the opportunities it would provide for social interaction and dialogue (2.4.2).

6.3.2 Supporting networking: Some recommendations

6.3.2.1 *Marketing and distribution of resources*

The point has been made that for environmental information resources to fulfil their purpose, they must be effectively marketed and distributed, e.g. through national strategies.

6.3.2.2 *Referrals to libraries*

Organisations which do not consider responding to environmental information requests a priority, but nevertheless see it as important, should consider referring information seekers to libraries. For this to be

effective, there should be cooperation between libraries and environmental organisations to ensure that the required information is in place. In this regard, liaison with TRANSLIS should be fostered.

The widespread occurrence of libraries, and their focus on the provision of information makes them a highly suitable source of environmental information - more so than teachers' centres and museums which have a more limited distribution and also priorities other than the provision of information. Teachers' centres and museums have a role to play as providers of environmental information and should not be discounted, but limited space has restricted this discussion to libraries.

Some respondents suggested that by referring information seekers to libraries, they may lose an opportunity to promote their organisation (5.3.3.2,vi). However, a prompt referral to a local library known to stock suitable resources would probably enhance the referring organisation's image. Further, such a referral could be accompanied by an information brochure, membership form, or magazine of the referring organisation. This aspect of responding, i.e. how the organisation might benefit, should be given careful consideration (5.2.4.5).

6.3.2.3 A directory of resource materials

The development of a directory of environmental education resource materials could support networking as it would make a pool of existing resources more widely accessible (4.5,ii; 5.2.4.7,i,p.55; 5.4.3.3). It is vital that such a directory include reliable details of the suppliers of the resources it mentions. The research indicated that it might be useful to include in the directory, names and addresses of regional people and places that could support environmental education (5.4.4.2,vi). Such 'contacts' would be a starting point for users wanting to locate suitable support in their local area. Similarly, networking could be further promoted by the inclusion of reference to other directories (5.4.3.2,i), e.g. *The green pages* (Weekly Mail, 1991/1992).

6.4 A CENTRAL OR LOCAL SUPPLY OF INFORMATION?

6.4.1 Description of issue

Prior to and during this research it was suggested that a central bureau or "letter-writer" be instituted to respond to information requests received by conservation organisations (4.5,iv; 5.2.4.7,i,p.57). Although a compelling notion, the research results and a review of the literature suggested that a decentralised or localised information supply is more likely to support environmental education, particularly socially critical environmental education. The motivation for this is discussed below.

6.4.1.1 A geographically close information source

The results indicated that information seekers usually sought information from organisations in the province or region in which they lived. This was particularly the case when information about a local event or concern was sought (5.2.3.3,i; 5.2.3.4,ii).

6.4.1.2 More than information needed

Many requests received by participants, in addition to seeking information, appeared to be asking for moral support and encouragement (5.4.6.2,v). This is more likely to be provided by the staff of local organisations, who may be able to meet with information seekers to discuss their requirements, or may know of a more appropriate source of support in the local community to which they could refer the information seeker.

6.4.1.3 Learning through social interaction

Several authors have pointed out that learning may be enhanced by social interaction (2.4.2; 2.4.3.3). Thus the potential for ongoing interaction with people close enough to visit, as described above, might enhance learning about environmental problems and developing appropriate solutions.

6.4.1.4 Local action for social change

Environmental problems are essentially social problems and are probably best addressed in a social context (2.4.1). Studying, and possibly resolving *local* environmental issues may lie at the heart of social change. Similarly, rather than addressing environmental issues as individuals, a somewhat futile undertaking (2.3.4 and 2.4.1), people should be supported to work with other members of their community. Such support would be best provided by a local, rather than a central information source.

6.4.1.5 Benefits to responding organisation

The results indicated that participants did not wish to hand over their information requests to a central bureau as this could cause them to lose contact with members or the public (5.3.2.2,iv; 5.3.3.2,iv). Despite this sentiment, none of the participating organisations seemed to maximise the potential presented by this link with either their members or the public.

6.4.2 Supporting local information sources: Some recommendations

6.4.2.1 Marketing and distribution of resources

Environmental education resources should be marketed and distributed effectively such that they are widely available to possible local sources of environmental information. Libraries must be included in such

distribution. Both points have been discussed above.

6.4.2.2 A directory of environmental education resources

The development of a national directory of environmental education resource materials, started during this research, should continue. Such a directory is likely to improve the accessibility of resource materials. In addition, regional directories of sources of environmental information should also be developed.

6.4.2.3 Workshops

A series of workshops such as that described in 5.4.6 should be offered to foster the development of regional cooperation in improving the supply of environmental information. This would also stimulate local networking.

6.4.2.4 Benefits to responding organisation

Receiving requests for environmental information, and responding to those requests, affords an organisation contact with their members and/or the public. Organisations should consider how such contact could be used to their own advantage.

6.5 ENVIRONMENTAL INFORMATION

6.5.1 Description of required information

Features of environmental information which were required by participants, can be grouped as follows:

6.5.1.1 Topical information

The results indicated that topical information was often needed and was difficult to locate (5.2.4.7,i,p.55)

6.5.1.2 Environmental days

Requests for environmental information were frequently prompted by national environment days, such as Marine Day, Arbor Day and Environment Day (5.2.3.5,i). This seemed to indicate that the purpose for which the days were instituted, i.e. to raise public awareness, was being realised. The research indicated, however, that the opportunities for environmental education which these events presented were not being realized for the following reasons:

- i) Resource materials produced by the DEA, the coordinators and promoters of the national environmental days, often did not reach distribution points until after the "day" had passed (5.4.6.2,iv).

- ii) The resources made available by DEA had limited potential for supporting environmental education. For example, their posters seemed to be mainly decorative and of doubtful educational value (5.4.4.2,ii; Ashwell 1993).

6.5.1.3 Easy-to-understand information

There were a few requests for information described as "easy-to-understand" (5.4.2.2,ii). Questionnaire responses (5.2.4.7,i,p.55) and discussion during a workshop (5.4.6.2,iii) indicated the need for information for certain age groups, but no agreement was reached on which age groups were a priority.

6.5.1.4 Popular topics

The research showed that the information which was most frequently requested concerned environmental problems, "Pollution" being the most frequently requested topic. Animal-related topics were also a common request. Education information such as "what resource materials are available?", and "where can pupils be taken for a field trip?" was also frequently requested (5.2.3.6,i). Participants also required information about environmental education *per se*, including a glossary of terms to describe the concept and principles of environmental education was suggested (5.4.4.2,vi; 5.4.5.2,i).

6.5.1.5 Organising framework for environmental issues

Although no participant explicitly articulated the need for an organising framework for South African environmental issues, teachers' generally inappropriate choice of project topics (6.2.1.2,i) might reflect such a need. An organising framework might enhance their understanding of environmental problems and consequently, the nature of project work. This need for an organising framework was further clarified during a workshop with student teachers (5.4.7.3).

6.5.2. Guidelines for environmental information resource development: Some recommendations

For environmental information resources to support socially critical environmental education, they should incorporate the following features:

6.5.2.1 Contentious areas

Reference to areas of contention should be included where applicable (4.3.5.2,iii; 5.3.3.2,ii). By so doing the information might support learning through the social processes of dialogue and debate (2.4.2), and better reflect the nature of environmental problems.

6.5.2.2 *An historical perspective*

An historical perspective, where relevant, should be taken of the accounts of environmental topics. This could contribute to a better understanding of those topics and allow for critical reflection on their development and possible resolution (2.4.1 and 4.4.2.2,i).

6.5.2.3 *Taking action*

Environmental information should not only be *about* environmental issues, but should endeavour to support pupils in *taking action* to resolve them. Several authors have referred to the significance of action-taking in learning (2.4.3.1 and 2.4.3.2). In addition, it goes without saying that taking action is a vital part of solving environmental problems.

6.5.2.4 *Success stories to encourage*

Learning only about environmental problems, their complexity and consequences might lead to hopelessness and despair. Complementing such information with examples of how environmental problems have been resolved, may provide people with an inspiring vision of what is possible (6.2.2.3,ii; Bardwell 1991).

6.5.2.5 *Regional contacts*

As discussed above, resource materials should include regional contacts with whom people can work, and from whom they can gain support (A 18,i; 5.4.4.2,iv).

6.5.2.6 *Environmental days*

Resources should be developed to meet the need for information associated with national environmental days. The development of such resources should take cognisance of the recommendations made in this section (6.5.2) as well as those made in 6.2.2.3,ii. Criticisms of the late arrival of the DEAs' materials produced for environmental days (5.4.6.2,iv), as well as the discussion in 6.5.1.2, highlight the importance of marketing and distributing resources effectively. Timeous distribution, in particular, needs attention.

The costly production of posters to promote environmental days should be reconsidered, in view of the seemingly limited educational potential of their existing design and content.

6.5.2.7 *Information about environmental education*

The need for information about the concept of environmental education has emerged from this study, and

also from several current initiatives in environmental education in South Africa, e.g. the Gold Fields Environmental Educators Course (Janse van Rensburg 1993) and the EEPI¹⁸ (Clacherty 1993; Janse van Rensburg 1994 pers. comm.). A recently produced booklet (O'Donoghue 1993b) might address this need, as might the resources for the Gold Fields Environmental Educators Course (Janse van Rensburg, in press). Development of these and other resources about the concept of environmental education should endeavour to address the needs of more than one course or programme.

6.5.2.8 An organising framework for environmental issues

A rationale for the development of a framework for southern African environmental issues should be investigated, as should the structure and content of such a framework. This could usefully occur within the context of teacher education.

