Online electronic environmental information: a study of use and attitudes within UK environmental organisations

Online electronic environmental information.

A study of use and attitudes within UK environmental organisations.

by

Samantha Jayne Smith, B.A. (Hons.)

A Masters' Dissertation, submitted in partial fulfilment of the requirements for the award of the Master of Science degree of the Loughborough University of Technology

September 1993

Supervisor: Derek Stephens, MSc., MIInfSc.
Department of Information and Library Studies

ABSTRACT

This dissertation examines awareness of, attitude to, and use of online electronic environmental information by organisations that handle environmental information. To achieve this, it proceeds by examining the background to environmental information, and the way in which its provision has developed. To give an insight into the kinds of online electronic information available to environmental organisations, the main commercial hosts, networks and initiatives for exchange of information are examined, and this is followed by a review of the literature to examine electronic information usage by environmental organisations.

To determine awareness and use of electronic environmental information, the results of a telephone survey of smaller environmental organisations are presented, followed by two in-depth case studies of larger international environmental organisations.

It is concluded that although there is a wide and varied range of electronic environmental information; awareness and use of electronic environmental information is low. Recommendations are made to increase awareness of electronic environmental information products, and to change the nature of information sharing amongst environmental organisations.

ACKNOWLEDGEMENTS

I would like to thank my supervisor, Derek Stephens for his advice and guidance throughout the duration of this research. I would especially like to thank him for the co-operation and effort he gave in helping me to complete the final stages of this research.

Acknowledgements must also be given to all those who co-operated in my survey, and agreed to give up their time to be interviewed.

Most importantly, I would like to acknowledge the support and continued encouragement from all my friends and family, without whom none of this would have been possible.

CONTENTS

Title Page

Abstract i

Acknowledgements ii

Contents iii

Chapter One

Introduction Page

1.1 Aims and objectives 2

1.2 Methodology 4

1.2.1 Literature Review 5

1.2.2 Evaluation of electronic environmental products 5

1.2.3 Telephone survey 6

1.2.3.1 Introduction 6

1.2.3.2 Survey method 6

1.2.3.3 The Sample Frame 7

1.2.3.4 The Piloting of the Questionnaire 8

1.2.3.6 The (eventual) sample 9

1.2.3.7 Questionnaire 10

1.2.4 Case Studies 10

1.2.4.1 Introduction 10

1.2.4.2 Participants 11

1.2.4.3 Questionnaire 11

Chapter Two

Environmental information - demand, growth and provision

2.0	Introduction	14
2.1	The growth of environmental information	16
2.3	Environmental information provision	18
2.3.1	Libraries	18
2.3.2	Environmental organisations	19
2.3.3	Organisations that act as central bodies	19
2.3.4	Environment Centres	20
2.5	Conclusion	21

Chapter Three

Online Electronic Environmental Information - Databases, Hosts, Networks and Initiatives for Information Exchange

3.0	Introduction	25
3.1	Online information services - an overview	26
3.2	Online environmental databases	28
3.3	Hosts	34
3.4	Networks	35
3.4.1	Specifically concerned with environmental information	35
3.4.2	Offering access to environmental information	38
3.5	Initiatives for information exchange	46
3.6	Conclusion	49

Chapter Six

Case Studies

6.0	Introduction	88
6.1	Case Study One	88
6.1.2	Participants	88
6.1.3	Objectives of the organisation	89
6.1.4	The objectives of the information unit	89
6.1.5	Information resources available to the organisation	90
6.1.6	Use of electronic information	91
6.1.7	Awareness of I.T. and attitudes towards it	91
6.1.8	Comment	93
6.2	Case Study Two	94
6.2.1	Participants	94
6.2.2	Objectives of the organisation	94
6.2.3	Objectives of the information unit	94
6.2.4	Information resources available to the organisation	96
6.2.5	Use of electronic information	96
6.2.6	Awareness of I.T. and attitudes towards it	98
6.2.7	Comment	99
6.2.8	Conclusion	100

Conclusion 101

Bibliography 107

Appendix A 112

Appendix B 115

Appendix C 118

Chapter Four

Electronic information usage in environmental organisations: a literature review

4.0	Introduction	52
4.1	Information handling and networking	52
4.1.1	Referral of information - networking to aid enquiries	53
4.2	Environmental organisations and I.T. resources	58
4.3	The cost of I.T. for environmental organisations	61
4.4	Does Government policy hinder or facilitate use of electronic information by environmental organisations?	65

Chapter Five

Results - Telephone Survey

5.0	Introduction	70
5.1	Quantitative information	70
5.1.1	Resources of organisations	71
5.1.2	Access to electronic environmental information	71
5.1.3	Awareness of electronic environmentla information	72
5.1.4	Use of electronic environmental information	72
5.2	Qualitative information	74
5.3	Summary of results	85
5.3.1	Use of I.T.	85
5.3.2	Use of electronic environmental information	85
5.3.3	Awareness of electronic environmental information	85
5.3.4	Attitudes towards electronic environmental information	86
5.3.5	Cost	86

CHAPTER ONE

INTRODUCTION

This dissertation is concerned with establishing awareness of, attitude towards, and level of usage of online electronic environmental information by environmental organisations.

The amount of, demand for, and use of environmental information has grown considerably in recent years. This in turn, has brought with it a need for organisations that use environmental information to manage their information more effectively. The increased amount of enquiries to environmental organisations has necessitated organisations such as Friends of the Earth to establish separate information units for the public because of the burden of the enquiries they receive, even though their primary function is not to provide information to the public; whilst there has also been a growing pressure for organisations in the community and voluntary sector to become more cost-effective and competitive.

The use of environmental information in electronic form has been hailed as the solution to more effective handling, collation and interrogation of environmental information.[1] Indeed, the issue of the use of computers to facilitate, or hinder, environmental information handling and provision is a topical one. In the last two years there have been two national seminars on the subject[2,3], and the availability of environmental information in electronic form is well documented in the literature.[4]

However, there appears to have been little research into the attitudes of environmental organisations regarding their use of, and need for electronic information. There is a wide and diverse range of electronic environmental information products available and this number is growing rapidly with the realisation of the profitability of "green" information, but to what extent do environmental organisations use electronic environmental information, and how useful it is to them?

This dissertation will examine awareness of, attitude to, and use of some of the main commercially available environmental information sources by a representative sample of organisations that handle environmental information.

1.1 Aims and Objectives

The information to be discerned was:

i. What resources do organisations that handle environmental information have; for example, do they have access to a computer?

ii. What are the main commercial hosts and networks which provide environmental information directly, or can give access to it, and how can these benefit organisations that handle environmental information? However, this dissertation does not attempt to provide an examination of all the electronic environmental products available. It does not discuss CD-ROMs, and is not concerned with individual databases; but aims to give a limited appraisal of the

main commercial hosts, networks and initiatives of (potential) interest for organisations that handle environmental information.

iii. What is the level of awareness amongst organisations that handle environmental information of commercially available electronic environmental information products? How much do organisations know about what is (potentially) available to them?

iv. What is the attitude of organisations towards electronic environmental information? How do they perceive that the use of such information fits in with their overall handling of information? Is it seen as necessary, advantageous or to be discouraged?

v. What do organisations concerned with environmental information think about the standard of commercially available electronic environmental information products?

vi. What is the current level of usage of electronic environmental information amongst organisations that handle environmental information and what products do they use?

vii. Is there a connection between the use of electronic environmental information and cost? Is low use of electronic environmental information due to the restrictive cost of products plus software and hardware, or merely the fact that organisations feel they have no need for it?

Hypotheses

The following hypotheses were to be tested:

1. that the majority of the sampled organisations that handle environmental information were aware of the commercially available electronic environmental information sources.
2. that the majority of the sampled organisations that handled environmental information would ideally, i.e. if not restricted by financial or other constraints, want to access commercially available electronic environmental information sources
3. that the organisations sampled that handled environmental information were using commercially available electronic environmental information sources
4 that where organisations did not use commercially available electronic environmental information products, it was primarily because of the restrictive costs of such products
5. that larger, international environmental organisations would be more aware of commercially available electronic environmental information sources than smaller environmental organisations.
6. that larger, international environmental organisations would have access to more commercially available electronic environmental information products than smaller environmental organisations.

1.2 Methodology

1.2.1 Literature review

1.2.2 Evaluation of electronic environmental products

1.2.3 Telephone Survey

1.2.4 Case Studies

1.2.1 Literature Review

A review of the literature was undertaken in order to:

i. Provide an overview of the demand, growth and provision of environmental information
ii. Identify the main hosts and networks commercially available of potential interest to environmental organisations and the content and quality of their environmental information.
iii Ascertain the usage of electronic environmental information within organisations that handle environmental information.

1.2.2 Evaluation of electronic environmental products

To gain as complete a picture as possible of the information content of hosts and networks, it was decided that rather than merely reading the promotional literature of hosts and networks, it was preferable to access them personally to determine how useful they could be to environmental organisations: for example, what kind of information they held, how user-friendly, accurate and current this was. Two of the initiatives discussed in Chapter Three were examined and the findings are incorporated in the discussions about them.

1.2.3 Telephone Survey

1.2.3.1 Introduction

To give an overview of the information resources of environmental organisations and their attitudes towards I.T., a series of structured telephone interviews were undertaken.

1.2.3.2 Survey method

The method of administering questionnaires was decided after an appraisal of the research literature,[5,6] and after consideration of time and financial constraints. The most viable alternatives were postal or telephone surveys, and it was decided that a telephone survey would be the most suitable for the time and resources available.

The benefits of telephone interviewing can be categorised, as follows:

i. There is likely to be a higher response rate from telephone interviews

ii. With all questionnaires, to obtain a representative and accurate sample, it is necessary to have some control over who completes the questionnaire. This is reasonably easy with a telephone survey, but with a postal questionnaire, it can not always be guaranteed that the person you have selected to answer the questionnaire does so

iii Telephone surveys are also the most advantageous where speed is a consideration.[7]

1.2.3.3 The Sample-Frame.

In the research literature concerned with telephone surveys it is recommended using the 'directory listing' method to obtain an effective sample of the area concerned. This involves:

i. obtaining a directory of the whole sample area (in this case, of national and regional environmental organisations in the UK)
ii. estimating the number of relevant numbers in the directory; deciding on the sample size; determining an appropriate sampling fraction, and thus drawing a systematic sample.[8]

The directory chosen was the Environment Council' "Who's Who in the Environment":[9] a directory of organisations concerned with the environment in some way.

As a result of time and financial constraints, the sample size had to be of a limited number, so it was decided to select one organisation from every 20 in the population, giving a sampling fraction of 1/20 and a sample frame of 32 organisations.

Interviews were undertaken with the Information Officers or other contact persons identified by "Who's Who in the Environment" over the telephone.

information" did not differentiate between in-house databases that the organisations used, for example, for mailing lists, or commercial external databases.

However, it emerged when undertaking the actual interviews that the pilot was not as indicative of the general situation as it first appeared. The two organisations the original questionnaire was piloted to were very aware of I.T. and used electronic environmental information - whereas only two out of the 29 in the eventual sample did so.

Therefore, the pilot sample obviously did not give a true representation of the use and attitude of I.T. amongst environmental organisations and their response to questions were, therefore, obviously, not the same.

1.2.3.6 The (eventual) sample

Three of the 32 organisations originally chosen to be interviewed could not be contacted by telephone; according to the operator they no longer occupied the telephone line identified by the Environment Council. This left a sample of 29: four of these stated they were too busy and lacked the staff time to be interviewed over the phone, and requested a postal questionnaire instead. Of the four sent out, two responded and their replies are incorporated into the results for the telephone survey. A fifth organisation refused to be interviewed because they felt that the questions did not apply to them, and as such, they could not answer them, and a further two organisations were consistently unreachable.

The majority of the 32 organisations are voluntary or not-for profit; three are trade associations, one is academic based and one is a partnership between fourteen environmental organisations and a large commercial organisation.

1.2.3.4 The Piloting of the Questionnaire

The questionnaire was piloted with a further two organisations from the directory to identify any unnecessary or ambiguous questions. As a result of piloting, it was decided that it should be made clearer what electronic environmental information was, but one of the questions was abandoned entirely, and the meaning of another was changed.

The question that was abandoned as a result of piloting was:
"Do you feel there is room for improvement [in electronic environmental information], and if so, in what way?"

Both the organisations answered that although there was plenty of scope for development, in their opinion, the answer to this question would always have to be yes - there is always room for improvement whatever the situation is, therefore responses would not really say anything constructive about organisations and electronic information.

Originally a closed question: "Does your organisation have access to databases of environmental information?" was asked.

This question was changed to: "Does your organisation have access to databases of information?" because "databases of environmental

Therefore, the eventual sample frame was 29 organisations, of which 24 agreed to be interviewed - an 83% response rate.

1.2.3.7 Questionnaire (See AppendixA)

The questionnaire consisted of:

a) a set of closed questions (Questions 1 - 5a) to determine:

i. what resources organisations had
ii. if organisations had access to electronic environmental information
iii. awareness of electronic environmental information - how much do organisations know about what is (potentially) available to them

b) a set of open questions (Questions 5b - 9)to gauge:

i. attitudes about I.T.
ii. attitudes about electronic environmental information.

1.2.4 Case Studies

1.2.4.1 Introduction

It was decided that to give a wider view of environmental organisations in the UK, it was important to consider the 'key players' in the environmental movement - organisations that the public are aware of and identify with environmental information. Therefore, two in-depth studies of larger environmental organisations were undertaken.

