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ENVIRONMENTAL MANAGEMENT IN DEVON AND CORNWALL'S SMALL AND MEDIUM-SIZED ENTERPRISE SECTOR

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**ENVIRONMENTAL MANAGEMENT IN DEVON AND CORNWALL'S
SMALL AND MEDIUM-SIZED ENTERPRISE SECTOR**

By

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M.A. (Hons)

A thesis submitted to the University of Plymouth
in partial fulfilment for the degree of:

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**Environmental Management in Devon and Cornwall's Small and Medium-Sized
Enterprise Sector - By Michael Andrew Hutchinson**

Abstract

The challenge of sustainable development has become one of the most important strategic, economic and social concerns facing global society today. Although literature on environmental management theory and sustainable development philosophy has increased apace throughout the 1980s and 1990s, very few of these writings have documented the case of the small and medium-sized enterprise (SME).

The objectives of this research are: i) to determine the level of awareness and perception of environmental issues within the SME sector and to assess prevailing attitudes of owner/managers to the importance they attach to managing this aspect of their business operations; ii) to gain an understanding of the scale and nature of response to environmental issues across a broad section of SMEs; iii) to utilise the knowledge gained about awareness, attitude and organisational response to assess the relevance of the environmental management systems so far developed to and to link this to achieving sustainable development; iv) to draw upon the expertise of owner/managers and appropriate institutions to validate and, if appropriate, further refine the new and/or revised systems as necessary; v) to assess the possibilities for sustainable development within the SME sector.

The first phase of the research involves a mail survey which identifies: what the SME sector is doing to improve its environmental performance; what the general attitudes to organisational change are: and levels of awareness of various environmental issues. Phase two of the research considers in more depth the issue of practical response to environmental issues through a series of in-depth interviews concentrating particularly on reasons why companies do not have detailed strategic management plans to deal with the environment. Phase two tests the results from the in-depth interviews on a larger sample frame providing the empirical foundations for testing existing models of environmental management. Phase three of the research analyses the need for an alternative strategy for the SME sector to manage environmental concerns. Material for a new model is obtained from case study material of best practice, alternative literature and primary source information.

Results show that existing models are inappropriate for the majority of SMEs and that environmental practices are limited within the sector. Awareness of environmental issues and attitudes towards change are more positive from larger secondary sector companies. To this end the research proposes an alternative Bioregional Regeneration Model which could be tested and applied to induce local community regeneration and the development of a sustainable community based SME sector.

CHAPTER 1

INTRODUCTION

1.1 Introduction

The initial research aims were to clarify what the SME sector in the UK is doing in terms of environmental management and critically assess the need for change in: management practices; socio-economic structures; and personal attitudes to attain sustainable development.

Literature on environmental management has continued to expand throughout the 1990s. However, research on sustainable development in the UK Small and Medium Sized Enterprise Sector, (SME) has been limited (Welford and Gouldson, 1993; Hendry, 1993). This is due in part to the diverse nature of the SME sector. Environmental management systems (EMS) are generic in nature and hence incompatible with the diverse nature of the SME sector. As management systems are *per se* inappropriate to small owner managed companies the requirements of the SME sector have largely been ignored in research on environmental management. Equally, the predominance of prescriptive literature based around (EMS) BS 7750 and the European Union (EU) Environmental Management and Auditing Scheme (EMAS) has proved inappropriate to SMEs. Micro-SMEs (0-9 employees) have *a priori* particularly low levels of strategic orientation (Gibb, 1983; Perry, 1986 *et al*) limiting the effective application of prescriptive solutions based on strategic systems.

1.2 Background

Undertaken by Plymouth Business School between 1991 and 1994 in the UK, the research collates selected results from two mail surveys and case study material to argue for the development of a regional re-generation model for the SME sector. Each survey was limited in its spatial distribution, in order to increase the response rate. Typically surveys of this sort have incurred a very low response rate when covering a large area (Erdos, 1970). Devon and Cornwall was chosen as the sample

area and the research was limited to SMEs because the area is predominantly SME based (Gripaios, 1989, 1990, 1991).