6.5.2.9 Networking for topical information

The location of topical information about which little, if anything, has been published, might best be achieved through networking. Existing directories of various environmental experts and organisations would play an important role in this.

In addition to consideration of these recommendations, the production of resource materials to support socially critical environmental education should also give attention to the points raised under "Project work and resource materials" (6.2.2.3,ii). A further recommendation, of no particular relevance to socially critical environmental education, is that resource developers should ensure that their materials photocopy well (5.2.4.3,i).

6.6 FINANCIAL AND TIME CONSTRAINTS

6.6.1 Description of issue

Many respondents indicated that a lack of money and time prevented them from responding optimally to information requests, and that increased funding and additional staff would allow better responses (5.2.4.7,i,p.57).

6.6.2 Improving responses despite limited funding and time: Some recommendations

South Africa's current economic climate makes it unlikely that NGOs or government bodies would

¹⁸ The EEPI (Environmental Education Policy Initiative), begun in 1992 by the DEA and EEASA, is an attempt by environmental educators to engage with the processes of education reform within South Africa and influence emerging education policy.

dedicate additional funding and staff for responding to environmental information requests, particularly as this function is seldom regarded as a priority (5.2.4.6). Recommendations for improving responses with little, if any, extra funding and no additional staff follow:

6.6.2.1 *Volunteers*

Volunteers could respond to environmental information requests (5.3.3.1).

6.6.2.2 *Marketing and distribution of resources*

A useful pool of resources with which to respond to information requests does exist. These resources should be made more readily available through improved marketing and distribution, and through the development of a directory of such resources.

6.6.2.3 *Managing information*

Organisations should make use of simple tools for the management of environmental information. This might include a simple filing system (5.2.4.3,i), or stands for the display and storage of *Enviro Facts* (A 22).

6.6.2.4 *Networking*

Organisations should network more effectively. This would allow access to a wider pool of environmental information in the form of people and resources materials.

6.6.2.5 *Collaboration and referral*

In 6.3.1.3 the case was made for environmental groups to collaborate with local and regional libraries to ensure that the latter have appropriate resources with which to respond to requests for environmental information. Organisations with priorities other than information supply could then, with confidence, refer information seekers to libraries.

6.6.2.6 *The print media*

Environmental groups could collaborate with newspapers and magazines (particularly those of the environmental groups themselves) to encourage them to publish information suitable for responding to requests for environmental information. The articles could then be either photocopied, or an extended print-run could make extra copies available at minimal cost (5.4.4.2,iii).

6.6.2.7 *Standard letter*

A standard letter could be used to respond. It should preferably be kept on computer for easy adjustment and personalization. Contents of such a letter might include the names and addresses of organisations better equipped to respond to requests for environmental information, appropriate Dewey classification numbers, and a list of generally useful environmental books and magazines (5.2.4.3,i).

6.7 A DIRECTORY OF ENVIRONMENTAL EDUCATION RESOURCES

Useful insights and suggestions were gained regarding the development of a directory of environmental education resource materials (5.4.3; 5.4.4; 5.4.5). The collaborative development of this resource should continue, for there was ample support for this initiative.

6.8 ADDITIONAL ISSUES

Limitations of time and space prevented the following issues from being dealt with in as much detail as those above. They have been listed, however, because they are seen as important, and warrant further investigation.

6.8.1 Text books

The general inadequacy of text books in dealing with those environmental issues which are included in school syllabi was pointed out (5.2.4.7,i,p.55; 5.3.4.2,v). Respondents thought that this contributed to the need for environmental information. Further insight into this aspect of environmental information requirements should be researched with teachers, as it could usefully inform future resource production.

6.8.2 A dictionary of environmental terms and concerns

The proposed dictionary of environmental terms and concerns (Paxton 1993b) was well received on the few occasions that it was discussed (4.3.5.2,i; 5.4.6.2,iii). Further development should take into account existing resource materials, and the complementary role that such a dictionary could play.

6.8.3 Information in African languages

During the development of the *Enviro Facts* and in the course of the research reported here, there were a few requests for information in African languages (4.3.5.2,vi; 5.2.4.7,i,p.55; 5.4.2.2,iv). On two occasions during the ensuing discussions, the contention was raised that the production of resources in African languages would perpetuate apartheid oppression of black people by denying them the opportunity of learning English. Subsequent discussions with a specialist in English second language, suggested that this was an outdated view, and that many progressive translators and language workers acknowledged the need for such resources as an affirmation of African languages (Murray 1993 pers. comm.).

The need for environmental information in African languages was not comprehensively assessed in this research, and warrants further investigation. This should include consideration of first, whether a lack of environmental information in one's own language deprives people of the capital with which to critique environmental problems, thus limiting the potential for socially critical environmental education. Second, consideration should be given to the need for mother-tongue literacy education and resource materials. There may be some merit in such materials having an environmental content (5.4.2.2,v).

Many of the recommendations made in this chapter are repeated several times, indicating that one recommendation could answer more than one problem. The conclusions based on these recommendations are discussed in the following chapter.

CHAPTER SEVEN

CONCLUSIONS

7.1. INTRODUCTION

This study was motivated, first, by a conviction that responding to environmental information requests presented an opportunity for environmental education to work towards its *raison d'être*, social change. Second, it was motivated by a concern that this potential was not being realised. The research question was thus "How can environmental education be supported by optimally responding to requests for environmental information?"

The research presented as a process of learning in action, for myself and possibly other participants. Learning took place in three areas, viz. environmental education theory; the research question; and the research method used. These are discussed, in turn, below.

7.2 ENVIRONMENTAL EDUCATION THEORY

At the outset of the research I saw the 'solution' to increasing environmental information requests in terms of improved information provision and something else - I was not sure precisely what, but I felt that the provision of information alone would be insufficient to realise the potential presented by requests for environmental information. In a similar vein, the "central letter-writer" suggestion, made at the outset of the research, created a sense of disquiet and unease amongst the Enviro Facts Steering Committee, yet we were unable to argue convincingly against the compelling notion of a central supply of environmental information.

During the course of the research, and through a review of the literature, my emerging orientation to environmental education was further clarified, and revealed the inadequacies of a central information supply. The *raison d'être* of environmental education can be seen as supporting social change to deal with the environmental risks accompanying modernity. I suggest that conventional approaches to environmental education are more likely to perpetuate the *status quo* than to contribute to the fundamental change required for the resolution of environmental issues. An alternative approach, socially critical environmental education, is described as being more likely to contribute to appropriate social change. It is seen to be characterised by reflexive learning through the processes of dialogue, encounter and reflection, within a social and historical context. This view of environmental education is emerging and tentative. There is as yet no well-defined body of theory with which to describe it.

Socially critical environmental education is based on the assumptions that: meaning and understanding are socially constructed; homegrown, traditional and grassroots knowledge of environmental problems is of value in developing solutions to those problems; grassroots participation in the development of solutions to environmental problems is likely to contribute to social change; learning can be enhanced by social interaction; environmental problems have social, as well as individual causes, and thus their resolution will involve broad social change as well as individual behaviour change; social and institutional critique and reflection are significant in supporting appropriate social change.

A central information bureau assumes that information is a commodity to be supplied, and that the provision of information in itself will lead to social change. Such a strategy does not recognise that information, knowledge and understanding are socially constructed, and that social change is more likely to be fostered when people work together around a shared problem - in short, in true community.

7.3 ANSWERING THE RESEARCH QUESTION: 'RECOGNISE, MOBILISE, LOCALISE'

The research results suggest that the optimisation of responses to environmental information requests might best be supported through first, a *recognition* of the significance of responding well, and a recognition of the potential offered by existing structures and resource materials such as libraries and *Enviro Facts*.

Second, responses could be enhanced by the *mobilisation* of existing structures and resources. The latter contrasts with an approach which deems necessary the development of new structures and resources to meet environmental information needs. An orientation which endeavours to make existing material resources and capacities more effective is not only cost-effective, but I suggest, the most desirable response to the issues at hand. The results indicate that in most cases the resources and institutions necessary for enhanced responses are already in place, e.g. *Enviro Facts*, magazines, libraries, teachers' centres. The mobilisation of existing resources or assets is congruent with an environmental ethic which beseeches us to live more lightly on the planet.

Further, resources and capacities should be mobilised, particularly (but not exclusively) at a *local* level as this is seen to be most likely to support people in understanding and resolving environmental problems. The supply of environmental information at a local level should be supported, where appropriate, by national and regional strategies. Examples of these are: the effective distribution of environmental information resource materials; liaison with provincial library services and TRANSLIS; cooperation between environmental organisations and teacher education programmes to support improved environmental project work; and offering a series of workshops to share the findings of this research, and

to foster regional or local cooperation to improve the supply of environmental information.

7.4 LEARNING ABOUT RESEARCH METHODOLOGY

7.4.1 Research on practice, in practice

A significant aspect of this research was the close link between the research and my work. The research question arose out of my work, i.e. the development of *Enviro Facts*, which was an attempt to improve responses to information requests. I found the close relationship between 'work' and 'research' one of the most enjoyable aspects of this research. It contributed to a motivating and sustaining sense of relevance.

Research 'on practice, in practice' enriched both the research and my practice, but it did make it difficult to set boundaries on the research. I was frequently tempted to include too much when, to quote a colleague, I needed to "keep my eye on the ball!" At other times "the ball" eluded me, and events in my work-world, of direct bearing on the research, were almost overlooked, but for the vigilance of colleagues who would hasten to make the links for me.

This relates to another advantage of research on practice, in practice: The research-work link meant that the research was of relevance to colleagues with whom I worked in resource development. This shared interest prompted many discussions about the implications of the research, which made it come alive, and contributed again to a sense of relevance.