1.2.4.2 Participants

The organisations were high-profile, international environmental organisations and were identified in the environmental directory: "Who's Who in the Environment" as two of the largest in the UK.

Interviews were carried out with the information officers of the UK national offices of the organisations, identified by "Who's Who in the Environment", and, if possible, with the I.T. manager, to gain a wider perspective of their use of electronic information within their overall information handling.

1.2.4.3 Questionnaire (See Appendix B)

It was decided that personal interviews in the form of a structured questionnaire would be undertaken, rather than a telephone or postal questionnaire. This was because it was assumed that the organisations would have an awareness of, and access to electronic environmental information and therefore a personal visit would give an opportunity to discuss the role of electronic environmental information in greater depth, and provide an opportunity to see first hand how the organisations used this information within their overall information handling.

As a result, the questionnaire used for the case studies differed from that used for the telephone interviews because it was assumed that organisations did have access to a computer and some electronic environmental information. No closed questions were asked; instead the

questionnaire consisted of a series of open questions designed to encourage discussion regarding information handling and electronic environmental information.

The questions were structured to determine:

i. The way in which the organisations handled their information
ii. The role that electronic environmental information plays within this.
iii. An insight into a major environmental organisations' awareness of I.T., and their attitude towards it.

REFERENCES

1. **Tozer, David.** Environmental issues. In: Kinnell, M. ed. *Informing communities, the role of libraries and information centres*, 1992.

2. **Networking with disk-based information: standards in environmental databases?**: summary report [of the] Environmental Information Forum, 17 November 1992.

3. **Surviving the computer jungle: uses and abuses of computes in environmental information provision.** [summary report of a seminar held in November 1991], 1992.

4. **Lees, Nigel and Helen Woolston.** *Environmental information: a guide to sources,* 1992.

5. **De Vaus, D.A.** *Surveys in social research*, 1990.

6. **Bell, Judith.** *Doing your research project: a guide for first time researchers in education and social science*, 1987.

7. **De Vaus**, ref.5, p.115.

8. *Ibid.*, p.115.

9. **The Environment Council.** *Who's who in the Environment: England 1992*, 1992.

CHAPTER TWO

Environmental Information - demand, growth and provision

2.0 Introduction

To ascertain in what ways electronic information can be of use to the handling of environmental information, it is firstly necessary to examine the background to environmental information, and the way in which it's provision has developed.

2.1 The demand for environmental information

In the last five years there has been a dramatic increase in public awareness of, and interest in, environmental issues. This is clearly shown by a number of opinion polls carried out over the last five years which are summarised in a recent Department of Environment publication in a chapter on public attitudes.[1]

In a survey carried out in October 1991, nine out of ten people said they were interested in the environment.[2] In 1989, a Department of Environment survey asked respondents what were the most important problems the Government should be dealing with - 30% cited

environmental or pollution issues in response - second only to concern about the National Health service and other social services.[3] In a 1990 survey conducted on behalf of the World Wide Fund for Nature - 46% of respondents said they would be willing to pay a one penny increase in income tax for measures to protect the environment.[4]

Such surveys show a great change in public concern about environmental issues. They are in marked contrast to social attitudes in the 1970's when involvement in environmental issues was often seen as the efforts of "the well meaning woolly-minded in woolly pullies."[5] Indeed, in similar surveys to those above, undertaken in the 70's,[6] the proportion of respondents who mentioned environment as the main issue fluctuated between one and seven percent.

Concern about the environment has graduated from being considered a fringe and slightly eccentric issue and has permeated into mainstream political thinking. Industry needs environmental information in order to comply with the directives of the European Environmental Protection Bill; political parties market their consciousness of the environment to an electorate whose awareness of the environment has been heightened by dramatic events such as Chernobyl; and major retailers sell 'environmentally friendly' products to the increasingly discerning consumer.

2.2 The growth of environmental information

Environmental or 'green' information is now big business - environmental groups, organisations and agencies have sprung up in response to the public concern and need for information and, in some cases, to exploit it.

This can clearly be seen by the growth in the number of environmental consultants. In 1988, the ENDS Directory of Environmental Consultants listed 125 environmental consultants. Two years later, the second edition, in 1990 listed 225 - an 80% increase.[7] Similarly, the number of national and regional information centres that provide an environmental enquiry service has mushroomed, as have national and regional groups and networks. 'Who's Who in the Environment'[8]- described by the publishers as "a directory of organisations in England which are concerned with the environment at regional or national level"[9] lists 45 organisations under the general heading 'information services', and several others that are concerned with *specific* environmental topics.

Correspondingly, there has been a dramatic increase in the amount of environmental information available. We are bombarded daily via television and newspapers: national quality dailies such as the Guardian have whole pages devoted to the environment; whilst women's magazines such as 'Best' have environmental pages and tips - with much more mass appeal these have the potential to reach a far wider audience than the Guardian. Documentaries of an environmental nature, highlighting the plight of our planet; the threat to endangered species and the dangers of

water and air pollution, are frequent occurrences on prime time television; whilst international environmental events such as the 1992 Earth Summit in Rio are given extensive coverage in the media. The Department of Environment has recently run a national leaflet campaign: "Wake up to what you can do for the Environment"[10]: a sixteen page booklet detailing simple steps that people can take to protect the environment, and is now continuing with a national television and magazine/newspaper advertising campaign; whilst environmental issues are now part of the national curriculum for school children. In addition, the number of magazines and journals that have recently appeared concerned solely with environmental issues is phenomenal. Ulrich's International Periodicals Directory lists 47 pages of periodicals under the broad heading of "environmental studies", several more are concerned with related topics such as energy.[11]

However, in spite of all the above, only 18 months ago, in a survey in October 1991,[12] almost half of all respondents said that they did not fully understand environmental issues and eight out of ten said they wanted to know more about it. This is quite ironic, considering there has never been as much environmental information available as there is today.

Perhaps indicative of the overall situation is an opinion expressed by a member of the public in a survey by Ostle, which examined environmental information needs in relations to attitudes and motivation:

"At the moment there's something about the water supply to your houses being polluted... one minute they're saying it's alright to drink, the next minute someone's saying it's not alright, so which one do you believe in?"[13]

Indeed, perhaps the situation can be characterised best by the term 'information overload'. There is so much information available about the environment, much of it giving conflicting messages that it is often difficult for the user (and the information provider) to know where to start.

2.3 Environmental information provision

Environmental information provision itself is characterised by a wide and varied range of organisations.

2.3.1. Libraries.

As centres of information and focal points for the community, libraries should be in an excellent position to provide environmental information. In an examination of the development of environmental information in public libraries, Taylor concluded that public libraries could provide an excellent, one-stop environmental information service, although current levels of funding would have to be increased.[14] In a 1990 study to determine the environmental information needs of the public, it was found that although Southwark and Wandsworth were the only organisations to deal with more general environmental enquiries, rather than just local

issues, their ability to deal with these enquiries was restricted by lack of financial resources and staffing levels.[15] However, a study carried out at public libraries in market towns in Leicestershire and Lincolnshire in 1992 contradicted this.[16] It aimed to investigate whether public libraries were capable of providing a basic science enquiry service, specifically environmental enquiries, and found that most of the enquiries could be answered by using resources already available in the library.

2.3.2 Environmental organisations

Environmental organisations such as Friends of the Earth whose aims are to lobby Government on environmental issues, inform and empower the public and encourage people to take action through its network of local groups.[17] Its primary function is not to deal with environmental enquiries, although the large amount of enquiries it receives from the public has necessitated a growing information department to deal with such enquiries.

2.3.3. Organizations that act as central bodies

Such organisations co-ordinate and help develop provision of information about the environment. Their primary aim is not to provide an information service themselves, although they do receive and answer enquiries. One such organization is the Environment Council. It describes itself as "a forum for individuals and organisations working

towards solutions to environmental problems."[18] Its Information Programme provides guides to sources of environmental information.

2.3.4. Environment Centres.

In a essay discussing environmental issues, Tozer identifies three types:[19]

i) Environmental interpretation centres - for example, visitor centres at tourist sites, where the information serves only to help the visitor understand and appreciate that specific site in relation to its environment.

ii) Technical aid centres - for example, Architecture Workshops and Urban Studies Centres. These are described as enabling agencies that support community and environmental action but tend to focus on the urban built environment.

iii) Environmental resource/information/green centres which are established specifically for providing environmental information. These may be 'pop-in' centres for the public, such as the London Ecology Centre which provides "the only walk-in service to the general public in London"[20] or be closer to resource centres, such as the Sutton Centre for Environmental Information which prefers to see people by appointment.

A good deal of the above organisations are charitable or not-for-profit organisations that rely on funding from external sources, and whose

resources are often stretched to the limit. Tozer described the situation thus:

> *"the field of environmental information provision is characterised to a large extent by numerous, autonomous, voluntary, often grassroots, initiatives aided by non-institutionalized networking."* [21]

2.5 Conclusion

It can be concluded then, that the demand for environmental information has grown considerably within the last ten years. Such demand has led to a growth in environmental groups, organisations and agencies responding to this demand for information, and consequently an increase in the amount of environmental information available.

The provision of environmental information has become one of 'information overload': there is such a plethora of information - much of it contradictory that information seekers and providers alike have become confused. Organisations that provide environmental information are numerous, disparate and voluntary. Environmental information provision, has, in the past, been largely characterised by growth, demand and duplication of effort.

It is the aim of this dissertation to assess the extent that computers are currently being used to rectify this situation, and indeed if they are capable of doing so.

These issues are addressed in the next chapter which examines some of the main commercially available hosts, networks and initiatives that provide environmental information.

REFERENCES

1. **Department of the Environment.** *The UK environment.*, 1992.
2. **MORI.** *Measuring the effectiveness of the Wake Up Leaflet*, 1992.
3. **Department of the Environment.** *Digest of environmental protection and water statistics*, 1989 (12).
4. **MORI.** *Tropical rainforests and the environment. A survey of public attitudes*,1990.
5. **Burke,T.** Did we go green in the '80's? *Town and Country Planning*, 1990, 59 (1), 11-12.
6. **Opinion research centre.** *Corporate Strategy guide*, 1976.
7. **Environmental Data Services Ltd.** *Directory of environmental consultants.* 2nd ed., 1990.
8. **Environment Council.** *Who's who in the environment.* 2nd ed., 1992.
9. *Ibid,* vi.
10. **Department of the Environment.** *Wake up to what you can do for the Environment*, 1992.
11. **Ulrich's International Periodicals Directory.** 31st ed., 1992.
12. **MORI,** ref.2
13. **Ostle, B.** *Qualitative research into environmental information needs in relation to attitudes and motivation*, 1991, p.93.
14. **Taylor, L.H.** *A green lifeline?: Public libraries and the development of environmental information provision*, 1992.

15. **Norman, D., Janet Rennie and Pat Fleming.** *The Green maze: environmental information and the needs of the public*, 1991.

16. **Hodges, Sally, Madeleine Cooke and Jack Meadows.** *Public libraries and questions about the environment*, 1992.

17. **Environment Council**, ref.8, p.144.

18. *Ibid*, p.123.

19. **Tozer, David**. Environmental issues. *In*: Kinnell,M. ed. *Informing communities, the role of libraries and information centres*, 1992.

20. **London Ecology Centre**. *Promotional literature*,1992.

21. **Tozer, David**, ref.19, p.124.

CHAPTER THREE

Online Electronic Environmental Information - Databases, Hosts, Networks and Initiatives for Information Exchange.

3.0 Introduction

The last decade has seen an explosion in information technology that appears to have been relentless and all-encompassing. Computers have affected almost every sphere of our lives in ways which we now take for granted. Consequently, computers have had a big effect on the way we handle information, and the medium for distributing information: publishing, is inevitably beginning to move into electronic formats. Electronic publishing has been defined as:

i. the use of computers and telecommunications systems to distribute data electronically.
ii. the use of various storage media to allow the distribution of data on demand.[1]

Such distribution and storage has increased, and is continuing to do so. According to the Gale Directory of Databases[2], since 1975 database records have grown by a factor of 87: from 52 million to 4,527 billion, while the number of databases have grown from 301 to 7,907: a factor of 26.[3]

Electronic information handling, and consequently, the ability to obtain 'real-time' and 'value-added' information has meant that the manipulation and presentation of information is much more effective and instant.

The effect of computers on information has not bypassed the area of environmental information and there are hundreds of electronic environmental information products available[4]: this number is growing with the realisation of the profitability of "green" information.

However, it is not the aim of this dissertation to examine all the electronic environmental products available. It does not discuss CD-ROMs and is not concerned with individual electronic environmental databases.

To give an insight into the kinds of online electronic information available to environmental organisations, the following chapter examines some of the main commercial hosts, networks and initiatives which provide environmental information directly, or can give access to it.

3.1 Online information sources - an overview

Online information services allow users access to databases or other sources of information held on computer in a central location. Access to this information is through a computer, linked via the public telephone system to the central computer - the "host" which holds the

information.

The user usually communicates with the host through a data communications network which most of the main hosts belong to. The users personal computer accesses the public telephone system into the communications network via a modem plugged into a telephone socket. A modem is a device which converts the computer signals into telephone signals and vice versa so that they can be read at either end of the connection.

One of the main advantages of online information services is that although the information is held and updated centrally it is available to a range of varied and geographically scattered users.