With a research area as interdisciplinary as this it is necessary to clarify terminology. The definitions of Small and Medium Sized Enterprises (SMEs) often vary from author to author (Buckley, 1993). In this case the definition will be taken from the EU Observatory for SMEs (EC Observatory, 1993). Any company with under 500 employees will be deemed an SME. Other definitions include further economic criteria like turnover and ownership. However due to the sensitivity of obtaining this empirical information at the data collection stage, with the potential subsequent reduction in response rates from questionnaires, it was decided employ the EU definition.

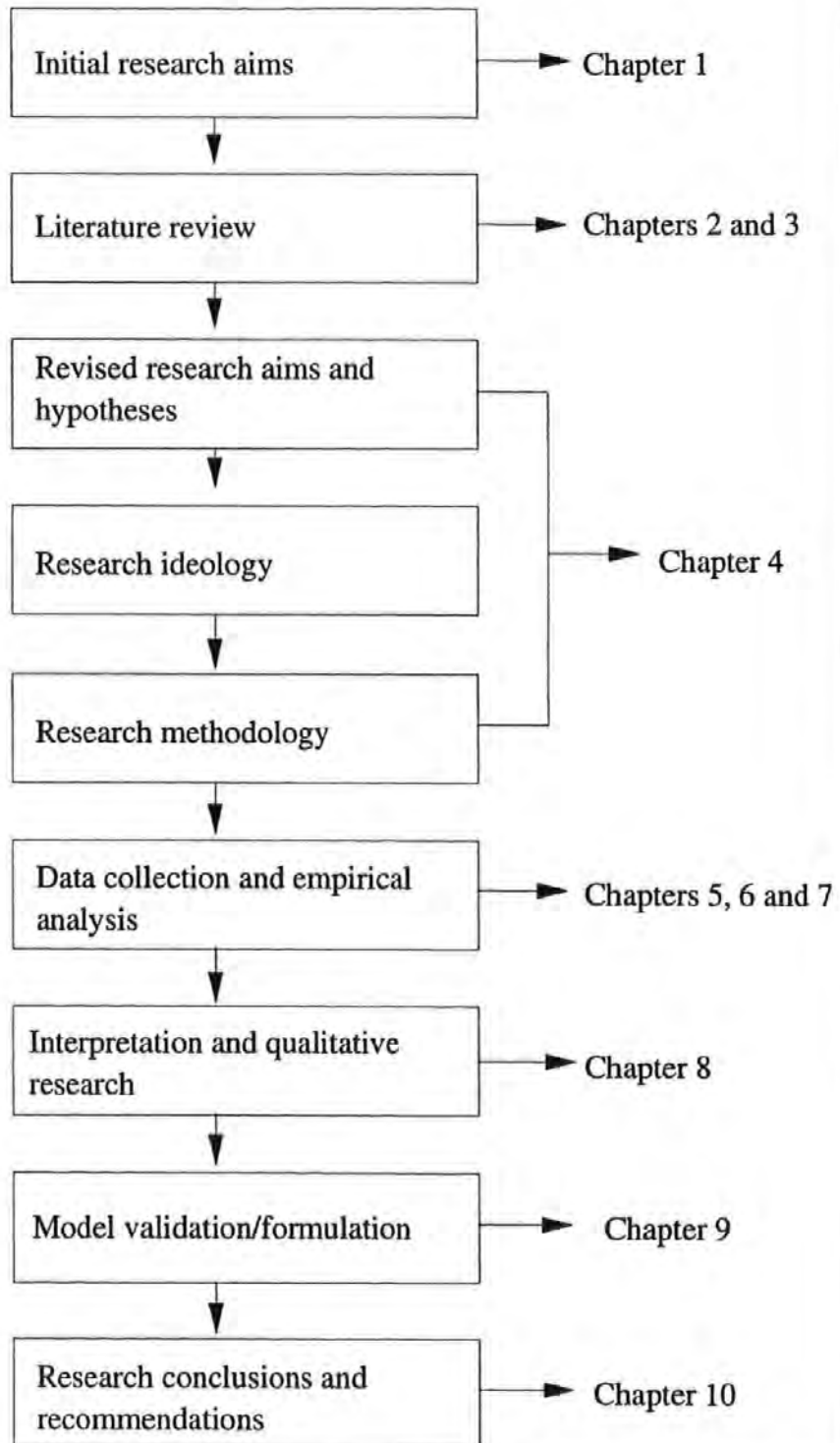
The terms *ecology* and *environment* have recently been used interchangeably within the management field. This has lead to confusion and a degree of misunderstanding. Ecology is the study of the relationships between living organisms and their environment (Collins English Dictionary, CED). The environment is the external surroundings. In relation to ecology, environment is *the external surroundings in which a plant or animal, lives which tends to influence its development and behaviour* (CED). The difference lies in the *relationship*. Ecology is an interdependent concept where humans and nature co-exist. The environment, however, pertains to a situation where there is a split between the observer and the observed. Nature and humankind are, therefore, conceptually separate. It should also be stressed that the Environmental Management and Auditing Scheme (EMAS) is also referred to as the Eco-Audit Scheme on occasions. This is because the title was changed through the regulation validation process.