7.4.2 Dealing with an issue of concern to the participants

In general, the research dealt with an issue of real concern to the participants. This contributed to many focused and honest interview and workshop discussions which reflected a commitment to reach clarity and to resolve the matter in hand.

7.4.3 Group interviews

I found group interviews to be particularly useful as they allowed for much more than simply the gathering of data. For example, they allowed participants to share problems, solutions and insights around the research question, a process that seemed beneficial to everyone involved. They also allowed for an exploration of the possible significance of responding optimally to requests for environmental information. Group interviews with participants from the same organisation were particularly productive as a result of their shared understanding of that situation. It emerged that such an interview informed discussion and decisions 'back at the chalk face.'

7.4.4 Reflexivity of the research design

The research design allowed for ongoing revisiting, with others, of the research question. The progressive clarification that this allowed, supported the participants, particularly myself, in developing the capital with which to productively engage with the issue of improving responses to environmental information requests. Progressive clarification and the development of this capital was interspersed with dealing with the problem in practice.

7.4.5 Juggling between control and flexibility

Some interviews were less structured than others and in some cases this seemed to contribute to a more productive interaction. In other cases, however, I needed more structure as the interviewees rambled and did not stick to the point. It seems that the distinguishing feature might have been the interviewee's commitment to finding a solution to the issue in hand. In future, I would be sensitive to what is needed in each interview situation, with the flexibility to respond to the situation with more or less structure, as appropriate.

7.4.6 Sharing the research findings

I enjoyed the participatory design of the research as it allowed many people to interact and benefit during the course of the study. Nevertheless, there is still a need to share the findings even more widely and to build on the contacts made.

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APPENDIX A: Abbreviations used

| | |
|-----------------|--|
| CFCs | Chlorofluorocarbons |
| DAPG | Dolphin Action and Protection Group |
| D'MOSS | Durban Metropolitan Open Space System |
| DEA | Department of Environment Affairs |
| EAO | Environmental Awareness Officer |
| ECF | Environmental Communicators Forum |
| EEASA | Environmental Education Association of Southern Africa |
| EEPI | Environmental Education Policy Initiative |
| EIA | Environmental Impact Assessment |
| ELMAP | English Language Methods and Programmes |
| EWT | Endangered Wildlife Trust |
| HDE | Higher Diploma in Education |
| IUCN | International Union for the Conservation of Nature and Natural Resources |
| JHB | Johannesburg |
| L2 | English second language |
| NBI | National Botanic Institute |
| NGOs | Non-government organisations |
| NPB | Natal Parks Board |
| OFS | Orange Free State |
| ORI | Oceanographic Research Institute |
| PnP | Pick 'n Pay |
| PSP | Primary Science Project |
| READ | Read, Educate and Develop |
| REF | Rhino and Elephant Foundation |
| SANCC | South African Nature Conservation Centre |
| SANF | Southern African Nature Foundation |
| SANGONET | South African NGO Network |
| SCISA | Science Curriculum Initiative in South Africa |
| SEP | Science Education Project |
| TPA | Transvaal Provincial Administration |
| TRANSLIS | Transformation of South African Libraries |
| UNCED | United Nations Conference on Environment and Development |
| UNEP | United Nations Environment Programme |
| UNESCO | United Nations Educational, Scientific and Cultural Organisation |
| WCED | World Commission on Environment and Development |
| WLS | Wildlife Society of Southern Africa |
| WWF | World Wide Fund for Nature |

APPENDIX B: Covering letter to questionnaire

*8 Curry's Post Road
Howick
3290*

*Telephone 0332 - 307205 (home)
0331 - 471961 (work)
Fax 0331 - 471037 (work)*

2 February 1993

Dear

IMPROVING RESPONSES TO REQUESTS FOR ENVIRONMENTAL INFORMATION

Libraries, museums, conservation and other agencies report a growing number of requests for environmental information from the public and schools. Many recognise that we could improve the way in which our organisations handle responses to these requests. In an effort to enhance the supply of environmental information, the Southern African Nature Foundation has funded a project to investigate this area.

The project will explore the request and response patterns of various groups, including conservation agencies, museums and libraries, with regard to environmental information. Aspects of the proposed research include:

- i) A postal survey, attached.
- ii) Interviews with some of the respondents to clarify issues raised in the postal survey.
- iii) Regional workshops with project participants to report, and apply the findings to their own work.

The key focus of the project is to assist people, in **practical** ways, to respond to requests for environmental information. I invite you to participate, should you feel that your work in this area might benefit. Please fill in the form below, as well as the questionnaire (should you decide to participate), and return to me by the beginning July 1993. Please 'phone me if you have any queries.

Yours faithfully

Linda Paxton

APPENDIX C: Questionnaire

**THE DEMAND FOR, AND SUPPLY OF ENVIRONMENTAL INFORMATION:
REPLY FORM**

Please return this form and the attached questionnaire to:

*Linda Paxton
8 Curry's Post Road
Howick
3290*

- i) Organisation
- ii) Name and position of person filling in this form
.....
- iii) Address
- iv) Telephone number
Fax number
- v) I am willing to take part in the following aspects of the project, circumstances permitting (please circle appropriate response):
 - a) completing questionnaire yes/no
 - b) interview yes/no
 - c) workshop yes/no



**Are you inundated with requests
for environmental information?**

THE DEMAND FOR, AND SUPPLY OF ENVIRONMENTAL INFORMATION: QUESTIONNAIRE

- * *Environmental information can be regarded as information dealing with environmental issues, ecological processes or plant and animal species.*
- * *Consider your answers to these questions in the light of your organisation's experience in 1992. If you are a regional or branch representative, then answer for your region or branch.*
- * *Answer the questions by making an informed estimate. Exact figures are not required.*
- * *Feel free to use any of the blank spaces for additional comments.*
- * *Please contact me if you have any queries.*

SECTION A: REQUESTS FOR ENVIRONMENTAL INFORMATION

i) WHO REQUESTS INFORMATION

What categories of people request information? Please respond by recording the approximate percentage in the box next to each category. Leave blank if a particular category does not apply. Percentages should add up to 100%.

| | |
|-------|---|
| | tourists (do not include requests for information about accommodation and visitor facilities) |
| | schoolchildren and teachers |
| | farmers |
| | industry and commerce |
| | media |
| | government departments |
| | general public |
| | staff within your organisation |
| | other - please specify |
| 100 % | TOTAL |

Comments

.....

ii) **FORM OF REQUEST**

How do people request information? Please respond by recording the approximate percentage in the box next to each category. Leave blank if a particular category does not apply. Percentages should add up to 100 %.

| | |
|-------|------------------------|
| | letter |
| | telephone |
| | visit |
| | modem |
| | computer network |
| | other - please specify |
| 100 % | TOTAL |

Comments

.....

iii) **GEOGRAPHICAL AREAS**

From what geographical area/s do requests for information come to your organisation? Respond by recording the approximate percentage in the box next to each category. Leave blank if a particular category does not apply.

| | |
|-------|----------------------------|
| | Natal |
| | Transvaal - PWV |
| | Transvaal - other than PWV |
| | Cape |
| | Orange Free State |
| | Rest of Africa |
| | Overseas |
| 100 % | TOTAL |

Comments

.....

.....

iv) **SEASONAL PATTERN**

Do requests for information show a seasonal pattern? For example, the greatest number of requests might be received in a particular quarter, e.g. start or middle of the school year. If a seasonal pattern *is* evident, please describe.

.....

.....

.....

v) **REACTION TO SPECIFIC EVENTS**

Do requests for information sometimes seem to be a reaction to a specific event such as Environment Day, an oil-spill or a publicity campaign? Please give details.

.....

.....

.....

.....

vi) **MOST COMMON TOPICS**

What are the most common topics or issues about which people request information?
List most frequently requested topics first.

| | |
|----|--|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |

Comments

.....

SECTION B: RESPONSES TO REQUESTS FOR ENVIRONMENTAL INFORMATION

i) WHO RESPONDS TO INFORMATION REQUESTS

a) Is there a person (persons) within your organisation who is responsible for responding to requests for information? Circle appropriate response.

..... **yes/no**

b) If so, does that person (or persons) have other work responsibilities?

..... **yes/no**

c) If so, what are those other responsibilities?

.....

ii) HOW DOES YOUR ORGANISATION RESPOND TO REQUESTS FOR INFORMATION?

Please respond by recording the approximate percentage in the box next to each category. Leave blank if a category does not apply. Percentages should add up to 100 %.

| | |
|-------|---|
| | Mail out information in response to requests. |
| | Hand out information to visitors. |
| | Make reference books, or your library, available for people to read and/or photocopy. |
| | Make staff available to discuss queries in person. |
| | Make staff available to discuss queries telephonically. |
| | Other - please specify. |
| 100 % | TOTAL |

Comments

.....

.....

iii) If you hand out or mail information, what information do you use? For example, photocopies from books and magazines, specially prepared information.

.....
.....
.....

iv) a) Do you charge for the service of providing information? Please circle appropriate response. **yes/no**

b) If so, specify rates and how managed.

.....
.....
.....

v) a) Does your organisation keep a record of names and addresses of people who have requested information, for later use? Please circle appropriate response.

..... **yes/no**

b) If so how are these records kept?

.....
.....

c) To what use are they put?

.....
.....

vi) Comment briefly on the importance your organisation attaches to the function of responding to requests for environmental information.

.....
.....
.....

vii) What would allow your organisation to carry out the function of responding to requests for environmental information more efficiently?