Online information services usually consist of either one (or both) of the following:-

a) Access to databases

The databases may be bibliographic - containing references of literature only; factual, i.e. directories of organisations or statistical information; or full-text - containing the actual words of the documents rather than just a reference. The largest and most well-known host that provides access to databases is Dialog Information Services, Inc., based in Palo Alto, USA.

b) Electronic mail

Electronic mail (E-mail) allows computer users to send messages electronically to other computer users. E-mail services also provide electronic conferences: allowing users to discuss specific topics of information - this information is available to anyone who is part of the conference. As a result of the information sharing nature of E-mail, it is the service most closely associated with environmental and voluntary organisations. An example is GreenNet - one of the largest E-mail services and one traditionally associated with environmental information.

3.2 Online environmental databases

There are a variety of online environmental databases available via hosts and networks. Some of the best known are:

Enviroline (Dialog File no. 40). Accessible via Dialog and the Manchester Host.

Enviroline is updated monthly and provides abstracts of more than 5,000 international primary and secondary source publications reporting on all aspects of the environment. It includes information from 1971 to the present, and contains 150,74 records. Included are such areas as management, technology, planning, law, political science, economics, geology, biology and chemistry as they relate to environmental issues. Literature covered includes periodicals government documents, industry reports, proceedings of meetings, newspaper articles, films and

monographs. Enviroline is produced by R.R. Bowker, based in America, and its coverage is mainly US based. The cost to access Enviroline via Dialog is $120 US dollars per hour.

Environmental Bibliography (Dialog File no. 68). Accessible via Dialog and the Manchester Host.

Environmental Bibliography provides an index to more than 300 periodicals in the fields of general human ecology, atmospheric studies, energy, land resources, water resources and nutrition and health. It includes information from 1973 to the present, containing 426,075 records, and is updated bi-monthly. It is produced by the Environmental Studies Institute in Santa Barbara, USA, and is US based. The cost to access Environmental Bibliography via Dialog is 60 US dollars per hour.

Acid Rain Abstracts. Accessible via the Manchester Host.

Covers the sources, causes and effects of acidic depositions, precursor gasses and related oxidants; also the economic, political and natural resource management issues. It includes information from 1984 to the present and is updated every two months. The cost to access it via the Manchester Host is £1.16 per minute.

Ecobase. Accessible via the Manchester Host.

Ecobase is a directory of public, private and voluntary sector organisations in the UK and Ireland, involved in environmental matters. The cost to access it via the Manchester Host is 0.25 p per minute.

Environment Digest. Accessible via the Manchester Host.

Environment Digest covers the key environmental developments worldwide. Produced by Environmental Publications Ltd., it is the full-text database of the monthly journal of the same name. The cost to access it via the Manchester Host is 0.25 p per minute.

Infolife. Accessible via the Manchester Host.

Provides details of local environmental initiatives undertaken by environmental groups, local authorities, and private industry through Europe since 1987. It is owned by the European Local Environmental Clearinghouse (ELEICh) and access to it via the Manchester Host is free.

Pollution Abstracts.(Dialog File no.41). Accessible via Dialog and the Manchester Host.

Provides an abstracting service on environmental science and technology with an international perspective. It includes information from 1970, in the areas of toxicology, pollution, health and environmental action. It is updated monthly and costs 0.94 p per

minute to access via the Manchester Host.

Toxline. Dialog File no.156. Accessible via Dialog and the Manchester Host.

Covers the adverse effects of chemicals, drugs and physical agents on living systems. Produced by the US Library of Medicine, it includes information dating back to the pre-1950s. It is updated monthly and costs 0.60 p per minute to access via the Manchester Host.

Unced. Accessible via the Manchester Host.

Provides official information from the United Nations Conference on Environment and Development, 1992, including full text of speeches, newsletters, substantive documents etc. Access via the Manchester Host is free.

Volnet. Accessible via Volnet UK.

Volnet is a bibliographic database which indexes and summarizes press items, journal articles, books and reports of information which would be of interest to voluntary agencies - including environmental issues. Journal titles regularly monitored for Volnet include Conservation Now!, Country Commission News and Green News. The majority of information included dates back to 1984 to the present, with some going as far back as the 1970's, and records are updated weekly. Cost to access all Volnet databases is free as there are no online connection

charges, or charges for displaying or downloading of records.

The Directory of Social Action and Research. Accessible via Volnet UK.

Contains details of current and recent research being undertaken in the UK and mainland Europe; and provides details of the research grants awarded by the Joseph Rowntree Foundation and the Nuffield Foundation: two major research sponsors.

UK Members of Parliament. Accessible via Volnet UK.

Provides information about MPs and MEPs with details of their committee membership and declared interests. As such, it is invaluable to anyone, such as environmental organisations, involved in lobbying or campaigning.

Devbase - Overseas Development Information. Accessible via Volnet UK.

A bibliographic database compiled by the Institute of Development Studies, containing thousands of references to books and reports on economic and social development in 191 countries.

The National Environmental Database. Accessible via Campus 2000.

The National Environmental Database is published by the Association for Science Education and encourages schools to perform experiments in their local environment that have been designed for the National Curriculum. Data from such experiments is then input into a communal database so that users can compare results. Access is via Campus 2000, and once users have subscribed to this host, access to this database is free.

Who's Who in the Environment - the Environment Council. Accessible via Environmental Information on CATA-list.

A directory of environmental organisations in the UK, containing over 1,000 profiles of useful organisations.

Cost to access databases on Environmental Information on CATA-list is free, after purchase of the database software.

The Directory of Regional Networks - NCVO - Environment Support Team. Accessible via Environmental Information on CATA-list.

A guide to regional environmental networking activity in the UK.

Getting Help - Shell Better Britain Campaign. Accessible via Environmental Information on CATA-list.

A guide for Community Environmental Projects containing grant

information, sources of help, project management techniques, publications, and facts on conversation and the environment.

The Directory of Environmental Databases - ECO Environmental Education Trust. Accessible via Environmental Information on CATA-list.

A list of almost 300 environmental databases held by voluntary and non governmental organisations in the UK.

3.3 Hosts

Dialog

Dialog is a large online host, owned by Dialog Information Services and operating since 1972. It provides access to over 400 databases, containing over 329 million records. It provides access to environmental information, but is not solely concerned with doing so. Databases are available in the areas of science, business, technology, chemistry, law, medicine, engineering and social sciences.

The cost to access Dialog consists of:

a. Annual service charge $35
b. Connection charge varies depending on the database accessed - around $36-$120 per hour
c. Charge for screen display per record varies between databases -

around $0.15 -$1.00 per record

d. Charge for offline printing of results varies between databases - around $0.15 - $1.00 per record

Databases available particularly concerned with environmental issues are: Energy Science and Technology, Energyline, Energy Alert, Energy Books Quarterly, Energy Conservation News, Energy Daily, Energy Journal, The Energy Report, Energy User News, Environment Week, Environmental Business Journal, Environmental Nutrition, Enviroline, Environmental Bibliography and Europe 2000 - Environment.

An example of the content and coverage of two of the databases is given on pp.28-29.

3.4 Networks

3.4.1 Specifically concerned with environmental information

GreenNet

GreenNet is part of the Association for Progressive Communications (APC): a global computer network designed specifically for environment, peace and human right groups. Other networks that make up APC include PeaceNet, EcoNet and ConflictNet in the US; NordNet in Sweden; GlasNet in Russia and Pegasus in Australia - between them they serve organisations in around

90 countries. GreenNet offers national and international electronic mail; electronic conferences and news groups and access to two databases: the UN list of National Parks and Protected areas and the Environment Development Education and Training Directory (EDET).

It is also possible to exchange electronic mail with other major networks such as Internet, Poptel and Telecom Gold.

GreenNet is extremely user friendly, and it is fairly easy to access the range of information on the network. There is an index of conferences, broadly grouped into subject areas of conferences, for example, Environment - Education; Environment - Legislation and Air and Climate. An examination of some of the news conferences provides a varying quality of information, but some of it is of a high quality and very useful. An example is the Environment News Service (ENS)which summarises the top ten news items of environmental interest from newswires and newspapers internationally. The Environment Development and Training Directory allows you to locate organisations or individuals within a specific environmental topic, with the choice of how much information you want: from just the name of relevant organisations to the members of staff and their E-mail numbers.

Costs

The costs to access GreenNet vary, depending on the type of organisation:

Registration fee: Non-commercial organisation - £15.00
Commercial/Public Sector - £30.00

High use non-commercial rates:
Monthly subscription: £10.00 Peak minutes: £0.04 Off-peak: £0.15
Low use non-commercial rates:
Monthly subscription: £1.50 Peak minutes: £0.15 Off-peak: £0.15
Commercial/Public Sector rates:
Monthly Subscription: £10.00 Peak minutes: £0.10 Off-peak: £0.10

Pilot Hampshire Environmental Network (pHEN)

The Pilot Hampshire Environmental Network (pHEN) was established by the Greenspace Networking Resources Project as part of a research programme looking at networking for community action in the environment. The project began in January 1990, and is supported by Hampshire County Council, the Countryside Commission, the Nature Conservancy Council and the British Trust for Conservation Volunteers (BTCV).

pHEN is a self-sustaining computer network using CATA-list database software (as detailed on p.46) containing core data from BTCV, Greenspace Community Environment Project, Hampshire County Council and Hampshire Wildlife Trust. Copies of this database are held on users computers and users can read this information and update their own details. Users are connected by a 22 user network connected to a central computer, and include community and

and conservation volunteer groups; schools and colleges and local councils which can read or add to the network directly, and libraries and community centres which provide read-only access to the network for the public.

The emphasis within the network is of community action to improve the local environment, and of local resource sharing and action.

Costs

There is no registration fee and NeSy: the systems software needed to access the system is also free. However, users will need to pay for the CATA-list database software (see p.47 for details).

3.4.2 Offering access to environmental information

The Manchester Host

The Manchester Host offers communication and information services; including electronic mail, fax and telex, conferences, database publishing and the FIND database gateway: a menu-driven database searching system which helps you locate the most appropriate database for your search, from over 150 databases worldwide, from hosts such as Dialog, FT-Profile, Orbit, Echo and Eurobases.

The host is based in Manchester and is produced by Soft Solutions Ltd. It was set up with financial help from Manchester City Council

following a feasibility study commissioned by the Council which indicated the poor use and awareness of I.T. and Telecommunications in the City. (This is discussed in more detail in chapter 4, p.59).

The idea behind the Manchester Host is to create an "Electronic Village Hall" - to give public access to telecommunications, particularly to those technologically disadvantaged in the community. The community aspect of the information held on the Manchester Host is strong: for example a Manchester community centre involved in an environment project to undertake trials of grain production using an organic method, provide access to arable land, and promote environmental improvements for residents nearby uses the Host's Bulletin Board to discuss their project. The community aspect of the Host plus the fact that it is UK based makes the Manchester Host more suited to UK environmental organisations than hosts such as Dialog.

The cost to access the Manchester Host consist of:

a. Costs for accessing databases are on top of the costs for using the Host which are as follows:

Once only registration fee - £25
Subscription - £10 per month
Connection charge - 12p per minute (£7.20 per hour) peak time, 8p per minute (£4.89 per hour) off peak.

b. Connection charge for databases which varies from free to £66.60 per hour

c. Charge for screen display of records varies between databases from free to 55p per record.

According to Manchester Host promotional material, users can access the following databases specifically concerned with environmental issues though FIND.

Databases specifically concerned with environmental issues and accessible through FIND on the Manchester Host are detailed on pp.29-31.

The Kirklees Host

The Kirklees Host is also run by Soft Solutions Ltd. - the owners of the Manchester Host, and offers a similar service to the Manchester Host. Subscribers can communicate via E-mail or bulletin boards with subscribers on either Host, or other E-mail systems, such as GreenNet or international e-mail systems. Subscribers to the Kirklees Host can also access the databases available on the Manchester Host, except for those local to Manchester (and vice versa).

Volnet UK

Volnet UK is based in London and produced by the Volunteer Centre UK. It provides access to databases that cover social, community and voluntary action issues, and is aimed at anyone interested in the

voluntary sector and social policy and contains information provided by Barnados, the Joseph Rowntree Fund, the National Youth Agency and the Volunteer Centre UK.

The costs to access the information on Volnet UK consists of:

a. Annual subscription at varying rates, according to type of organisation:-

local voluntary groups - £42.30
national or regional voluntary agencies, registered (non-local) charities - £126.90
Statutory bodies including local and central government department, academic/research institutions etc., private sector organisations - £211.50

b. No online connection charges, or charges for displaying or downloading of records.

Volnet UK consists of four databases, as detailed on p.32, and these can be considered of relevance to environmental organisations because, although none of the agencies which provide data to the Volnet databases have the environment as their core interest, they all cover environmental issues as they impinge on their main working area.

Campus 2000

Campus 2000 was established in 1989 as the result of the integration of two educational services: Prestel Education and the Times Network System. It is a computer network created for educational establishments and offers two level of services:

Campus Basic which offers:

* National and international electronic mail
* Directory of Campus 2000 users
* Electronic conferencing
* Local Education Authority Databases
* Special Educational Needs Databases
* Primary Projects
* Sponsored Databases
* Electronic Yellow Pages and Phonebase

Campus Plus which offers all of the above plus access to PRESTEL: a public viewdata service with information pages on such subjects such as travel, sport and leisure, news updates and financial information.

Also available on Campus 2000 are services known as premium services: databases and facilities offered by third parties and accessible through Campus 2000. These include:

Profile which provide the full text of articles from UK newspapers and the New Scientist from the last three years; and

Teletel: the French equivalent of Prestel.