Management (with regard to environmental considerations) is a controlling concept that requires a dominant decision maker or makers. Therefore it fits well with the term *environment*. External control of nature becomes *environmental management*. The term *environmental* is at times used in the more traditional industrial sense to mean a businesses external (or internal) environment. When this usage is employed it is made clear in the text which application is being used.

Green is defined as a set of ideas based upon ecological thought (Cooper T. 1990). There is, however, a distinction to be made within this term as there are varying levels of *green*. The two terms usually used are *light* and *dark* green. These terms have developed from an original distinction drawn by Arne Naess between *shallow environmentalism* (light green) and *deep ecology* (dark green), (Naess, 1973). This distinction is discussed by Mellor:

Shallow environmentalism is a human-orientated concern with immediate environmental issues, such as pollution or resource depletion, which aims to reconstruct the relationship between human society and nature in a way that would ensure human survival. Against this Naess sees deep ecology as a nature-orientated desire to adjust human life in such a way that its destructive impact on the planet ceases. Deep ecology celebrates the complexity and diversity of the natural world for its own sake, not as something useful or even necessary for humanity (Mellor, 1992 pp 83-84)

Sustainable development was defined as "meeting the needs of the present generation without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987). The term sustainable development is frequently used to refer to financial or economically sustainable development. Within the context of this research, however, sustainable development will relate to environmental sustainability unless stated otherwise.

Figure 1.1**RESEARCH PLAN**

1.3. Research Plan (see Figure 1.1.)

Chapter 1 introduces the research area, delineates the research aims and clarifies the general research design (Figure 1.1). Chapter 2 covers the evolution of environmental philosophy pre-1980, establishing an understanding of the roots of contemporary environmental thought. Chapter 3 covers all of the relevant literature post-1980. The distinction in history was made due to the marked increase in environmental management literature in the 1980s. Chapter 3 considers both economic and environmental management literature accumulating in a section on alternative holistic solutions to the problem of sustainable development. Chapters 2 and 3 enable the initial research aims outlined in the introduction to be revised and expanded. Chapter 4 delineates the revised research aims and the subsequent hypotheses. It also outlines the research ideology and covers the methodology used to test these hypotheses.

Chapter 5 presents the results of the first mail survey and issues of environmental perceptions, awareness and practice are explored. First, the chapter looks at attitudes towards environmental issues and compares the differences between industrial sectors, size and type of company in response. Second, it clarifies levels of awareness of environmental regulation and compares industrial sector, company size and type response. Third, levels of operational and strategic environmental management are observed. Variance of response is tested between industrial sectors and company types.

Chapter 6 clarifies some of the issues arising from the first mail survey and explores new questions of environmental perception through the concept of *action learning* (Morgan, 1993). Action learning is a practical research technique which allows the interviewer to loosely structure the interview whilst concurrently extracting primary source information from the interviewee. This chapter explains company response,

attitudes, awareness and policy in the first survey. It also gauges opinion on the prescribed environmental management systems solutions and their alternatives.