.....
.....
.....

THANK YOU FOR TAKING THE TIME AND TROUBLE TO COMPLETE THIS QUESTIONNAIRE

ANALYSIS OF RESPONSES TO QUESTIONNAIRE
CATEGORY **NO. Q. SENT OUT**

NO. OF RESPONSES

DATE

SECTION A

i) Who requests information

| | | | | | | | | | | TOTAL | n | AVER. | RANK |
|---------------------|--|--|--|--|--|--|--|--|--|-------|---|-------|------|
| tourists | | | | | | | | | | | | | |
| children & teachers | | | | | | | | | | | | | |
| farmers | | | | | | | | | | | | | |
| ind. and comm. | | | | | | | | | | | | | |
| media | | | | | | | | | | | | | |
| govt. | | | | | | | | | | | | | |
| public | | | | | | | | | | | | | |
| staff | | | | | | | | | | | | | |
| other | | | | | | | | | | | | | |

ii) Form of request

| | | | | | | | | | | TOTAL | n | AVER. | RANK |
|-------------|--|--|--|--|--|--|--|--|--|-------|---|-------|------|
| letter | | | | | | | | | | | | | |
| tel. | | | | | | | | | | | | | |
| visit | | | | | | | | | | | | | |
| modem | | | | | | | | | | | | | |
| comp. netw. | | | | | | | | | | | | | |
| other | | | | | | | | | | | | | |

APPENDIX D: Form used in analysis of questionnaire

iii) Geographical areas

| | | | | | | | | | TOTAL | n | AVER. | RANK |
|------------|--|--|--|--|--|--|--|--|-------|---|-------|------|
| Natal | | | | | | | | | | | | |
| Tvl - PWV | | | | | | | | | | | | |
| Tvl- other | | | | | | | | | | | | |
| Cape | | | | | | | | | | | | |
| OFS | | | | | | | | | | | | |
| Africa | | | | | | | | | | | | |
| Over-seas | | | | | | | | | | | | |

iv) Seasonal pattern

| YES | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|
| NO | | | | | | | | |

v) Reaction to specific requests

| YES | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|
| NO | | | | | | | | |

SECTION B: RESPONSES TO REQUESTS FOR INFORMATION

i) Who responds

a) Someone responsible for responding, b) other respon., c) list respon.

| | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
| YES | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| NO | | | | | | | | | |

ii) How do you respond?

| | | | | | | | | | TOT | n | AVR | RANK |
|-------------------|--|--|--|--|--|--|--|--|-----|---|-----|------|
| mail out | | | | | | | | | | | | |
| hand out | | | | | | | | | | | | |
| ref/library | | | | | | | | | | | | |
| staff - in person | | | | | | | | | | | | |
| staff - tel. | | | | | | | | | | | | |
| other | | | | | | | | | | | | |

iii) Describe information handed or mailed out

| TYPE OF INFORMATION | FREQUENCY OF REQUESTS |
|---------------------|-----------------------|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

iv) a) Do you charge? b) Describe rates etc.

| | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | |
| YES | | | | | | | | | | |
| NO | | | | | | | | | | |

v) Records of people who have requested info., vi) how are records kept, vii) how are they used

| | | | | | | | | | | |
|-----|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | |
| YES | | | | | | | | | | |
| NO | | | | | | | | | | |

A workshop for teachers
who are concerned about
the environment



GUEST SPEAKER Dr John Ledger, Director
Endangered Wildlife Trust

CHAIRMAN Dr Lynn Hurry, Director
Educational Development
KaNgwane



The SOUTH AFRICAN NATURE
CONSERVATION CENTRE
together with the
ENDANGERED WILDLIFE TRUST
invite you to attend
a one day workshop entitled

**ENVIRONMENTAL PROJECTS
pleasure or problem?**

DATE 14 October 1989

VENUE South African Nature
Conservation Centre, Delta Park,
Victory Park, Johannesburg

COST R30 per person
(including lunch & teas)

TIMES Registration 8.00 - 8.30am
Closing 4.00pm

| TOPICS TO BE COVERED | WHO SHOULD ATTEND |
|---|--|
| <ul style="list-style-type: none"> * a global & local perspective on the environment * the potential in setting projects * effective means of setting, running & evaluating projects * suitable topics * resource material | <ul style="list-style-type: none"> * teachers * guiders & scouters * conservation organisations * museum & zoo education staff * wildlife club organisers |
| <p>Enquiries Linda Paxton or Di Beeton (011) 782-1934, 782-1531</p> | |

REPLY FORM

Please complete & return this form together
with the registration fee of R30.00 to

The Workshop Convenor
SANCC
Private Bag X6
Parkview
2122

TO BE RECEIVED NO LATER THAN 1 OCTOBER 1989

Name & Title

Postal Address

Telephone No.

Organisation/school etc

Position

Specific interest

CHEQUES SHOULD BE MADE PAYABLE TO

E.W.T. WORKSHOP

APPENDIX F: Original *Enviro Facts* topics

| | | | |
|---|---------------------------------|---|------------------------|
| Why conserve? | 31 | Deforestation | |
| Who's who in the zoo | 32 | Conservation and development | |
| The wildlife of your garden | 33 | Elephants and ivory | |
| Grow green garden grow | 34 | Hunting | |
| Diving into oceans | 35 | Indigenous, alien and invasive explained | |
| Water - our most precious resource | | Poisons - in the home and garden | |
| The ozone layer | 36 | Toxic waste | |
| Antarctica | 37 | Plant a tree today! | |
| Prevent plastic pollution | 38 | The value of trees | |
| Gill nets | 39 | Urbanisation | |
| For the earth's sake - what can I do at home? | 40 | | |
| For the earth's sake - what can I do away from home? | 41 | River catchments | |
| War on waste | 42 | Wetlands | |
| Marine turtles | 43 | Estuaries | |
| Fynbos | 44 | Rocky shores | |
| Jackass penguin | 45 | Sandy shores | |
| Whales | 46 | Harvesting the sea | |
| The Cape fur seal | 47 | Coastal conservation | |
| Black rhino | 48 | Sharks | |
| Birds of prey | 49 | Dolphins | |
| | 50 | Wattled crane | |
| 21 | Acid rain | 51 | Soil |
| 22 | Afforestation | 52 | Soil erosion |
| 23 | Blue swallow | 53 | Compost |
| 24 | Wild dog | 54 | Growing vegetables |
| 25 | Careers that care | 55 | Urban conservation |
| 26 | Biodiversity in southern Africa | 56 | Global warming |
| 27 | Farming poisons and wildlife | 57 | Desertification |
| 28 | Biodiversity - an introduction | 58 | Energy and environment |
| 29 | Riverine rabbit | 59 | Energy options |
| 30 | Environmental projects | 60 | Human numbers |

APPENDIX G: Revised *Enviro Facts* topics

| | | | | |
|----|---------------------------------------|---|----|--|
| 1 | What are Enviro Facts? | * | 31 | Deforestation |
| 2 | Conservation | * | 32 | Marine turtles |
| 3 | Sustainable development | * | 33 | Elephants and ivory |
| 4 | Integrated environmental management* | | 34 | Hunting |
| 5 | Environmental auditing | * | 35 | Indigenous, alien and invasive explained |
| 6 | Careers that care | | | |
| 7 | Permaculture | * | 36 | Poisons - in the home and garden |
| 8 | Gardening with wildlife | | 37 | Toxic waste |
| 9 | Traditional medicine and conservation | | 38 | Plant a tree today! |
| 10 | Antarctica | | 39 | The value of trees |
| | | | 40 | Urbanisation |
| 11 | Pollution | * | 41 | River catchments |
| 12 | Marine pollution | * | 42 | Wetlands |
| 13 | War on waste | | 43 | Estuaries |
| 14 | Precious water | * | 44 | Rocky shores |
| 15 | Ozone | | 45 | Sandy shores |
| 16 | Jackass penguin | | 46 | Harvesting the sea |
| 17 | Whales | | 47 | Coastal conservation |
| 18 | The S A fur seal | | 48 | Sharks |
| 19 | Rhinos | | 49 | Dolphins |
| 20 | Raptors | | 50 | Wattled crane |
| 21 | Acid rain | | 51 | Soil |
| 22 | Afforestation | | 52 | Soil erosion |
| 23 | Blue swallow | | 53 | Compost |
| 24 | African wild dog | | 54 | Growing vegetables |
| 25 | Fynbos | | 55 | Urban conservation |
| 26 | Biodiversity | | 56 | Global warming |
| 27 | Biodiversity in SA | | 57 | Desertification |
| 28 | Farmers, poisons and wildlife | | 58 | Energy and environment |
| 29 | Riverine rabbit | | 59 | Energy options |
| 30 | Environmental projects | | 60 | Human numbers |

* **new topics**

APPENDIX H: Development of *Enviro Facts*

The points below describe the process by which the fact sheet topics were identified and written:

i) *Selection of topics and format*

During September and October 1990 a range of likely users of the fact sheets were surveyed by letter (Paxton 1990a correspondence) to establish what were the most needed topics, and what was an appropriate format for the fact sheets. Included in the survey were teachers, teacher-educators, staff of environmental education centres and conservation agencies, and members of the *Enviro Facts* Project Steering Committee. In addition, the results of a WLS survey held earlier in the year were drawn upon in selecting topics (Wildlife Society of Southern Africa 1990).