Databases available specifically concerned with the environment include are discussed on p.33.

Costs

Prices to subscribe to Campus 2000 vary according to the type of educational establishment. The range is from £134.00 per year for schools with less than 300 pupils to subscribe to Campus Basic, to £272 per year for Advisors and Advisory Teachers not based at schools or Teachers Centres to subscribe to Campus Plus.

There are also additional charges for access to the Premium services that Campus 2000 offers (see p. 42), for example:

Campus Teletel

£15.00 per quarter plus 12.0p per minute connection charge.

The vast amount of information available on Campus 2000 makes it a valuable information tool, although it is probably far too specific in its coverage for an organisation seeking general environmental information, and is instead more appropriate for anyone interested in the environment from an educational slant.

Internet

Internet is the largest computer network in the world. It was born about 20 years ago, initially as an experimental U.S. Defence Department network designed to support military research. However, over time it has joined with other networks and now consists of various U.S. federal networks, regional, campus and international networks, accessible in over 40 countries.

There is no single authority that governs Internet: each network may govern itself but there is no overall structure for all the networks that constitute the Internet. Similarly, the only cost to access the Internet is connection costs to a regional network in the telecommunications structure because each network pays for itself, and then decides collectively how to connect themselves together and fund these connections.

Internet offers national and international electronic mail; news groups, governed by Usenet: a set of voluntary rules that govern the use of news groups; and WAIS: a tool that searches for information that has been indexed on Internet, and displays the information for you.

According to the Internet catalogue[5], there is quite a large and varied amount of information on the Internet specifically concerned with the Environment.

News groups

Sci.environment is a news group that discusses environmental issues. Upon examination of the group, there was a range of information available, of varying quality. One very useful item was information on how to obtain a live progress report from the U.N's climate treaty negotiations taking place in Geneva in August 1993. This information is supplied by the Climate Action Network - a global coalition of over 100 major environmental organisations in a newsletter entitled ECO. Other information included environmental consumer information, for example, giving details about how to keep your home free from carbon monoxide, supplied by a US based environmental magazine; recent legislation on topical environmental issues, and requests from academics to other academics for information on research they are undertaking.

Internet also holds various catalogues of environmental libraries and back issues of environmental newsletters. This includes a catalogue to the holdings of the Environmental Protection Agency Library which includes abstracts of the literature in the library, and the Agenda of the United Nations Conference on Environment and Development, held in 1992, accessible by WAIS.

Traditionally, Internet has been restricted to academics, and a large amount of users did appear to be academics, however, it is now slowly breaking into the commercial sector. Although the quality of information varied, there was a lot of information that would be extremely beneficial to environmental organisations concerned with

global issues, and academics. The fact that some information is accessible by Internet features such as WAIS is an added advantage.

3.5 Initiatives for information exchange

Environmental Information on CATA-list

The Environmental Information on CATA-list is a collaboration between the Environment Council, the National Council for Volunteers Overseas (NCVO); the Shell Better Britain Campaign and the ECO Environmental Education Trust. CATA-list is a commercially designed database produced by Information for Action. It's main function is to act as a tool for advice services: locally useful information for statutory/voluntary sector partnerships is collated on the database, with the ability to then add national or regional information to this local database, or vice versa. CATA-list is produced in disc form - in a read only, or read and write format and contains a directory from each of the four aforementioned organisations.

The aim of the read and write format is that organisations can select the information they need from the disc and add their own information or in-house database to the national data, so, in effect, they have a "customised" database. The databases available on CATA-list are discussed on pp.33-34.

The cost of the Environmental Information CATA-list is:

Read-Only database

£125 voluntary organisations
£150 local authority
£200 Commercial organisations

Read and Write database

£510 -£700 voluntary organisations
£725-£1025 Local authority/Commercial organisations

The advantages of such a system is that organisations can have important national environmental information that has been collated and inputted once, rather than several times by the many environmental organisations that have a need for such information, and this information can then be added to each organisations local information, thus saving time and duplication of information.

The Environmental Information Service (EIS)

This is a service located within the Science Reference and Information Service in the British Library. It was launched in 1989 to provide central access point to all British Library collections and services concerned with environmental information and related subjects, such as chemistry, engineering, biotechnology and business. According to the British Library, the aim of the service is to:

"help industry, the public sector and non-governmental organisations answer questions about pollution, conservation, clean technology and other topics related to the environment."

As well as answering quick phone enquiries and providing document supply, the Environmental Information Service offers online searching on over 100 online sources accessing all the major host systems, including Data-Star, Dialog, Blaise-Line and ESA-IRS. Databases accessed include Acid Rain, Aqualine, Enviroline, Environmental Bibliography and ERTH.

Cost

The charge for the service to undertake online searching is:

Staff time: £64.00 per hour plus VAT., which includes charges for online searches.
Alternatively, for those who have experience of online searching, computer terminals are available for hire for £2.50 per minute.

Such an initiative is beneficial for organisations who may badly need the up-to-date, accurate and quick information that is obtained from online sources, but who cannot afford, or do not wish to purchase the necessary equipment or products to access such information. It is also ideal for those who are confused by the sheer amount of environmental information available, and do not know which particular product or information source to go to for information.

3.6 Conclusion

Online environmental networks such as GreenNet, and to a lesser extent, pHEN are excellent means of obtaining cheap, often topical information that can then be discussed with other like-minded users. The news services on such networks, and indeed, on Internet, could be of considerable use to organisations handling environmental information. Indeed, one of the organisations discussed in the Case Studies said that they would like access to an electronic environmental news service (see Chapter 6, p.92); as did some of the organisations from the telephone survey (see Chapter 5, p. 82). One problem with this type of information, however, is that the quality of information is not always uniform. This is because the networks are self-sustaining: the quality of the information is only as good as the users of the network: there is no guarantee that the information will be accurate or useful.

Initiatives such as the Environmental Information on CATA-list standardize information and, thus, provide a common format for reading and updating this information and prevents the collation and duplication of the same information by many different organisations.

There is also a large amount of environmental information accessible on hosts and networks that do not deal specifically with environmental information, although community based initiatives such as the Manchester Host, and those with e-mail facilities can probably offer more to environmental organisations than large, multinational, hosts, such as Dialog.

To conclude, there is a varied range of electronic environmental databases, hosts, networks and initiatives for information exchange available. Many of these are available at reduced cost to voluntary or not-for-profit organisations.

However, those discussed in this chapter are only the tip of the iceberg of the plethora of products available. Whilst this is good in terms of the range of information available electronically, it also has its disadvantages in the fact that there may be too much choice. Indeed, the Environmental Information Service at the British Library appears to have been established in part, in recognition of the need to provide a central access point to the range of information available.

REFERENCES

1. **Gurnesey, J. and Henderson, H.** Electronic publishing trends in the United States, Europe and Japan, 1984. In: Lea, P.W. with Alan Day eds. *Printed reference material and related sources of information.* 3rd ed., 1990.

2. **Morcadcio, Kathleen Y. ed.** *Gale directory of Databases: Volume 1: online databases*, 1993.

3. *Ibid,* vii

4. **Lees, Nigel and Helen Woolston.** *Environmental information: a guide to sources*, 1992.

5. **Krol, Ed.** *The Whole Internet: user's guide and catalog,* 1992.

CHAPTER FOUR

Electronic information usage in environmental organisations: a literature review

4.0 Introduction

This chapter is a review of the existing literature regarding organisations that use environmental information and the ways in which they handle and refer this information. It considers how organisations management of information could be improved by the use of electronic information, and looks at the significance of two factors that may be detrimental to the use of electronic information: cost, and Government policy.

4.1 Information handling and networking

In 1991, a national seminar "Surviving the Computer Jungle: uses and abuses of computers in environmental information provision"[1] took place to examine applications of Information Technology (I.T.) and computers in the field of environmental information provision. The seminar was organised by the ECO Environmental Education Trust, in conjuction with the Greenspace Networked Resources Project and arose from a realisation by environmental information providing organisations and individuals that they were:

> *"reinventing the wheel through duplication of information gathering and database setting up."*[2]

The seminar concluded that within environmental organisations there is often a hope that the acquisiton of a computer and subsequent establishment of a database may solve all the organisations problems and reduce workloads. However, the effort of physically setting up a database can be disproportionate to the value gained from them; although, this value can be increased if databases are used to signpost enquiries to alternate sources of information, in other words, networking.

As a result of the discussions and workshops during the seminar, it was agreed that collecting and updating information was the largest cost to an organisation in terms of time and resources. Moreover, no one organisation could hope to keep all information up to date.

4.1.1 Referral of information - networking to aid enquiries.

It was decided that the solution to this issue was the establishment of a referrals service, with specialisation by organisations and sharing of subject matter to avoid duplication.

The information flow of the referrals service would be organised in two ways:

i. Horizontal networking. This would take place between organisations at the national, county or regional levels, and would require organisations to contribute to information sharing networks, with each organisation agreeing what data they would collect and keep up to date.

ii. Vertical networking. This would allow local organisations to be connected to regional and national information collected by the organisations above, and vice versa.[3]

Once the networks were established, enquirers could then be sign-posted to the relevant organisation.

However, it is important to note that this was only a proposal. The seminar concluded that, currently, organisations were not referring enquiries. It would be very difficult to move towards the above model because of two fundamental constraints: the lack of resources and the lack of a national co-ordinating federation or strategy.

The issues of networking and handling of information were followed up in a meeting of the Environmental Information Forum in November 1992[4]: a conglomorate of organisations that provide environmental information, concerned to promote improvements in the provision of such information. The purpose of the seminar was to examine ways in which environmental organisations can share information more effectively, and to discuss the establishment of guidelines to help in the management and dissemination of core information.

The seminar concluded that:

i. There were key organisations that could work together in order to compile directories or provide other information/referrals services. For example, organisations that use the results of postal questionnaires to update their information could standardise the

format of their questionnaires with similar organisations, and co-ordinate their updating processes.

The benefits of this standardisation of information would be:

a) A reduction in duplication of effort currently involved for information officers who have to fill out several questionnaires from organisations all asking for the same information.
b) Savings in postage and administration costs for the organisations gathering the information.
c) Assurance that the right questions are asked.

ii. It was important to have a two-way flow of communication between national and local organisations, so that national organisations have the relevant information to signpost enquirers to local groups that are more able to help them, as well as local groups being able to obtain information on national organisations.

iii. That there should be "core" information, exchanged in computerised form which is "customisable" so that organisations can select the information they need and add extra information of their own.[5]

It was thought that problems with standardising information may occur because of funding, maintaining the quality of information, and ensuring compatability of systems. However, overall it was emphasised that:

"computers are just tools -it's people who really make things happen."[6]

A survey undertaken by Norman, Remmie and Flemming in 1991, for the ECO Educational Trust examined organisations concerned with environmental information, and how they used that information.[7] To ascertain the amount of computer usage and the extent of networking of environmental information, Norman questioned a cross-section of information providers in the booroughs of Southwark and Wandsworth, including libraries, 'Green' organisations and environmental health officers. She found that there was little cross referral between organisations - each attempted to answer their enquiries itself. This is important when considering adoption of a national referrals service, or indeed use of the major electronic environmental information packages; electronic initiatives such as GreenNet, and pHEN are both based around the idea of information referral and exchange of ideas. If such networking of information occurs infrequently currently, is it likely to occur with the installation of a computer package?

This is an idea expounded in a paper given to the conference "Surviving the Computer Jungle". Entitled "Capital 'I', little 't'[8], the paper argues that there has been an over-emphasis on technology at the expense of information management. Harris argues that although people talk about I.T. strategies within organisations, such strategies should be about the way that information is handled and the people that handle it - not technology. Nevertheless, at the present time, the importance of information handling skills within I.T. is largely ignored in the voluntary sector. Use of I.T. in environmental organisations is not going to reach it's full potential if information workers do not have an understanding of the role of, access to, and awareness of information, and the need to exploit it correctly.

He concluded by saying:

i. I.T. has a role to play in improving access to resources
ii. I.T. has a role to play in helping in the transfer and development of information-handling skills to exploit resources.
iii. The application of I.T. to improve the use of information can be completely jeopardised by lack of information awareness.[9]

The quality of information handling by environmental organisations was examined by a survey undertaken by English Nature in 1992.[10] English Nature undertook a survey to compare the performance of 47 national and local bodies that provide an environmental enquiry service. Two letters from fictitious enquirirers were sent to each of the 47 organisations and quality and content of replies were examined.

The survey concluded:

i. None of the replies referred to electronic sources of environmental information as an alternative information source for the enquirer.
ii. Very few voluntary bodies referred enquirers to public bodies, and vice versa, and this is, again, surprising, considering the resource sharing ethos of the environmental sector. The survey comments:

> *"It was surprising how many voluntary bodies kept themselves to themselves in replying to enquiries without making a single or obvious referral to another body. Perhaps many were either ignorant of the work, policies and publications of other bodies or for some marketing purposes pretended they were the font of all knowledge."*[11]

iii. A third of all replies were categorised as promotional, unrelated to the specific enquiry, and concerned with promotion of the organisation and recruitment of supporters.[12]

This is important because exhortations to "join us" and similar promotional material, rather than specific answers to questions do not satisfy the enquirers demand for information, nor do they give an impression of competent information handling.