The decision as to what format *Enviro Facts* should have was informed by the aims of the Project (4.3.3), the feedback from the surveys, and the opinion that should readers wish to learn more after reading a fact sheet, the latter should support them in doing so. The following format was decided upon:

- * *Outline of issue.* Each fact sheet provided an outline of the topic.
- * *What you can do.* This section listed ideas for individual and group action to address the topic covered in the fact sheet.
- * *Further reading.* Included in this section was a list of books, brochures and magazines relating to the topic of the fact sheet.
- * *Useful contacts.* This was a list of names, addresses and telephone numbers of organisations active in the subject area covered by the fact sheet.
- * *Topics for debate.* A later development was the inclusion of "Topics for debate" (for example see *Enviro Facts* "Human numbers" A 23) to succinctly reflect, and raise for debate, differing viewpoints (for discussion on this point see 4.3.5.2,iii).

It would be misleading to suggest that the original sixty topics chosen (A 16) were identified at the beginning of the Project. My ongoing engagement with potential users of the fact sheets, specialists who were writing the text, the Steering Committee, and the literature on the environmental issues themselves, contributed to a continuous process of selecting, rejecting and refining topics that should be included (*Enviro Facts* 1991c). Although 'user demand' was the major influence in determining the topics chosen in Phase I, a few topics were selected because they complemented a subject area, or because they were significant issues about which clear information should be provided. The selection of topics during Phase II followed a somewhat different process (4.4.2.1,i,ii).

- ii) *Identification of contributing authors.* Once the topics had been selected, authors were identified, primarily through discussion with colleagues and members of the Steering Committee. Most authors were recognised specialists on a particular topic.

Fifteen of the original sixty fact sheets were written by myself where no author was identified for the particular topic, or I was dissatisfied with the first draft submitted by a contributing author. These fact sheets were always reviewed by one or more specialist.

- iii) *Liaison with contributors.* My initial approach to potential authors was usually by telephone. If they agreed to write the fact sheet, I would send a facsimile which described the Project and gave clear guidelines for the writing of the fact sheets, as well as a deadline date.

During this process I was struck by the enthusiasm with which the Project was received, and the support willingly offered. No author was paid for their contribution, although those authors who contributed to Phase I did receive a coffee-table book in appreciation of their contribution. These books had been provided to the Project at a discounted rate by their publisher. I recall only two occasions where specialists declined to write a fact sheet as a consequence of their work commitments. On the matter of reimbursement, again on only one occasion did the specialist approached request payment on the grounds that he was self-employed and writing was his source of income.

- iv) *Initial editing.* Once the copy had been written by the contributing author, the draft was posted (frequently on computer disc) or faxed to me for editing. The amount of editing required varied considerably from author to author. It required, most commonly, shortening and simplifying the text. Some fact sheets, particularly those that dealt with contentious issues (for example, "Human Numbers" (A 22) and "Global Warming"), were sent to one or more specialist for comment.

- vi) *The workshop process.* Following the editing process, workshops (Table AH.1) were held with likely users of the fact sheets, such as teachers and staff of environmental education centres. Environmental education resource developers and journalists were also included in some of the workshops. Workshop participants provided useful suggestions as to how the fact sheets could be improved for example, by making them easier to understand, and adding to the lists of "Further Reading" and "Useful contacts".

TABLE AH.1 Summary of workshops held during Phase I

| DATE | VENUE | PARTICIPANTS | FOCUS |
|-----------------|--|---|---|
| 1. November '90 | Midmar Dam, Howick, Natal | Representatives of several government and non-government conservation agencies. | This three-day workshop endeavoured to establish collaborative structures through which participants could both contribute to and benefit from resource development activities in southern Africa. <i>Enviro Facts</i> was one of many resource development projects discussed. |
| 2. February '91 | Potberg Reserve, Cape | Ditto | Ditto |
| 3. May '91 | SANCC, Johannesburg, Transvaal | Representatives of the WLS, TPA Department of Nature Conservation, DEA, SANCC, JHB Zoological Gardens, Botanical Society. | The purpose of this workshop was to review, first, the concept of <i>Enviro Facts</i> , and second, fact sheets 1-20, with a view to informing the development of subsequent fact sheets. |
| 4. May '91 | Umgeni Valley Project, Howick, Natal | Representatives of the WLS, NPB, University of Natal, ORI and the Natal Education Department. | Ditto |
| 5. July '91 | Centaurus High School, Windhoek, Namibia | A range of environmental educators from South Africa, Zambia, Namibia and Botswana. | The concept of <i>Enviro Facts</i> was discussed. Two problematic fact sheets and the issue of the 'target group' for the <i>Enviro Facts</i> were discussed. |
| 6. October '91 | Hewatt College of Education, Crawford, Cape | Members of EEASA, Western Cape | The concept of <i>Enviro Facts</i> was outlined and discussed in the light of other resource development initiatives in South Africa. The possible role of <i>Enviro Facts</i> in environmental education was discussed. |
| 7. October '91 | ORI, Durban, Natal | A representative of ORI, and of the WLS and a teacher of secondary school biology | The participants reviewed the drafts of those fact sheets that dealt with marine issues. |

- vii) *Final editing.* Following incorporation of workshop recommendations, a scientist from the NPB, a collaborating organisation, edited the fact sheets for spelling, grammatical and scientific accuracy. Most often the fact sheets were sent to him via modem link between my office in Namibia and the NPB, Pietermaritzburg. We had variable success with this technology.
- viii) *Artwork.* During the latter stages of the process outlined above, I would liaise with a NPB artist with regard to illustrations for the fact sheets. As I was located in Namibia during Phase I, some of this liaison took the form of telephonic and facsimile communication. For the rest, I would consult with the artist when I was visiting Natal, and he would then post the finished artwork to me.
- ix) *Typesetting, printing and translation.* Once the text and artwork were finalised, they were sent to PnP in Cape Town for translation, typesetting, printing and distribution to their stores. Translation and typesetting were thus not under editorial supervision and this contributed to numerous errors in fact sheets 21 - 40 (Card 1991 correspondence). Negotiation with PnP resulted in fact sheets numbers 41 onwards being translated and typeset in Namibia under my supervision (*Enviro Facts* 1991c, 1991d, 1992a).
- x) *Release of the fact sheets.* After the initial release of twenty fact sheets in October 1990, four sets of ten fact sheets were released as follows: June 1991, September 1991, March 1992 and January 1993 (A 16).

APPENDIX I: *Enviro Facts* in display and storage stand



Photo: R. de la Harpe, NPB

APPENDIX J: Selected *Enviro Facts*

What are Enviro Facts?

Conservation

Sustainable development

Rhinos

Human numbers



ENVIRO FACTS

- | | |
|---|-----------------------------------|
| 1 What are Enviro Facts? | 31 Deforestation |
| 2 Conservation | 32 Marine turtles |
| 3 Sustainable development | 33 Elephants and ivory |
| 4 Integrated environmental management | 34 Hunting |
| 5 Environmental auditing | 35 Indigenous, alien and invasive |
| 6 Careers that care | 36 Poisons - home and garden |
| 7 Permaculture | 37 Toxic waste |
| 8 Gardening with wildlife | 38 Plant a tree today! |
| 9 Traditional medicine and conservation | 39 The value of trees |
| 10 Antarctica | 40 Urbanisation |
| 11 Pollution | 41 River catchments |
| 12 Marine pollution | 42 Wetlands |
| 13 War on waste | 43 Estuaries |
| 14 Precious water | 44 The rocky shore |
| 15 Ozone | 45 Sandy shores |
| 16 Jackass penguin | 46 Harvesting the sea |
| 17 Whales | 47 Coastal conservation |
| 18 The S A fur seal | 48 Sharks |
| 19 Rhinos | 49 Dolphins |
| 20 Raptors | 50 Wattled crane |
| 21 Acid rain | 51 Soil |
| 22 Afforestation | 52 Soil erosion |
| 23 Blue swallow | 53 Compost |
| 24 African wild dog | 54 Growing vegetables |
| 25 Fynbos | 55 Urban conservation |
| 26 Biodiversity | 56 Global warming |
| 27 Biodiversity in SA | 57 Desertification |
| 28 Farmers, poisons and wildlife | 58 Energy and environment |
| 29 Riverine rabbit | 59 Energy options |
| 30 Environmental projects | 60 Human numbers |

August 1993

Enviro Facts 1



WHAT ARE ENVIRO FACTS?

The Enviro Facts have been developed in response to a growing need amongst South Africans for information about their environment. The Enviro Facts are 60 information, or fact sheets covering a range of environmental issues (see list on back page). The fact sheets provide an overview, or orienting framework, for each topic or issue. They aim to be concise, up-to-date, and easy-to-understand, with a South African perspective. In addition, ideas for individual or group action towards solving a particular problem are suggested.

HOW ENVIRO FACTS ARE WRITTEN

The fact sheets have been developed in close collaboration with environmental specialists throughout South Africa. Input from educators, journalists and education resource developers, amongst others, was made possible by an initial survey to identify topics, followed by a series of workshops run across the country.

ENVIRO FACTS TO MOTIVATE AND SUPPORT

The Enviro Facts attempt to describe environmental issues in a simple way. Careful attention is given to ensuring that the information is accurate, and easy-to-understand, so as to motivate, and support, action around environmental issues.

"Further Reading" The fact sheets are short, and you will probably want to get more information on a particular topic. A list of "Further Reading" will guide you to other resources available in South Africa.

"Useful Contacts" provides addresses and telephone numbers of organisations active in each field. Some may be able to send you



information brochures, or make specialist scientists available for a brief discussion, others may refer you to a local branch for assistance. Whereas many organisations are geared for supporting the public on environmental issues, some are not, so persevere until you find what, or who, you need.

“Topics for debate” Many environmental issues are contentious, and people frequently disagree with one another. Differing viewpoints, or contentious issues are often included in a fact sheet as “Topics for Debate”. Sometimes the best way to come to grips with an environmental issue is through discussion and debate, and the Enviro Facts aim to support this. You might find that some fact sheets raise doubts and uncertainties, rather than providing clear cut answers - this is because clear cut answers are few and far between!

USING ENVIRO FACTS

A good way to start using Enviro Facts is to become familiar with the fact sheets “Conservation” and “Sustainable development”. These provide a framework within which the issues raised in other fact sheets can be better understood. Likewise, the fact sheets “Environmental projects” and “Environmental auditing” provide useful reference points to guide action in your local environment.

People are using Enviro Facts in a variety of ways:

- They are useful for supporting pupils and students in project work - the list of Enviro Facts topics alone, provides a wealth of ideas for projects. The fact sheet “Environmental projects” suggests guidelines for teachers on setting environmental topics.
- Enviro Facts can form the basis for articles in newsletters, magazines and newspapers, or for a speech you need to present.
- Parents, teachers and youth group leaders read fact sheets to younger children, explaining tricky concepts or words as they go along.
- They can be used as part of a comprehension exercise.
- Enviro Facts are used together with other environmental education resource material, e.g. Enviro Picture Building, Project Water, and the Hands-On booklets (available from Share-Net, address below).

COPYRIGHT FREE

Enviro Facts are copyright free - and they are available on disc in Word Perfect 5.1. They are thus easily localised by changing the material for

your particular needs, for example, you might want to simplify the information, or adapt it for teaching literacy programmes. Some people use the information for newspaper or magazine articles. Teachers may modify the fact sheets to provide notes for their pupils. People in other African countries are adapting the material to make it directly relevant to their country by including local examples and contact organisations.

LET'S HEAR FROM YOU

During the development of the Enviro Facts, we have tried to respond to the needs of South Africans - so let's hear from you. Write and tell us how you are using the material, what aspects of the project you have found most useful, or problematic. Ideas for the “What you can do”, “Further reading” and “Useful Contacts” are particularly valuable. Suggestions as to how the project could be improved are always welcome.

WHERE FROM

Enviro Facts are available free from Pick 'n Pay stores, or from Share-Net, PO Box 394, Howick, 3290. Tel. 0332-303931. A full set (as pamphlets or on disc) from Share-Net costs R10.00, inclusive of postage and packaging. Share-Net supply a range of environmental education resource materials, so it is worth asking for their catalogue.

ACKNOWLEDGEMENTS

The Enviro Facts Project is funded by the Southern African Nature Foundation and Pick 'n Pay. Six conservation organisations endorse the project, and have supported it in various ways: Botanical Society, Wildlife Society of Southern Africa, Natal Parks Board, National Parks Board, Endangered Wildlife Trust, and Oceanographic Research Institute. The artwork is by Peter Stewart, and editorial support is provided by Dave Rowe-Rowe, both of Natal Parks Board. Translation and typesetting is by Cella Mendelsohn. The project steering committee comprises Jim Taylor (Wildlife Society), Rob O'Donoghue (Natal Parks Board), Alex Craib (SA Nature Foundation) and Ann Seba (Pick 'n Pay). Over one hundred people have given, at no charge, specialist advice on the 60 topics covered. Development and production of Enviro Facts is carried out by Linda Paxton.



"The good of going into the mountains is that life is reconsidered."
Ralph Waldo Emerson

TOPICS FOR DEBATE

- South Africa has an excellent international reputation for conservation, especially for the management of its national parks and game reserves. However, rural people living in poverty on the borders of parks and reserves, seldom have access to the 'wealth' of these areas - should they?

FURTHER READING

The gaia atlas of planet management. N. Myers (ed). Pan Books, London, 1985.

Our common future. The World Commission on Environment and Development. Oxford University Press, Oxford, 1987.

Caring for the earth: a strategy for sustainable living. IUCN, UNEP, WWF. Gland, 1991.

Environmental management in South Africa. R. Fuggle and M. Rabie. Juta and Co., Cape Town, 1992.

The green pages 1991/1992: environmental networking and resource directory for southern Africa. Weekly Mail, Johannesburg.

Going green: people, politics and the environment in south Africa. J. Cock and E. Koch (eds). Oxford University Press, Cape Town, 1991.

Back to earth: South Africa's environmental challenges. J. Clarke. Southern Books, Johannesburg, 1991.

A sand county almanac. A. Leopold. Oxford University Press, 1949.

The turning point: science society and the rising culture. F. Capra. Flamingo, London, 1982.

All books are available from **Russel Friedman Books**, PO Box 73, Halfway House 1685. Tel: 011-7022300/1.

USEFUL CONTACTS

The "Green pages", details above, is a directory of conservation, and other related organisations.

Pick 'n Pay have sponsored the production of these Enviro Facts, developed with the help of several conservation bodies through the Environmental Education Association of Southern Africa (EEASA). Your comments and ideas for further Enviro Facts are welcome. Please write to: Linda Paxton, Coordinating Editor, Enviro Facts Project, Share-Net, P.O. Box 394, Howick 3290.



CONSERVATION

South Africa's earliest conservation organisations, formed in the 1800s, were game preservation associations, concerned primarily with protection of wildlife. These were formed by hunters concerned about declining numbers of wild animals. Single species conservation formed the focus of conservation efforts in South Africa until fairly recently, when people became aware that all species are dependant on their habitat and life support systems. The realization that the earth's resources (living and non-living) are both finite, and essential for the survival of human, and other life, contributed to a broadening of the concept of conservation to include, as well as wild animals, all the interacting components of an ecosystem that are necessary for its healthy functioning. More recently, scientific and technological advances, such as the use of satellites, have allowed us to assess global environmental problems such as depletion of ozone (see Enviro Facts "Ozone"), and global warming (see Enviro Facts "Global warming").

Today, conservation has come to be described as the wise use of the earth's resources such that they will be able to support, or sustain, all life for generations ahead. Conservation is practised in different ways in different situations. For example:

- In a national park, conservation might involve protection of ecosystems including endangered species, such as the black rhino (see Enviro Facts "Rhinos").
- In agriculture, conservation might involve permaculture techniques (see Enviro Facts "Permaculture", "Soil", "Soil erosion"), or river catchment management (see Enviro Facts "River catchments", "Wetlands", "Estuaries").



- In industry, pollution control measures (see Enviro Facts "Pollution", "IEM"), or environmental auditing (see Enviro Facts "Environmental auditing") is in keeping with the 'wise use of resources'.
- In our personal lives, recycling waste in our home is a conservation action (see Enviro Facts "War on waste").

The above examples show that conservation involves the use of resources, in many different situations, all of which include *protection and maintenance* (e.g. national parks and game reserves), and *rehabilitation and restoration* of ecosystems and their populations (e.g. planting of trees and shrubs along a degraded riverbank).

Conservation is also applied to our cultural heritage, thus including things of historical importance, such as old buildings, battle fields and oral traditions.

WHY CONSERVE?

Some people argue that the creation has an intrinsic value and thus a right to exist, independently of human use. Christian belief is that people will achieve harmony with nature through Jesus Christ. This is in keeping with the view that the solution to our environmental problems lies not only in technological or scientific advance, but in an awareness of the non-material dimension of the human-environment relationship.

In addition to the 'intrinsic value' argument for conservation, people are dependant on natural resources for a variety of reasons:

ECOLOGICAL VALUE

Ecology is the study of the interactions and relationships between all living (plants and animal) and non-living (e.g. soil, water, air) things on earth. From ecology we have learnt of the interdependence of all living and non-living things.

"All things are connected, like the blood that unites one family. Whatever befalls the earth, befalls the sons of the earth. Man did not weave the web of life; he is merely a strand in it. Whatever he does to the web, he does to himself." Chief Seattle.

Ecological reasons for conservation demonstrate the need to care for the life support systems of the planet. The greenhouse effect (see Enviro Facts "Global warming") illustrates the breakdown of a life support system, the maintenance of the carbon dioxide balance in the atmosphere. Increased burning of fossil fuels, such as coal, oil and gas, releases greater amounts of carbon dioxide into the atmosphere. Deforestation results in less carbon dioxide being taken up by plants (see Enviro Facts "Deforestation"). The overall result is an increase in the carbon dioxide

concentration of the atmosphere, and this contributes to a warming of the earth's atmosphere.

ECONOMIC VALUE

Healthy ecosystems

Most sections of our economy are dependant on natural resources. For example, industries such as forestry, fishing, agriculture and tourism, are all dependent on the healthy functioning of the natural environment. If the resource base on which these industries depend is damaged, the industries themselves suffer. For example, overfishing of pilchards off the west coast of South Africa and Namibia resulted in the 1970s crash in fish populations, and harvests dropped dramatically.

Genetic diversity

Plants and animals contain a largely untapped store of genetic diversity which may be of great value in plant and animal breeding programmes (see Enviro Facts "Biodiversity" and "Biodiversity in South Africa"). In addition, plants are chemical factories able to make vast numbers of complex and unusual substances, many of which are potential medicines for humankind. Examples of existing drugs based on plants include:

- quinine, an anti-malarial medicine, made from a substance in the yellow cinchona plant;
- aspirin, a common drug, has been developed from a blueprint supplied by the bark of the willow tree;
- the rosy periwinkle produces substances which are effective in the treatment of leukaemia.

We cannot predict which resources may be of use in the future - thus it is important that we leave our options open and maintain the earth's biodiversity (see Enviro Facts "Biodiversity" and "Biodiversity in South Africa").