4.2 Environmental organisations and I.T. resources

A survey undertaken in 1992 by the Mersey Basin Trust illustrates the attitude of environmental organisations towards I.T. and the resources available to them.[13] They surveyed smaller environmental organisations in the North West of England and found that most environmental organisations:

> *"are in the very early stages of commitment to I.T. and that there was very little expertise and little compatibility of equipment."*[14]

Many of the organisations had computers that had been donated to them, and many of these were out-dated and incompatible with other equipment. There was also considerable ignorance of I.T.: some of the people questioned didn't even know what a modem was. Gwen White of the Mersey Basin Trust commented:

"We were surprised to find when researching for our work that there seems to have been little progress with electronic environmental information. There have been one or two gatherings of people involved in the subject but little practical progress seems to have been made."[15]

The survey by the Trust supports the findings of a feasibility study commissioned by Manchester City Council and undertaken by Manchester Polytechnic in 1990, which examined the use of I.T. and Telecommunications in Manchester.[16]

It found that although many community, voluntary and small business organisations do have a personal computer, there is a real mixture of makes and models. Most importantly, it also found that organisations were not aware that it was possible to link a PC by use of a modem and telephone link to access communication and information services.

However, the ECO Environmental Education Trust - an organisation concerned with research in, and improvement of, the provision of environmental information, examined environmental organisations and their use of I.T. from a different angle. They discovered that nothing had previously been published in the UK or the US regarding environmental information and the public, and, consequently, there was a gap in research on how the public obtained their environmental information, which subjects were most requested and what formats and levels of information are most appropriate to market needs.

This led the Trust to realise that although a large number of organisations provided the public with environmental information, there was no research

into what subjects and levels of information are required to meet demand, or information as to the effectiveness of existing services by organisations.

A survey undertaken by Norman, Remmie and Fleming for the ECO Environmental Education Trust, to examine environmental information and the needs of the public was the result, as discussed on p.56.[17]

Another of the remits of the survey was to assess the degree of computerisation in environmental information provision. Norman questioned a cross-section of information providers in the boroughs of Southwark and Wandsworth, including libraries, "Green" organisations and environmental health officers, to ascertain the amount of computer usage and the extent of networking of environmental information. She found that most organizations could not see much of a future with computers, whether due to a lack of money or reluctance to move towards I.T.

Neither the libraries nor local green organizations had access to electronic information in any form. Although one library expressed its interest in online databases, severe financial restraints meant that just to stay open was a struggle - their only I.T. was a telephone. Similarly, although the Southwark branch of Friends of the Earth expressed interest in accessing online databases and using facilities such as GreenNet, current levels of funding prevented this. In contrast, Environmental Health Officers were found to be, of the three groups, the one that had access to most I.T. However, although the Southwark Environmental Health Department had access to commercial databases through Telecom Gold, 80% of the

information they required was used in hard copy form - partly because of the expense involved - £200 was spent in one morning just to find three addresses.[18]

4.3 The cost of I.T. for environmental organisations

The issue of cost of electronic information is an important one considering that the majority of environmental organisations are voluntary or not-for profit organisations, often operating on a limited budget.

Therefore, it is important to ascertain if the literature addresses the issue of cost as an influential factor in determining use of I.T. in environmental organisations.

A publication by Volnet UK describing online information sources on social and community issues,[19] gives a detailed breakdown of the costs involved to use online databases. The costs are described as including:

a. Annual subscription to the host database service.
b. Charge for the time spent connected to a specific database.
c. Charge for displaying database records on screen.
d. Charge for 'offline' printing, that is having results printed and sent to the user by the host.
e. Charge for downloading records.
f. Telecommunications charge for time connected to the host.
g. Telecommunications charge for amount of data sent or recieved along telephone line.

It gives an example of a similar search on three different database services to illustrate how costs and ways of charging can differ from one service to another. The example is based on the cost of a search which takes 10 minutes with 20 full records displayed on screen, where the user is calling from Leeds, in the afternoon.

The two examples below demonstrate how costs can differ:

i. Search conducted on Volnet UK (based in London)

a. Annual subscription (between £36 and £180 (+VAT) per year depending on type of organisation.
b. Telecommunications charge - 10 minute local phone call at standard rate, no charge for use of Mercury 5000 network.
c. No connection charge, or online record display charge.

ii. Search conducted on SIGLE database, though Blaise Line service (based in London):

a. Annual subscription £75 (+VAT) per year.
b. Connection charge - 10 minutes @ £10 per hour = £1.66.
c. Charge for online display of records -
   20 records @ 45p each =£9
d. Telecommunications charge
   10 minute local phone call at standard rate plus use of GNS Dialpus/PSS (British Telecom Network)
   - 10 minutes time charge (@£1.90 per hour or approx. 3p per minute).

However, this is not all the cost that should be borne in mind. Assuming that the organisation already has a PC, to access online services, a modem is necessary - the cheapest cost around £250.[20]

Moreover, considering the longer one spends searching for information the more one will pay, training in the use of your chosen online service is usually desirable, although training, as well as technical assistance is something that can be easily forgotten in the cost equation. GreenNet charges £15.00 per person for three hours of training in groups of four or more.[21]

In an unpublished MSc. dissertation in 1992 examining the environmental online and CD-ROM databases available,[22] De Silva looked at the cost of electronic information from the users point of view. He interviewed users of electronic environmental information, divided into three groups: environmental organisations; academic/educational users and "green" commercial users, to ascertain users attitude to, and experience of electronic environmental information. He found that all the users he interviewed were critical of CD-ROMs because of their cost. In a breakdown of the cost of CD-ROMs, he stated that a CD-ROM can cost over £2,000 to rent annually (excluding VAT) and this is without taking the costs of hard and software into consideration - the cheapest CD-ROM disc drive available from Philips and Hitachi at the time of writing was £399.00.[23] The additional need for compatible printers and screen monitors makes CD-ROMs a very expensive option.

Furthermore, he found that although the interviewees recognised the advantage of online in terms of timeliness and accuracy, several mentioned that costs are too high, making online a last resort: the general opinion amongst organisations was that because of the costs involved, it was only in exceptional circumstances that an online search would be the first resort. He concluded that:

> *"wider and more popular use of online systems and their databases will only occur, however, once the prices for these services fall, and accessing them (with the added cost considerations of a modem and computer terminal) can be financially justified."*[24]

He argued that if a fall in costs did occur, there would be a big uptake in use of both CD-ROMs and online, and that:

> *"...costs of online and CD-ROM development and use will be the dominant factor in the way environmental information provision develops."*[25]

These findings are echoed by Sarah Cowell, Project Manager of the Environment Council in her regular environment column in New Library World.[26] In it she claims that environmental organisations do not use computerized systems, probably owing to the costs involved.

However, an article in the Journal of Information Science[27] examining intermediaries and end-users views on online costs and cost-effectiveness argues that most organisations can justify expenditure on online on the grounds of staff, material and space savings. By outlining the case of intermediaries and end-users Nicholas et al suggest that online use is actually very cost-effective for what it provides. The article argues that

it is not the actual costs of the systems themselves that restrict online use by organisations but the still widely held attitude that information should be free; host organisations still have to face people's general unwillingness to pay for information.

Obviously, in the case of environmental organisations the situation may be more complex than that presented above - many environmental organisations have funding constraints and may not be able to access online even if they recognised its value as an information tool. Nevertheless, it is justifiable to include such an argument in a literature review because the 'information for free' debate is a controversial one in the information world, and it would be presumptuous to assume that information workers dealing with the environment should somehow be exempt from this.

4.4 Does Government policy hinder or facilitate use of electronic information by environmental organisations?

In an article in the Journal of Information Science,[28] Martyn examined UK Government policy on the electronic information industry. He concluded, that there is, in effect, no policy for the information industry as a whole, much less one for the electronic information industry.

He states that the only policy evident is that:

> *"which conforms to the general Government policy towards industry, which is to allow free market forces to operate within a lightly regulated environment, the regulations being put into place when the need becomes evident and pressing."*[29]

He considers the main reasons for this to be:

i. The size of the information industry. According to Martyn, the UK end of the information industry is probably worth only three billion pounds a year - actually very small for an industry, and, therefore, not of great interest to the Government.

ii. Government lack of knowledge about information and the information business.

> *"An Information Officer in Government eyes is someone whose job is to pass information about government activities to the outside world (sometimes, in the light of the British national tendency to secretiveness, to pass as little information as possible), and in consequence members of Government have perhaps a tendency to see information activities as something that ought not to be encouraged too much."*[30]

Conversely, in a paper concerned with the importance of information and information-handling skills, given at the seminar "Surviving the computer jungle:uses and abuses of computers in environmental information provision.",[31] Harris argues that the provision of information and advice about I.T. in the community and voluntary sector is generally very poor, compared to that within the commercial sector. He argues that whereas the Government in the 70's and 80's urged commercial organisations that I.T was crucial for their competitive advantage, this was not the case for the voluntary sector. He goes on to say:

"There has been no explication or demonstration of the benefits to not-for profit organisations: and no systematic Government investment in I.T. within the sector; and hence the social benefits to be gained from such systematic investment remain unproven."[32]

Conclusion

Although the literature does indicate an awareness of I.T. and the problems inherent when using it, (there is a great amount of discussion on these issues in the literature) it is also apparent from the literature that I.T is not used by organisations concerned with the environment as extensively or as efficiently as it could be. There appears to be several fundamental reasons for this:

i. A lack of any national co-ordination or strategy, certainly not made easier by a lack of any substantial Government policy on electronic information.

ii. The prohibitive costs of electronic information, although, this may also be partly due to the idea that information should be free.

iii. A poor understanding within environmental organisations of the importance of information handling before I.T. strategies.

REFERENCES

1. **Surviving the computer jungle: uses and abuses of computers in environmental information provision.** [*summary report of a seminar held in November 1991*], 1992.

2. *Ibid.*, p.1

3. **Surviving the computer jungle: uses and abuses of computers in environmental information provision,** ref.1, [p.24].

4. **Networking with disk-based information: standards in environmental databases?:** *summary report [of the] Environmental Information Forum*, 17 November 1992.

5. *Ibid.*, p.6

6. **Networking with disk-based information: standards in environmental databases?**, ref.4, p.9

7. **Norman,D., Remmie, J, and Fleming, P.** *The green maze: environmental information and the needs of the public*, 1991.

8. **Harris, Kevin.** Capital 'T, little 't': on the importance of information and information-handling skills. In: Surviving the computer jungle: uses and abuses of computers in environmental information provision. [*summary report of a seminar held in November 1991*], 1992.

9. *Ibid.*, p.6

10. **English Nature.** *Public access to information on Conservation: a snapshot of the performance of some enquiry services*, 1992.

11. *Ibid.*, p.16

12. **English Nature,** ref.10, p.12.

13. Gwen White to Samantha Smith, 27 May 1993.

14. *Ibid*

15. Pam Day to Samantha Smith, 11 May 1993.

16. **Edwards, Alison.** Electronic village halls and online databases. In: Surviving the computer jungle: uses and abuses of computers in environmental information provision. [*summary report of a seminar held in November 1991*], 1992

17. **Norman., D.**, ref.5

18. *Ibid.*, p.41

19. **Volnet UK.** *Online information sources on social and community issues*, 1993.

20. *Ibid.*, p.13

21. *GreenNet promotional literature*, 1993.

22. **De Silva, D.** *Online databases and CD-ROMs as sources of environmental information*, 1991.

23. *Ibid.*, p.76

24. **De Silva**, ref 22, p.78.

25. *Ibid*, p.142.

26. **Cowell, Sarah.** Environment Column. *New Library World*, 1991, 92 (1091).

27. **Nicholas, D., Erbach, G. and Harris, K.** Online: views on costs and cost-effectiveness. *Journal of Information Science*, 1987, 13 (1), 109-115.

28. **Martyn, John.** UK Government policy on the electronic information industry. *Journal of Information Science*, 1992, 18 (4), 269-272.

29. *Ibid.*, 272

30. *Ibid.*, 272

31. **Harris**, ref.6

32. *Ibid.*

CHAPTER FIVE

RESULTS

Telephone survey

5.0 Introduction

To give an overview of the information resources of environmental organisations and their attitudes towards I.T., a series of structured telephone interviews were undertaken.

5.1 Quantitative information (Questions 1 - 5a)

Questions were structured in the following format:

a) a set of closed questions to determine:

i. what resources organisations had
ii. if the organisation had access to electronic environmental information
iii. awareness of electronic environmental information; how much do organisations know about what is (potentially) available to them?
iv. use of electronic environmental information

The following figures correspond to a) above.

Of the 24 organisations sampled:

5.1.1. Resources of organisations

* Only one(4%) did not use computers at all.

5.1.2. Access to electronic environmental information

a) Access to in-house databases

* Four out of the 24 (17%) did not have in-house databases of information.
  - Of the twenty(83%) that did have in-house databases, only one of these(5%),allowed their database to be accessible to the public.

b) Access to an external host or network

* Only two out of the 24 (8%) had access to an external host or network.
* Seven out of 24 (29%)felt that it would be beneficial for their organisation to have access to an external host or network.
* Three of the 24 (13%)felt that they couldn't say whether access to an external host or network would be beneficial for their organisation or not, and one (4%)replied that it would depend on what the host could offer.

5.1.3. Awareness of electronic environmental information

* Four of the 24 (17%)were not aware of any of the external hosts or networks on the list given to them.
* The electronic environmental information products of which there was most awareness were Campus 2000 and Prestel. 11 organisations (46%) said they were aware of Campus 2000, and 11 (46%) said they were aware of Prestel.
* Out of the three hosts or networks specifically aimed at environmental organisations, the one of which there was most awareness was GreenNet: 7 (29%) of respondents were aware of this,although, interestingly, none of the respondents actually used GreenNet (see below).