"Few problems are less recognised, but more important than the accelerating disappearance of the earth's biological resources. In pushing other species to extinction, humanity is busy sawing off the limb on which it is perched" - Professor Paul Ehrlich, Stanford University.

AESTHETIC VALUE

The beauty and peacefulness of the mountains, the sea and the bushveld attracts people for recreation, rest and refreshing inspiration. Nature is a refuge to which people turn, time and again, to be nourished and revitalised.



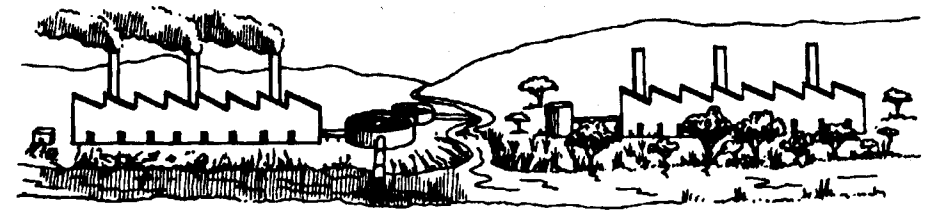
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- Integrated environmental management in South Africa.** Council for the Environment, 1989, address below. Also offer slide show on the same topic. All books available from **Russel Friedman Books**. P.O. Box 73, Halfway House 1685. Tel: 011-70022300/1.

USEFUL CONTACTS

- Environmental and Development Agency.** PO Box 322, Newtown, 2113. Tel. 011-8341905
- Environmental Justice Networking Forum.** PO Box 100029, Scottsville, 3209. Tel. 0331-65410
- Development Resource Centre.** PO Box 6079, Johannesburg, 2000. Tel. 011-8387504.
- Council for the Environment.** P/Bag X 447, Pretoria, 0001. Tel. 012-3103582.
- Mazda Wildlife Fund.** PO Box 411, Pretoria, 0001. Tel. 012-4764183

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SUSTAINABLE DEVELOPMENT

Historically, development and conservation (see Enviro Facts "Conservation") have been in conflict, because conservation was understood as the protection of resources, and development as the use, or exploitation of resources. Recognising the need for both, the United Nations appointed, in 1980, a commission to advise on development and conservation. In their report "Our common future" they emphasised the concept of sustainable development.

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainable development thus aims to improve the quality of human life while living within our ecological means. This reflects a changed view of development, as it takes into account environmental concerns. It is compatible with a more enlightened view of conservation as the wise use (not only protection) of natural resources.

AN HISTORICAL PERSPECTIVE

During the industrial revolution, development was associated with economic growth through industries such as mining, factory production and large-scale farming. Industrialization began in Britain and spread to Europe, North America and Japan, all of which became known as the First World. Characteristics of First World countries are high economic growth, many job opportunities, and high incomes. Third World countries, such as those in Africa and South America, have slow, if any, economic growth, with high unemployment and very low incomes. In fact, the



wealth of many First World countries is founded in part on the exploitation of resources from Third World countries.

ENVIRONMENTAL PROBLEMS

The environmental problems of the First World are associated with economic wealth, high resource consumption and industrialization. These have contributed to, for example, ozone depletion (see Enviro Facts "Ozone"), and global warming (see Enviro Facts "Global warming"). Environmental problems of the Third World, however, are associated with poverty, e.g. high population growth rates (see Enviro Facts "Human numbers"), overgrazing and desertification (see Enviro facts "Desertification").

DEVELOPMENT AS A SOLUTION?

The solution to the devastating poverty, and environmental problems of Third World countries is often seen as 'development', i.e. the development of Third World countries towards the First World ideals of economic growth through industrialization and high consumption patterns. However, many people have begun to seriously question the wisdom of this approach.

Limited resources

It is argued that the earth's finite resources would not be able to support all the world's people if everyone had the high consumption patterns of First World countries (see Enviro Facts "Human numbers").

Mahatma Gandhi, when asked if, after independence, India would attain British standards of living, commented that "... it took Britain half the resources of the planet to achieve its prosperity; how many planets will a country like India require?"

A different type of development?

Development is conventionally seen as economic growth, dependant upon 'throughput growth', i.e. growth which depends upon an ever increasing consumption of energy and natural resources. This type of development tends to be unsustainable. One alternative being suggested is qualitative development, with minimum inputs and outputs, maximum reuse and recycling, and little or no growth in throughput.

Development programmes in Third World countries probably need both quantitative growth (to address poverty), and qualitative development. The richer countries of the First World need to bring a halt to throughput growth, and replace it with qualitative growth. For example, an industry-oriented economy (high throughput) might be characterised by coal mining and steel manufacture, whereas a service-oriented economy might focus on fibre optics and electronics (low throughput).

Who benefits?

Third World development programmes that focus on economic growth as a solution to widespread poverty, assume a 'trickle-down' effect, i.e. that the benefits of economic growth will trickle down to all members of society, including the poorest. However, economic growth does not always benefit the poor in a country. Many development programmes now give special attention to human needs, and the *distribution* of development benefits, rather than focusing all efforts on economic development. A more people-oriented development should empower people to take greater control over all aspects of their lives: social, political, economic and ecological.

TOOLS FOR SUSTAINABILITY

IEM (see Enviro Facts "Integrated Environmental Management") is a tool, or environmental check, used to support sustainable development. IEM, which includes environmental impact assessment and environmental auditing (see Enviro Facts "Environmental auditing"), is of potential significance in less developed regions where people want to avoid the environmental problems associated with uncontrolled development.

IEM has an important role to play in ensuring that a particular development does address the needs of all people, including the poor, as public participation is an essential part of the process.

TOPICS FOR DEBATE

- The rich must live more simply, so that the poor may simply live.
- Is development without an increase in throughput really possible? Describe examples of this type of development, from both First and Third Worlds.
- The Third World is plagued not so much by a lack of development, but by its disadvantaged place in a world economic order in which the interests of the First World are paramount.
- Sustainable development may become a verbal formula for glossing over the harsh political realities that the concept requires, e.g. the need for income redistribution, reduced population growth and reduced natural resource consumption.
- South Africa is often described as a microcosm of the world because it has both First World and Third World characteristics in one country. With this in mind, what approach to development would be best for this country?



TOPICS FOR DEBATE

- Why bother conserving rhinos? What value do these animals have?
- Some people argue that trade in rhino horn should be legal. They maintain that this would encourage people to protect, or even breed rhino and sell the horn, thus removing pressure from wild populations, and increasing rhino numbers. With increased supply of rhino horn, the price would probably drop, and the incentive for poaching would be removed. In addition, legal trade would be easier to control than illegal trade. Funds derived from sales could be ploughed back into rhino conservation programmes. What is your view?

WHAT YOU CAN DO

- Report any signs of illegal trade in rhino horn to your local conservation agency, the National Parks Board or the Endangered Species Unit, addresses below.
- Support a conservation organisation concerned with rhinos.

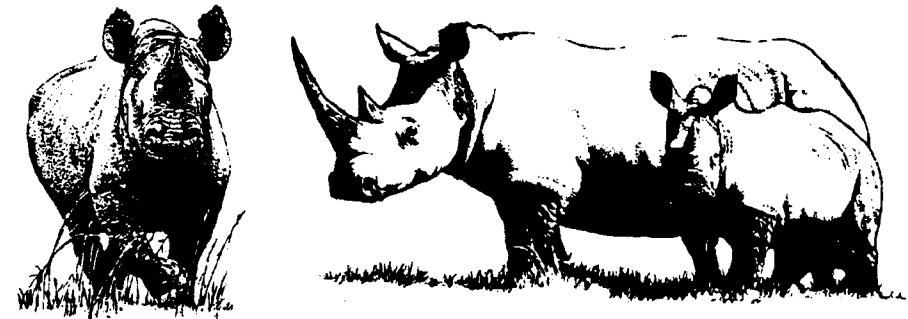
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 Tel: 011-70022300/1.

USEFUL CONTACTS

Rhino and Elephant Foundation. PO Box 381, Bedfordview, 2008. Tel. 011-8820606. **Endangered Wildlife Trust.** P/Bag X11, Parkview, 2122. Tel. 011-4861102. **Natal Parks Board.** PO Box 662, Pietermaritzburg, 3200. Tel. 0331-471961. **National Parks Board.** PO Box 787, Pretoria, 0001. **TRAFFIC.** P/Bag X11, Parkview, 2122. Tel. 011-4861102. **Endangered Species Protection Unit.** PO Box 94, Pretoria, 0001. Tel. 012-3101728.

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RHINOS

WHITE RHINO

By the turn of the century, the uncontrolled killing of southern white rhinos for sport or for their horns had reduced the population to only 20 animals located in the Umfolozi Game Reserve in Natal. These thrived under the protection of the Natal Parks Board, and by 1961 there were enough to allow translocation (moving rhinos from one area to another) of white rhinos to new reserves. Known as 'Operation Rhino', more than 3 500 white rhinos have since been moved to other areas within their former range and elsewhere in the world. The increase in population that followed 'Operation Rhino' resulted in the white rhino being removed from the IUCN's Red Data Book of threatened species. Today, surplus animals are sought after by hunters as trophy animals.