5.1.4. Use of electronic environmental information.

* Two of the 24 (8%)organisations had access to an external host or network.
* None of the networks used by the organisations were used more than any other.
* The networks used were Dialog, Volnet, Prestel and the Environment Council' initiative on CATA-LIST: the organisation who used this is also a contributor to the initiative.

Awareness and use of commercially available hosts, networks or initiatives.

The table below indicates awareness and use of commercially available hosts, networks or initiatives that provide electronic environmental information

ELECTRONIC PRODUCT	AWARENESS OF RESPONDENTS		USAGE BY RESPONDENTS	
	NO.	%	NO.	%
DIALOG	2	8%	1	4%
GREENNET	7	29%	-	-
VOLNET	2	8%	1	4%
PRESTEL	1	46%	1	
CAMPUS 2000	1	46%	-	-
MANCHESTER HOST	1	4%	-	-
PILOT HAMPSHIRE ENVIRONMENTAL NETWORK (pHEN)	2	8%	-	-
INTERNET	8	33%	-	-
USENET	3	13%	-	-
ENVIRONMENTAL INFORMATION ON CATA-LIST	5	21%	1	4%
NERIS (ON CD-ROM)	7	29%	-	-

5.2. Qualitative information (Question 5b - 9)

Questions were structured in the following format:
b) a set of open questions to gauge:

i. attitudes about I.T.
ii. attitudes about electronic environmental information.

The following questions correspond to b) above.

Question Five

An important part of the interview was the use of a list of computer hosts and networks of potential use to an organisation concerned with information about the environment. This list was read out over the phone and participants were asked to say whether they used them, but also if they were aware of them or had heard of them. This was to gauge:

i. use of electronic environmental information sources
ii. awareness of the products

Three of the eleven products on the list were electronic initiatives aimed specifically at environmental organisations, so obviously their awareness of these are important. The remaining eight were well-known hosts, networks or products from which environmental information can also be obtained - it was decided that they should be included because they can be considered as major providers of

electronic information, and as such, must be included in any discussion of electronic information.

Do you feel that it would be beneficial for your organisation to have access to an external host or network?

b) If yes, which ones and why?

7 out of the 24, (29%) of the organisations said that they felt that it would be beneficial to have access. Their reasons for this fell into two main categories:

i) Organisations who would like access to a host or network, but who didn't really know what they entailed. The majority: five of the seven (71%)organisations who said that they thought that it would be beneficial to have access to a host or network fell into this category.

* **Respondents were guaranteed confidentiality but are identified by a unique number and this is given after comments.**

There was a range of comments, as follows:

> *"If I knew of a specific one, I would do something about it."*(2)

"I have made enquiries about the Environment Council' initiative on CATA-LIST, but it was too expensive. I'm apprehensive because there's so many people jumping on the environmental bandwagon you just get befuddled with choice....there's so many of them it's difficult to get the right one."(17)

"We're involved in CATA-list already, but I don't know a lot about the others."(3)

"Yes, but because of the expense, and because we're small, we don't have access to any."(4)

ii) Organisations who felt that it would be beneficial to access a host or network for a specific reason. Two of the seven organisations (29%) fell into this category.

Their comments were as follows:

"We're starting to look into it now because we want to expand the information we can offer people. We offer an enquiry service and if our own library didn't have that information we might be able to find it somewhere else."(5)

"We're interested in GreenNet: previously none of these things were of relevance to us, but now they're setting up an independent curators forum which we would like to access."(11)

In addition, four of the 24 (17%)organisations felt that they just did not know enough about the hosts or networks to say whether access to them would be beneficial or not.

Their comments were:

> *"I don't really know because I don't know enough about it. We have been approached by pHEN [the Pilot Hampshire Environmental Network] but we're a national organisation and initiatives such as pHEN are local networks - we would really need something with a national base. We also run on Apple Macs [Macintosh] and these are incompatible with most of the networks."*(15)

> *"I don't know what's on them so I have no idea. We have very little money; it's only very recently that we've all got a word processor."*(19)

> *"I don't know because I don't know what they are."*(20)

> *"I don't know. It depends what they would offer us - we would want information about sites of special scientific interest - we would want other organisations to give us that information."*(14)

Question Five.

Do you feel it would be beneficial for your organisation to have access to an external host or network?

c) If no, why?

It is important to note that thirteen organisations (54%) said that they did not feel that it would be beneficial for their organisation to access hosts or networks.

There appeared to be recurring reasons for this.

Lack of knowledge of what was available was undoubtedly the main reason. Almost all the organisations who expressed an opinion regarding external hosts or networks prefixed their sentence with: "I don't know what's on them but..."

There also appeared to be a belief that such products were just not needed or applicable for the organisations - they did not perceive that they needed extra information.

There was a range of comments that reflected these attitudes, as follows:

> *"I don't know much about them, so I can't see what we'd get out of them."*(9)

> *"We have our own statistics - we're a trade association; we get our statistics from Customs and Excise and we disseminate them for our members. These are what are of use to us. Environmental organisations produce a whole load of green statistics but on the whole they're not industry statistics and that is all we're interested in."*(16)

> *"Because our main job is taking inner-city schools out for days in the country so I can't see the advantages they would bring us."*(7)

> *"No, perhaps it's just our ignorance but we are an umbrella organisations and if we find we need any expert knowledge we would refer people to one of our member organisations who would have such facilities."*(1)

"The system we've developed over the years has proved very satisfactory. We've only got 2,000 members and we're not profit-making; we don't seem to need any sort of boosting or streamlining. We don't want to have a lot of information."(13)

"I don't know what they are so I couldn't say if they would be beneficial or not, but anything we get we get by fair means and we wouldn't want other organisations to have that information."(8)

Question Six

If you don't use electronic environmental information, what do you feel are the main factors that have determined why not?

Only two out of the 24 organisations surveyed (8%) used some form of electronic environmental information. In general, organisations responded that they didn't use electronic environmental information because they didn't know what it was. However, there does appear to be a general feeling of too much choice of electronic environmental information - a feeling of information overload.

There were a range of comments, as follows:

"We don't know what they offer and we weren't aware of them until know."(14)

"Probably because we don't know about them."(6)

"There's so many people offering these services - both on the technicalities and the legislative functions - it's just becoming a minefield."(17)

Another said:

"[The problem is] ease of access, knowing what there is, deciding between all the different areas."(2)

Other comments were:

"If someone came round and showed me how useful it was I might be swayed. Also, it's because it has to be something that's demonstrated on computer, and that's not always practical. If it could be passed around on paper with what it entailed that would be a lot better."(15)

"We don't perceive we have a need for it - we run our business efficiently - if there was a gap in our information resources it would have surfaced, but it hasn't."(18)

Question Seven

If you do use electronic environmental information, what benefits, if any, do you think computerised environmental information has brought to your organisation?

Only one organisation chose to answer this question:

"Not having to repeat the same research that's already been done; being able to use information that's already there for you." (21)

Question Eight

Ideally, what electronic information would you like your organisation to have, or what would you like to add?

This question was asked to determine if low use of electronic environmental information was because organisations essentially did not feel that electronic environmental information was necessary, or because of other factors, such as cost.

Answers broadly fell into three categories:

i) Organisations who stated that they were happy with their existing information system, or that they had no need for electronic environmental information. Importantly, the majority - 11 of the 24 organisations (46%) fell into this category.

Typical comments were:

> *"We're happy with what we've got"*(6)
>
> *"There's no need for it".*(18)
>
> *"There's already too much information coming in through the post to read. To have any more on a network would be annoying."*(19)

ii) Organisations who stated that there was something specific that they would like to have. 8 of the 24 (33%) fell into this category.

Typical comments were:

> *"A local area network within our own organisation. An environmental news service with the latest developments would be interesting - but that would be something that I would call interesting rather than essential."*(10)

> *"It would be good if you could just plug in and find out what a certain environmental organisation is doing at the moment. There is so much environmental information available and I don't really know what these things are capable of doing."*(15)

> *"We would like an electronic mail system - something like GreenNet would be useful so we could have contact with other organisations."*(4)

iii) Organisations who stated that they would like to have all the information that they could, but cost or other factors ruled this out. 2 of the 24 organisations (8%) fell into this category.

One of the organisations commented:

> *"Anything I could afford - you could go on forever. I would dearly love everyone to have access to everything but we can't afford it, so, therefore, we can't have it."*(12)

> *"Almost any information is worth having"*(2)

iv) Organisations who stated that they couldn't respond because they didn't know enough about it. 3 of the 24 organisations (13%) fell into this category.

Question Nine

What do you think of the standard of electronic environmental information in general?

Participants were asked what they thought about the standard of electronic environmental information in general. 17 of the 24 (71%) commented that they didn't know or couldn't comment because they hadn't used electronic environmental information or didn't know enough about it to say. The fact that the majority of organisations responded in this way gives an important insight into the awareness of organisations into electronic environmental information.

However, amongst the seven (29%) who did comment, the majority: four appeared to have a negative view of electronic environmental information.

Typical comments were:

> *"I haven't explored enough about what is available but I would guess that they're almost too specialized, too difficult to access...We don't have an information officer - maybe if we did, we would know more about it."*(2)

"From my limited experience, I found that there are vast amounts of information that aren't useful - so much information on a subject that you can never get down to finding the stuff specific to your query."(5)

"Lots of work has been done on it [electronic environmental information] but a lot of it is in its very early stages - lots of databases have been set up and have not been the answer to everybody's problems...When we decided to look into it, speaking to other people involved, the general view was that the databases that had been set up were difficult for end-users to use, not user-friendly and didn't have the right information on them."(3)

Only three out of the 24 organisations expressed a positive view about the standard of electronic environmental information. Interestingly, all three were non-users of electronic environmental information.

Comments were:

"If you've got the money you would be able to get something to suit you - there's very widespread provision and lots of information around, but you do need the cash."(10)

"Fairly good - various people have told me that it's [electronic environmental information] good and interesting."(11)

"I imagine that it would be quite good, but I'm not a user, so I can't say for definite."(15)

5.3. Summary of results

5.3.1 Use of I.T.

Use of I.T. generally is quite widespread. 96% of organisations sampled use computers, and 83% of these had an in-house database of information.

5.3.2 Use of electronic environmental information

Use of electronic environmental information is generally very low. Although 29% felt that it would be beneficial to have access to an external host or network, such as those suggested to them, only 8% actually do so.

5.3.3 Awareness of electronic environmental information

The organisations awareness and understanding of electronic environmental information appears to be, in most cases, minimal. Although 83% of organisations were aware of at least one of the external hosts or networks on the list given to them, many were merely familiar with the names and had no idea what they were, how they worked, or how they could be accessed via a computer. Indeed, the comment by organisation number 15 on p.77: "We also run on Apple Macs [Macintosh] and these are incompatible with most of the networks." is interesting because all the major networks offer communications software for IBM-compatible and Macintosh machines, and this further demonstrates a lack of knowledge of the facilities available.

5.3.4 Attitudes towards electronic environmental information

In general the attitude of the organisations sampled towards the usefulness of electronic environmental information is very poor.

It is interesting to note that unwillingness to share information appears to be a factor contributing towards non-use of such information. (See comment by organisation no. 8, p.79) This directly contradicts what is supposed to be the culture of environmental organisations - the ethos of resource sharing and co-operation, and the basis for many electronic environmental initiatives such as pHEN and GreenNet which depend heavily on sharing of information.

5.3.5 Cost

Cost was mentioned as a factor by several of the organisations when questioned about use of electronic environmental information (see comments by organisations no.'s 12,19 and 4,p.82,77 and 76 respectively). Nevertheless, cost does not appear as important a consideration as considered in the hypotheses, as detailed in Chapter 1, p.4.

However, it is significant that neither of the two organisations that do have access to commercial electronic environmental information (as opposed to their in-house databases) are voluntary organisations: one is academic-based; another is a partnership of commercial organisations and, thus, are not organisations traditionally associated with restrictive budgets.

Moreover, it is surprising that when organisations are asked what electronic information they would ideally like to have, i.e. if resources were not a problem, the majority of organisations (46%)are still not interested in electronic environmental information.

This can perhaps best be explained by the prevailing negative attitude towards electronic environmental information. Although many of the organisations knew little about electronic environmental information, the opinions that they did have were that they were difficult to access, difficult to use and too expensive.

Such attitudes towards electronic environmental information present a huge problem if one is to hope for an environmental movement that uses information technology to it's full potential, and they certainly question the success of the marketing of electronic environmental information products.

These themes are discussed in more detail in the next chapter which examines two environmental organisations and their use of, and attitude to, electronic environmental information.

CHAPTER SIX

CASE STUDIES

6.0 Introduction

To give a wider view of environmental organisations in the UK, it was important to consider the 'key players' in the environmental movement - organisations that the public are aware of, and identify with environmental information.

Two in-depth case studies of larger environmental organisations were undertaken. It was intended that these would demonstrate:

i. The way in which the organisations handled their information.
ii. The role that electronic information played within this.
iii. An insight into major environmental organisations awareness of I.T., and their attitude towards it.

6.1 Case Study One

6.1.2 Participants

It was decided to base the case study on the UK national office of the organisation, considered by the Environment Council as the largest and most active of the group. A structured interview was undertaken with the information and research officer of the organisation at the national office.

The interview took the form of a questionnaire based around open-ended questions designed to encourage discussion.