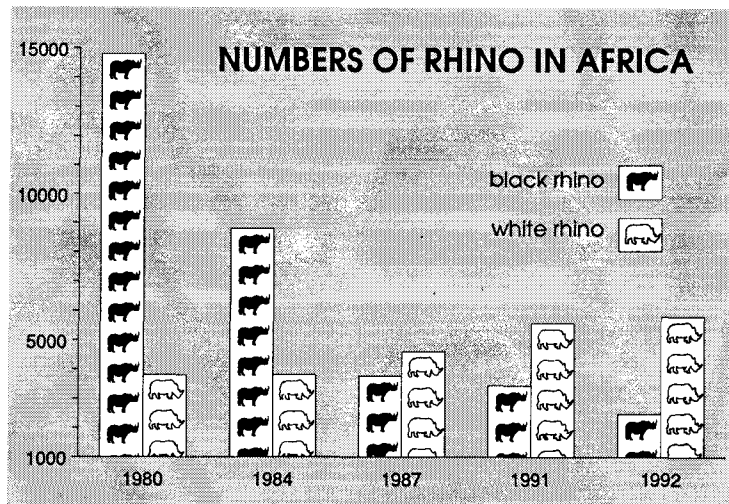
Today, white rhino numbers are still increasing, largely because more than 90% of the animals are found in South Africa where a relatively effective infrastructure (e.g. policing, legislation, communications), and sound conservation management are able to control poaching and provide conditions suitable for breeding.

BLACK RHINO

The recent history of the black rhino is rather different. In 1970 there were approximately 65 000 black rhinos in Africa. Today there are less than 2 500, with numbers decreasing. Although formerly widespread throughout South Africa, by 1930 only 100 - 150 black rhinos remained in the Hluhluwe-Umfolozi and Mkuzi Game Reserves. As with the white rhinos, numbers increased under protection, so that by 1962 the Natal Parks Board was able to translocate animals to reserves within its former range. By the end of 1992, almost 200 black rhinos had been relocated



to eight other reserves and onto private land. While black rhino numbers in South Africa have increased steadily in recent years, the overall African population has decreased by 83% since 1980!



POACHING

Poaching for horn is largely responsible for this massive decline. The southern African countries of Namibia, Zimbabwe and South Africa, where 90% of Africa's remaining black rhinos and white rhinos are conserved, are coming under increasing pressure. These animals provide the only means of satisfying the illegal trade in rhino horn, which now appears to be driven by stockpiling for investment purposes in addition to the traditional demands of eastern medicine and Yemeni dagger handles.

The first substantial poaching in Zimbabwe was recorded in 1985, and since then the numbers have declined from about 1 950 to 674 animals in 1992. Namibia experienced increased poaching in the late 1980s, but this is now under control. More recently, during 1991 and 1992 Swaziland lost 45 white rhinos to poaching.

RHINO HORN

Rhino horn is highly valued in certain parts of the world for medicinal and cultural reasons. In the Far East, especially China, people believe the powdered horn can be used as medicine to reduce fever. In Yemen, the curved dagger, or jambia, epitomises manhood. Rhino horn is the most sought after type of handle for this dagger and many people are prepared to pay the high price (US\$ 580 for new, and US\$ 1200 for antique rhino horn) it fetches. Alternative dagger handles are water buffalo horn (US\$ 8), and amber-coloured plastic (US\$ 5).

CONSERVATION ACTION

- International pressure is being applied to a number of consumer countries to control the illegal importation and subsequent sale of rhino products.
- Yemen has agreed to stop importing rhino horn, however, there is no internal prohibition, i.e. ownership and trading in rhino horn within the borders of Yemen is legal.
- Chemical tests on rhino horn have shown that it may have some fever-reducing properties, but only at far higher dosages than are found in current medicines. Alternative medicines are being promoted in countries of the Far East to reduce the demand for rhino horn, and hopefully the value of the horn will fall and remove the incentive to poach. Unfortunately the current high prices paid for rhino horn encourage an illegal trade.
- South African reserves practise intensive conservation management programmes which include anti-poaching patrol and intelligence-gathering activities, rhino population monitoring, translocation and maintaining genetic diversity.
- South Africa currently provides the chairman for the IUCN's (World Conservation Union) African Rhino Specialist Group, and has followed this group's recommendation that all countries with more than 100 rhinos draw up a national plan to direct rhino conservation efforts.
- A special police unit, the Endangered Species Protection Unit, investigates illegal activities (such as poaching and trading) relating to endangered species, including rhino.
- A TRAFFIC (Trade Records Analysis of Flora and Fauna in Commerce) office was recently established in South Africa. The object of the international TRAFFIC network is the conservation of wildlife by monitoring and reporting on trade in wild animals and plants.

DID YOU KNOW?

- Rhino horn is made of a mass of fibres attached to the skin of the rhino's snout. The fibres consist of a protein called keratin, which also forms the basis of human hair and fingernails, and the hooves of horses.
- In South Africa the penalty for anyone caught poaching rhino is R100 000 or 10 years in prison, or both. All cases of poaching in Natal in the last two years have resulted in the offenders being brought to trial.
- In 1992 the Natal Parks Board sold 5 black rhino for R2,4 million!
- South Africa has about 819 black rhinos and 5297 white rhinos. This represents 74% of Africa's total rhino population.
- CITES (Convention on International Trade in Endangered Species of Wild Flora and Fauna) lists black rhinos and white rhinos on Appendix I. This means that trade in rhino products is illegal.

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access to resources on the one hand and the overconsumption of resources on the other.

- In South Africa, is poverty a result of having too many children - or are large families a symptom of poverty?

CONTACT ORGANISATIONS

The Planned Parenthood Association of South Africa. PO Box 8687, Johannesburg, 2000. Tel. 011-331 6953.

The Urban Foundation. PO Box 1198, Johannesburg, 2000. Tel. 011-403 5500.

The Rural Foundation. Drostdy Centre, PO Box 388, Stellenbosch 7600. Tel. 02231-76870.

Institute for Natural Resources. University of Natal, PO Box 375, Pietermaritzburg 3200. Tel. 0331-68317.

SAPLER (Splendidly alive people within limited environmental resources). PO Box 51446, Raedene, 2124. Tel. 011-640 7180.

Department of National Health and Population Development. Private Bag X399, Pretoria, 0001. Tel. 012-325 5100.

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January 1993

Enviro Facts 60



HUMAN NUMBERS

Extraordinary population changes have taken place in the past 150 years - human numbers have increased from one billion to 5,4 billion today. If present trends continue, there will be at least 8,5 billion people in the year 2025. The human population is growing *exponentially*, i.e. the rate of increase is continuously applied to an ever-expanding number, identical to a bank account where interest is compounded. Human populations are growing exponentially, or 'exploding' because children, comparable to the interest earned on a bank account, have children themselves.

Clearly, more people make greater demands on the earth's resources. However, human impact on the earth is not determined only by numbers of people, but also by how much energy and other resources each person uses or wastes. Sustainable living is possible only if human numbers *and* demand for resources are kept within the earth's carrying capacity.

If we apply to our lives the rules we apply when managing other species, we should curb population growth well before human numbers reach our estimate of what the planet can support. This is particularly important because whilst we know that there is an ultimate limit to the planet's carrying capacity, we are uncertain exactly what it is.

FACTS AND FIGURES - HUMAN POPULATION AND RESOURCE CONSUMPTION

- Commercial energy (e.g. coal, oil, nuclear) consumption is a useful measure of environmental impact. Energy enables people to take resources from the environment, to change them into usable products, and consume them. During this



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process waste is produced, and often released into the environment as pollution.

- The 42 countries in the world that use the most energy per person contain only one quarter of the world's population but account for four-fifths of its use of commercial energy.
- The 128 countries that use the least amount of energy per person contain three-quarters of the world's population but use only one-fifth of commercial energy consumption.
- On average, a person in a 'high energy consumption' country consumes 18 times the commercial energy used by a person in a 'low energy consumption' country, and causes twice as much pollution. One North American causes the emission of twice as much carbon dioxide (see Enviro Facts "Global Warming") as a South American, and ten times as much as someone in South or East Asia (excluding Japan).
- Although most 'high energy consumption' countries have near-stable populations (i.e. the population growth is close to zero) their resource consumption continues to rise.

POPULATION GROWTH AND POVERTY

Population growth rates are highest where poverty is most severe - why is this so?

- Where there is poverty people have less security and fewer choices. It seems that with economic growth and the range of options it brings, people, particularly women, choose not to have large families.

Economic growth and a widespread distribution of the benefits it can bring, creates jobs and improves education and health facilities. With improved education facilities, more women will have opportunities to attend school. More jobs means that women, drawn into the growing job market, become wage earners in their own right. New found status and empowerment resulting from earnings and education, coupled with access to family planning services, allow women greater control in

deciding how many children they will bear. A desire to remain employed, and fewer child deaths (as a result of better health services) no doubt contribute to a decision to limit the number of children born.

- In some societies, where financial structures such as pension and retirement annuity schemes are not readily available, having children is a rational choice as they provide security for their parents' old age.

Giving people the means (through the vote, improved social and legal status, education, access to family planning and financial independence) to choose the size of their families will not only help keep the population in balance with resources; it is also a way of assuring, especially for women, the basic right of self-determination.

Concern over population growth is a call of concern for human progress and human equality.

SOME POPULATION STATISTICS

- The world's population of 5,3 billion is increasing by three people every second, which is equivalent to a quarter of a million people every day.
- South Africa's estimated population of 41,7 million is growing at a rate of 2,6% each year, making it set to double within the next 25 years.

TOPICS FOR DEBATE

- Some people maintain that economic growth will reduce population growth in many countries. Is this a realistic solution in view of the environmental damage that traditionally accompanies much of the industrial and commercial activity associated with economic growth?
- For sustainable living all societies need a balance between resources and population. Could it be argued that in South Africa the balance has been destroyed by colonial and apartheid policies and through this process, major environmental problems have been created? Thus it is not population numbers that threaten the South African environment, but the lack of