6.1.3 Objectives of the organisation

Case Study One was founded in 1961 by a group of individuals concerned about the environment - it has grown considerably and today there are national offices in 28 countries and four million supporters worldwide making it one of the largest international voluntary environmental organisations. Its objective, as stated by the organisations 'fact sheet' is to :

> *"preserve the variety of life on Earth, to prevent the over-exploitation of the Earth's natural resources, and to reduce pollution and waste."*[1]

The organisations main priority is conservation projects and according to the organisations fact sheet:

> *"More than one hundred projects have been supported since 1986, safeguarding over 5,000 hectares of Britain's wildlife habitat and protecting native species of bats and butterflies, flowers and birds, reptiles and amphibians."*

6.1.4 The objectives of the information unit

Until recently, Case Study One had a separate information unit, employing seven people - however the recession has meant that economies have had to be made and the 1991/1992 annual review of the organisation states:

---

[1]Interviewees were guaranteed confidentiality. As a result of this, although references have been made to their literature, it has not been possible to cite them.

"With the recession continuing, Case Study One UK experienced a further fall in income, the public and other donors having priorities which compete both with charitable giving and with concerns over the environment."

Therefore, in 1992, the information unit was amalgamated with the publications unit and the number of staff was reduced from seven to two and a half. The organisations main priority is conservation and environmental projects, not the provision of information to the public. The objectives of the information unit can best be described by the comments of the information and research officer who stated:

"Most of the money has to go on the [conservation] projects so the library and information unit is just a support service to that."

Public enquiries are handled in three ways: if it's a complaint or of a very general nature it's answered by a unit called Audience Services which has standard letters or responses to questions that arise frequently; anything a bit more complicated or that isn't immediately available is passed to the information and research officer; enquiries too technical in nature or anything that the information and research officer cannot answer would be passed to the conservation department who have experts in specific species, problems and continents.

6.1.5 Information resources available to the organisation

The organisation has a comprehensive library containing relevant journals and has built up information files on specific areas from press cuttings. It also has access to GreenNet, and PFPS: an in- house database designed to help plan conservation projects, co-ordinate how much money they are

receiving, and chart their progress.

6.1.6 Use of electronic information

The information resources used to answer enquiries vary according to the type of information that is needed. Something very specific regarding the projects that Case Study One is working on would merit a look at PFPS although this is also available in hardcopy form which tends to be looked at first if the information is needed quickly. The Conservation Monitoring Centre in Cambridge is partly funded by Case Study One and this keeps a database of figures of endangered species and the organisation tends to rely on them frequently for information. Otherwise, information is taken from the library and information files. Although there is no official policy to restrict use of electronic information; generally, it's left to the discretion of the staff - it is stressed throughout the organisation, that as a charity, cost is important, and the use of electronic information is kept to a minimum. The information and research officer commented:

> *"We'd use the hardcopy first and if we couldn't find what we wanted there, we'd then go on it [GreenNet]."*

Indeed, GreenNet is not used for external enquiries at all, and the information and research officer interviewed has not been trained to use it. Furthermore, the information and research officer commented:

> *"[GreenNet] is used for internal enquiries only where we couldn't find the answer already in our files, or in the library, or from the conservation experts...The problem with GreenNet is that once you use it you tend to receive masses and masses of mail from other people and we've only got limited staff."*

6.1.7 Awareness of I.T. and attitudes towards it.

The interviewee was given a list of hosts and networks (see Appendix C) that could be of potential interest to an organisation concerned with the environment to test awareness of electronic environmental information available. The response was:

> *"I haven't used any of them apart from GreenNet. I've heard of Internet but not the other one's, I'm afraid. The problem is that up until the previous February we did have someone who dealt with computer type information links but unfortunately she was made redundant and my training isn't in that line."*

Nevertheless, Case Study One does appear to have an awareness of the importance of I.T. - a management information systems unit co-ordinates what Case Study One UK has so they're not that dissimilar from the other national offices around the world. The benefits of electronic environmental information are recognised. The information and research officer commented:

> *"I think its certainly helped. The people who use it [GreenNet] are pollution people and people dealing with the Earth Summit, so it's certainly helped them to keep up to date with what's happening around the world which they might not have been able to do so easily if they were relying on telephone calls or journals."*

The interviewee was asked what criteria would be used to evaluate the usefulness of electronic environmental information for Case Study One and what the organisation would ideally want from a host or network. The reply was:

"How accurate it was, how quick it was and the cost...if we could plug into the World Conservation Monitoring database, that would give us access to what amount of endangered species were left - that sort of information would be invaluable. Really, I suppose up to date news on the environment is what we would like, and records of what's happened on each species or habitat or environmental problem."

As far as the information and research officer knew, there are no future developments planned for I.T., and regret was expressed at this:

"We thought we were lagging behind just having GreenNet...We have looked into the Environmental Information Service at the British Library - it would be nice to be able to access, but it's just too expensive... to be linked to the World Conservation Monitoring Centre database was looked into a couple of years ago, but that didn't happen because of funding."

6.1.8 Comment

Clearly, cost is the main restriction to use of electronic environmental information in Case Study One, and this is, to some extent, understandable for a voluntary organisation largely dependant on donations in a time of recession. The financial restraints placed upon the organisation has meant a very limited use of electronic environmental information: the member of staff responsible for electronic information has been made redundant, and the information and research officer currently responsible for dealing with a large amount of enquiries is not trained to use GreenNet and, indeed, has little awareness of electronic environmental information as a whole, as demonstrated by the comments on p.92.

6.2 Case Study Two

6.2.1 Participants

It was decided to base the case study on the UK national office of the organisation. A structured interview was undertaken initially with the head of the Public Information Unit and then, separately with the I.T. Manager, at the national office of the organisation.

6.2.2 Objectives of the organisation

The birth of Case Study Two came in 1971 when a small group of Canadians protested against a nuclear test zone. Today it is an international independent environmental pressure group with five million supporters worldwide. It's objective is to campaign to protect the environment from harmful human interference using non-violent direct action. It's priority is to campaign government, organisations and decision-makers on specific environmental issues - not to collate or disseminate information about general environmental problems.

6.2.3 Objectives of the information unit

Recently, the Public Information Unit was merged with the unit that deals with supporter (member) recruitment and liaison because it was felt that they were receiving one set of information from current supporters and one set from the general public which could eventually be dealt with by the same person. It was felt that if the two were dealt with in the same unit an

an overall view of how people feel about the organisation would be gained, and that it would make it easier to judge whether those who joined had different interests to those who just write in.

All enquiries are answered by the Public Information Unit and are split into enquiries from adults and those from children. The children's letters usually mention a broad subject and can be tied in with a general brief about a campaign, but there's a different range of campaign briefs for adults that are more specific to certain areas and written in a different technical language. Often, the organisation receives letters from scientists and doctors and if these were too technical for the Public Information Unit to answer they would be passed onto one of the campaigners.

However, it is not a priority for Case Study Two to answer enquiries on general environmental topics. The head of the Public Information Unit commented:

> *"If it wasn't something that wasn't a particular campaign of ours, but we dealt with something similar, then we would say this is the information we can give you on what we deal with, such and such an organisation tends to deal more in your particular area...If we feel another organisation might not be adequate, then we try to add the information into the context of our letter...but if there is another organisation that covers that area it is far easier, quicker and more sensible to pass it on."*

The I.T. manager added:

> *"The aim of the Public Information Unit is to standardize information as much as possible and package it into different levels - one letter and set of information for adults, another for children."*

6.2.4 Information resources available to the organisation

Case Study Two has a large library of books and literature, but the bulk of information used when dealing with the public is obtained from campaign briefings: literature that gives information about specific environmental campaigns they are dealing with and how these are progressing.

The head of the Public Information Unit commented:

> *"We have a production manager who talks to campaigners daily, finds out the developments of their campaign and updates these briefings as, and when, he feels it's suitable. We provide him with feedback on which campaign areas are most requested and then based on that he would change the briefings. That's the main area of our information and we try to answer as many of the enquiries by briefings as we can. Our library we will use to read up on the more general areas."*

Comparative to many other environmental organisations, Case Study Two also has access to an impressive range of electronic environmental information.

6.2.5 Use of electronic information

Greenbase is a database owned by Case Study Two which originates from Vancouver and contains environmental information that has been selected from relevant files on Dialog and other hosts. Monthly updates of the database are sent by disc and added into Case Study Two' UK own database IZE. They also have their own account on Dialog which is accessed mainly for information regarding companies and shipping; the Financial Times on CD-ROM which has very good coverage on companies and environmental

issues; access to GreenNet and Aquarius.

Aquarius is a large database set up by Case Study Two UK using water quality monitoring data from the National River Authorities. There are several tens of thousands of these monitoring sites from ten N.R.A's but Case Study Two felt that no-one was getting a broad picture of them as a whole, and, thus what was happening in the UK overall. Therefore, last year, the information from five N.R.A's was input into the database which enabled Case Study Two to see at a glance which companies were polluting. Therefore, even N.R.A's don't have as broad a picture as Case Study Two does.

Interestingly, however, GreenNet appears to be used scarcely. In the United States, Case Study Two has an electronic bulletin board on GreenNet that the public can dial into to obtain information about the latest campaigns but campaigners in the UK are very reluctant to do this because they have a very heavy workload. In the UK office GreenNet is used just to check specific messages although Case Study Two International uses GreenNet conferences for their international press releases.

All of the electronic information is used for internal use only; the information used for campaigns and incorporated into reports. None are available to the Public Information Unit.

The I.T. Manager explained that this was because the aim of the Public Information Unit is to standardize information as much as possible and added:

"It would be very difficult to do this with a host or network because the information from them is free-text, often very unstructured and non-specific to a particular enquiry - we didn't want the Public Information Unit dealing with reams and reams of information..."

6.2.6 Awareness of I.T. and attitudes towards it.

The head of the Public Information Unit was given a list of hosts and networks (see Appendix C) that could be of potential interest to an organisation concerned with the environment to test awareness of the electronic environmental information that's available to organisations. The response was:

"We use GreenNet, but I'm not aware that we use any of the others. It's possible that our campaigners might use some of these....The campaigners themselves use a vast amount of resources for research, where they get their information I have no idea... they tend to keep things like that very close to their heart."

There was no awareness of any of the other electronic environmental products on the list; indeed, surprise was expressed that these things existed, and it is both surprising and disconcerting that the Head of the Public Information Unit is not aware of the wide range of electronic environmental products available to the organisation.

The I.T. manager summed up Case Study Two and it's relationship with I.T. by commenting:

"The problem is that until recently Case Study Two didn't realise the importance of I.T. for it as an international organisation; until recently there has been a very minimal strategic policy on I.T. However, this year, a proper I.T. co-ordinator at the international office is in the process of establishing an international I.T. policy. This will be all encompassing and will apply to Case Study Two through the world - it should be far-reaching and will aim towards a wide area network to extend the capabilities of the data that Case Study Two has."

6.2.7 Comment

The standardization of information by Case Study Two to save staff time and effort is impressive. However, it is clear that although Case Study Two has an impressive range of electronic environmental information, the full advantages of this information cannot be gained because the person responsible for disseminating information to the public is not even aware of it. There may be justifiable reasons for this, for example the confrontational and campaigning nature of the organisation means that information seeking by staff may not always be undertaken in the conventional way and staff may be reticent about their information sources, as, indeed was pointed out by the Head of the Public Information Unit (p 98). Also, the aim of the public information unit is to reduce the handling of information by staff in the unit by standardizing information as much as possible, so in that respect, there may be a lack of awareness. However, the fact that the Head of the unit knows little regarding the information resources available to the organisation does not give the impression of an effective information-handling policy. Until recently, there has been a minimal strategic policy on I.T. as a whole, and it does appear that there has been little understanding of the value of electronic information within that strategy.

6.2.8 Conclusion

To conclude, by establishing separate information units for public enquries and standardizing this information, both organisations have the facilities to handle information effectively. However, it is reasonable to conclude that both organisations do not take advantage of the range of electronic environmental information, firstly because of financial restraints, and secondly because of a lack of awareness of the availability of electronic information.

Therefore, it is not necessarily the case that larger, international environmental organisations are more aware, or have access to more commercially available electronic environmental information products than smaller environmental organisations, as expected (see Chapter 1, p.4).

CONCLUSION

The purpose of this study was to examine the level of awareness, usage and need for commercially available environmental information sources.

The hypotheses tested were:

1. That the majority of the sampled organisations that handled environmental information were aware of the commercially available electronic environmental information sources.
2. That the majority of the sampled organisations that handled environmental information would ideally, i.e., if not restricted by financial or other constraints, want to access commercially available electronic environmental information sources.
3. That organisations sampled were using commercially available electronic environmental information sources.
4. That where organisations did not use commercially available electronic environmental information products, it was primarily because of the restrictive costs of such products.
5. That larger, international environmental organisations would be more aware of commercially available electronic environmental information sources than smaller environmental organisations.
6. That larger, international environmental organisations would have access to more commercially available electronic environmental information sources than smaller environmental organisations.

It would appear from the results that the hypotheses were false. It was found that:

1. The majority of the sampled organisations that handled environmental information were not aware of the commercially available electronic information sources.
2. The majority of the sampled organisations that handled environmental information, did not, if not restricted by financial or other constraints, want to access commercially available electronic environmental information sources.
3. The organisations sampled were not using commercially available electronic environmental information sources.
4. Where organisations did not use commercially available electronic environmental information products, it was not primarily because of the restrictive costs of such products.
5. Larger, international environmental organisations were not more aware of commercially available electronic environmental information sources than smaller environmental organisations.
6. Larger, international environmental organisations did not have access to more commercially available electronic products than smaller environmental organisations.

The survey found that although use of computers amongst organisations that work with environmental information is high, use of electronic environmental information is generally very low.

An integral part of the survey was the examination of the main commercial hosts and networks of potential use to organisations that work with environmental information to assess how they could be beneficial. Although, there is a large and varied amount of useful, topical electronic environmental information; accessible fairly cheaply for voluntary or not-for-profit organisations, awareness by organisations of electronic information is minimal, and there is little knowledge of the facilities and the technical capabilities of the products available.

Apart from one organisation, whose use of electronic information was restricted by financial restraints (see Chapter 6, pp.88-93), cost was not a significant factor in the issue of access to electronic environmental information, as was expected. The attitude of the majority of organisations towards electronic information was simply that they had no need for such information, not that they could not afford it. Indeed, there appeared to be a prevailing negative attitude towards electronic environmental information. Many organisations felt that they did not know a great deal about what was available to them, but from the knowledge they had, they felt that electronic environmental information was difficult to access and to use. There were also too many products available to decide which would be of use to them - indeed, a feeling of 'information overload'.

Moreover, both the literature review and the telephone survey indicated an unwillingness by organisations to share information with other organisations, and a marked lack of cross-referral or networking of information between environmental organisations. This is an area of concern when it is considered that most of the major electronic environmental products are based around the premise of shared information, and it may indicate why there appears to be low interest in environmental information products.

Furthermore, larger, international environmental organisations have responded well to an increased amount of enquiries, for example by establishing separate information units for public enquiries and standardizing information as much as possible, they have minimized the time and effort needed to answer enquiries as much as possible. However, they are not necessarily more aware of, or use more electronic information than smaller environmental organisations.

Recommendations

As a result of the findings of this survey it is recommended that:

* Firstly, and most importantly, that more emphasis is placed on the benefits of networking and sharing of information amongst environmental organisations. This could be achieved by building upon the recommendations of the Environmental Information Forum on networking.[1]

* That further research be undertaken into the attitudes of environmental organisations with regard to electronic environmental information.

* That organisations that are responsible for the provision of electronic environmental information examine the ways in which the level of awareness of their products can be raised amongst environmental organisations.

REFERENCES

1. **Networking with disk-based information. Standards in environmental databases?**: summary report [of the] Environmental Information Forum, 17 November 1992.

BIBLIOGRAPHY

Anmar, N.J. *Biotechnia: the location, assessment and provision of environmental health information for the development of an information broking service in Nottingham.* Unpublished M.A. dissertation: Loughborough University of Technology, 1990.

Barlow, Monica. Eco Environmental Education Trust - from information to action. *Assignation,* 1993, 10 (3).

Bell, Judith. *Doing your research project: a guide for first time researchers in education and social sciences.* Milton Keynes: Open University Press, 1987.

Burke, T. Did we go green in the '80's? *Town and Country Planning,* 1990, 59 (1), 11-12.

Cowell, Sarah. Environment Column. *New Library World,* 1991, 92 (1091).

Department of the Environment. *Digest of environmental protection and water statistics*, 1989, 12.

Department of the Environment. *The UK environment.* London: MORI, 1992.

Department of the Environment. *Wake up to what you can do for the environment.* London: HMSO, 1992.

De Silva, D. *Online databases and CD-ROMs as sources of environmental information.* Unpublished MSc. dissertation: City University, 1991.

De Vaus, D.A. *Surveys in social research.* 2nd ed. London: Unwin Hyman, 1990.

English Nature. *Public access to information on Conservation: a snapshot of the performance of some enquiry services.* Peterborough: English Nature, 1993.

Environment Council. *Who's who in the Environment: England 1992.* 2nd ed. London: Environment Council, 1992.

Environmental Data Services Ltd. *Directory of environmental consultants.* 2nd ed. London: ENDS, 1990.

Gomilny, Jake. European environmental networking - an idea whose time has come. *Town and Country Planning*, 1989, 58(3), 88-89.

Guernsey, J. and Henderson, H. Electronic publishing trends in the United States, Europe and Japan. Commission of the European Communities. Electronic document delivery. v.11. Oxford: Learned Information, 1984. In: Lea, P.W. with Alan Day, eds. *Printed reference material and related sources of information.* 3rd ed. London: Library Association, 1990.

Krol, Ed. *The whole Internet: user's guide and catalog.* Sebastopol CA: O'Reilly & Associates, 1992.

Lea, P.W with Alan Day, eds. *Printed reference material and related sources of information.* 3rd ed. London: Library Association, 1990.

Lee, Nigel and Helen Woolston. *Environmental information: a guide to sources.* London: British Library, 1992.

Martyn, John. UK Government policy on the electronic information industry. *Journal of Information Science,* 1992. 18 (4), 269-272.

Morcadcio, Kathleen Y. ed. *Gale directory of Databases: Volume 1: online databases.* Detroit: Gale Research, 1993.

MORI. *Measuring the effectiveness of the Wake Up leaflet.* London: MORI, 1992.

MORI. *Tropical rainforests and the environment: a survey of public attitudes.* London: MORI, 1990.

Networking with disk-based information: standards in environmental databases?: *summary report [of the] Environmental Information Forum, 17 November 1992.* London: Environment Council, 1992.

Nicholas, D. Erbach, G. and Harris, K. Online: views on costs and cost-effectiveness. *Journal of Information Science,* 1987, 13 (1) 109-115.

Norman, D. Janet Rennie and Pat Fleming. *The Green maze: environmental information and the needs of the public.* Bristol: Eco Environmental Education Trust, 1991.

Opinion research centre. *Corporate Strategy guide.* London: ORC, 1978.

Ostle, B. *Qualitative research into environmental information needs in relation to attitudes and motivation.* Unpublished MSc. dissertation: City University, 1991.

Surviving the computer jungle: uses and abuses of computers in environmental information provision: [*summary report of a seminar held in November 1991*]. Bristol: ECO Trust, 1992.

Taylor, L.H. *A green lifeline?: Public libraries and the development of environmental information provision.* Unpublished M.A. dissertation: Loughborough University, 1992.

Tozer, David. Environmental issues. In: Kinnell, M. ed. *Informing communities, the role of libraries and information centres.* London: CSG Publishing, 1992.

Tucker, Mary Ellen, Judith B. Wood and Francesca Allegri. Use of library science students as research intermediaries for environmental science and engineering students. *Online Review,* 1992, 16 (4), 195-206.

Ulrich's international periodicals Directory. 31st ed. New Jersey: R.R. Bowker, 1992.

Volnet UK. *Online information sources on social and community issues.* Berkhamstead: Volunteer Centre, 1993.

Will, L. Is the moon made of green cheese - and what is a black hole? *Library Association Record,* 1992, 94, 796-7.

Woolston, Helen. Informed environment: British Library environmental information service. *Assistant Librarian,* 1992, 85 (11), 172-4.

APPENDIX A

TELEPHONE SURVEY QUESTIONNAIRE

Organisation _____
Name _____
Job Title _____

1. **Does your organisation use computers at all?**

Yes ☐ No ☐

2.a) **Does your organisation have access to databases of information?**

Yes ☐ No ☐

i) **Own in-house database.**
What type of information does this contain?

_____
_____
_____
_____
_____
_____

ii) **CD-ROM database.**
Which ones? Please specify below.

_____

b) **Are any of these accessible to the public?**

Yes ☐ No ☐

c) **Which ones? Please specify below.**

_____

3. **Do you have access to an external host or network?**

Yes ☐ No ☐

4. **Which hosts or networks:**

a) **Are you aware of?**
b) **Do you use?**

Please place a tick in the boxes provided.

	Aware of	Use
Dialog	☐	☐
Greenet	☐	☐
Volnet	☐	☐
Prestel	☐	☐
Campus 2000	☐	☐
Manchester Host	☐	☐
pHEN	☐	☐
Internet	☐	☐
Usenet	☐	☐
The Environment Council' initiative on Cata-LIST	☐	☐
NERIS (on CD-ROM)	☐	☐
Other (Which one? Please specify below)	☐	☐

_____

5.a) **Do you feel that it would be beneficial for your organisation to have access to an external host or network?**

Yes ☐ No ☐

b) **If yes, which one/s and why?**

_____
_____
_____
_____
_____

c) **If no, why?**

_____
_____
_____
_____

6. I f you don't use electronic environmental information, ***i.e. information relating to the environment in computerised form,*** what do you feel are the main factors that have determined why not?

7. If you do use electronic environmental information, what benefits, if any, do you think computerised environmental information has brought to your organisation?

8. Ideally, what electronic information would you like your organisation to have, or what would you like to add?

9. What do you think of the standard of electronic environmental information in general?

APPENDIX B

STRUCTURED INTERVIEW QUESTIONNAIRE - CASE STUDY

1. **What would you describe as the main information resources at your disposal?**

2.a) **How are enquiries usually answered? Which resources tend to be used most?**

---

b) **Who tends to answer enquiries - are their specific people or departments who handle specific enquiries?**

---

c) **In what way are internal enquiries, or enquiries by government departments etc. handled differently to those from the public?**

---

3. **Do you have a policy as regards going online? For example, is there a policy on who uses it and what it is used for?**

4.a) **Is online used for both external and internal enquiries?**

---

b) **Are there any enquiries for which online is not used?**

---

c) **Are there any restraints to going online i.e. cost?**

---

4. **Which hosts or networks:**
   a) **Are you aware of?**
   b) **Do you use?**

Please place a tick in the boxes provided.

	Aware of	**Use**
Dialog	☐	☐
Greenet	☐	☐
Volnet	☐	☐
Manchester Host	☐	☐
pHEN	☐	☐
Internet	☐	☐
The Environment Council' initiative on Cata-LIST	☐	☐

5. **What types of enquiries do you tend to use them most for?**

---

6. **How often, on average, do you tend to use them?**

---

7. **What ideally, would you want a host or network to give you?**

---

8. **Why did you decide to use the particular systems/databases that you do in preference to others available?**

---

a) **Did you evaluate the need for them beforehand?**

---

b) **What criteria would you use to evaluate the usefulness of electronic environmental information for your organisation?**

---

9. **Do you have a strategic policy on the use of I.T. that determines what resources you use?**

---

10. **What benefits, if any, do you think that electronic environmental information has brought to your organisation?**

---

11. **What do you think of the standard of electronic environmental information?**

---

12. **What developments would you like to see in I.T. in your organisation in the future? Are there any future developments planned?**

APPENDIX C

HOSTS AND NETWORKS OF (POTENTIAL) ENVIRONMENTAL INTEREST.

Dialog -

Enviroline

Is updated monthly and provides abstracts of more than 5,000 international primary and secondary source publications reporting on all aspects of the environment. Included are such fields as: management, technology, planning, law, political science, economics, geology, biology and chemistry as they relate to environmental issues. Literature covered includes periodicals, government documents, industry report, proceedings of meetings, newspaper articles, films and monographs.

Environmental Bibliography

Provides an index of periodicals in the fields of general human ecology, atmospheric studies, energy, land resources, water resources and nutrition and health.

GreenNet

Is part of the Association for Progressive Communications (APC) - a global computer network serving around 90 countries designed specifically for environment, peace and human right groups. The network contains an electronic mail system and computer conferences allowing users to assemble information from many sources and ask questions that can be seen and answered by other users watching that conference. Conferences specifically relating to the environment include environment - education, environment - general, and environment - legislation.

Volnet UK

Is a database service of information accessible by telecommunication networks. It is aimed at anyone interested in the voluntary sector and social policy, and contains information provided by Barnados, the Joseph Rowntree Fund, The National Youth Agency and the Volunteer Centre UK. It has four databases - the most relevant to environmental issues is probably Volnet which indexes and summarizes press items, journal articles, books and reports of information which would be of interest to voluntary agencies - including environmental issues. Journal titles regularly monitored for Volnet include Conservation Now!, Country Commission News and Green News. It's three other databases are concerned with social action research being undertaken in the UK and Europe, index to UK members of Parliament and overseas development information.

Manchester Host

Offers communication and information accessible via the telecommunication network, including electronic mail, fax and telex; conferences, database publishing and FIND database gateway: a database searching system giving simplified access to over 150 databases worldwide. Databases available through FIND specifically relating to the environment include the Environment Digest, Infolife and Ecobase.

pHEN

Pilot Hampshire Environment Network has been established by the Greenspace Networking Resources Project as part of a research programme looking at networking for community action in the environment. It is made up of libraries, community centres, schools, conservation and amenity groups and local authority offices who share an interest in improving the environment. Members communicate via a computer networking system, NeSy, accessible via telecommunications networks and includes information about community and local activities in Hampshire.

Environment Council' initiative on Cata-LIST

Cata-LIST is a database that enables organisations to collect, maintain and distribute their information. It's function is to collate locally useful information for statutory/voluntary sector partnerships and national or regional information can then be added to the local databases. Collaboration between Information for Action (the designers of Cata-LIST), the Environment Council, Eco Environmental Education Trust and the Shell Better British Campaign and NCVO have produced an environmental information package containing lists and profiles of 1,500 useful organisations, and information on environmental subject matter from recycling to woodland management. This is produced on a read-only disc which can then be added to local or regional databases.

Internet

Is the largest computer network in the world, accessible via the telecommunications networks to anyone with a computer. Services include electronic mail; conferences and news groups. There are hundreds of news groups and conferences covering environmental issues. Traditionally, Internet has been restricted to academics but is now slowly breaking into the commercial sector.