Chapter 7 develops the questions and ideas from the in-depth interviews, empirically testing their validity with a larger sample size. This is achieved through the distribution of a second mail survey which covers the applicability of strategic environmental management theory to the SME sector. Chapter 7 also covers issues of present and future support for the SME sector. Chapter 8 summarises the empirical findings of the research and considers the requirements for alternatives to present theory on the strength of the research findings. Case study material is presented in Chapter 8 as one variable of the alternative model which is presented in Chapter 9. The model devised also includes inputs from the literature as well as alternative primary source information. Chapter 10 concludes the research by delineating future research.

CHAPTER 2

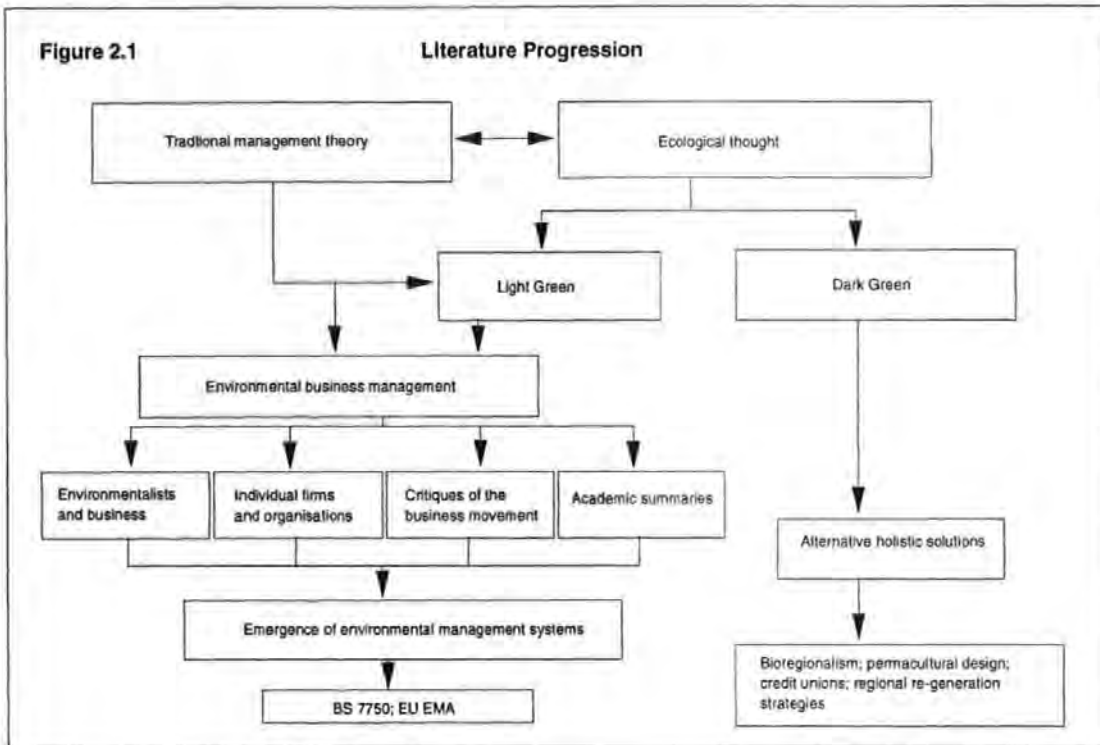
THE ROOTS OF ECOLOGICAL THOUGHT

2.1. Literature Progression

The purpose of Chapters 2 and 3 are to trace the roots of environmental management and the greening of business literature. The review is chronological in form and is drawn from a number of diverse subject areas. Two main strands of literature emerge (Figure 2.1). First, ecologically based writings which include business or industry as just one variable. Second, business literature which includes ecological or environmental issues as just one external variable in the business environment.

These two paths do, however, subdivide again: ecological literature emerges from at least as far back as the deep green thought of the 17th century socio-religious sect the Diggers and their political wing, the Levellers. The more light green ecological literature which is concerned with resource depletion, pollution and industrial expansion is epitomised by Schumacher (1973). Business literature on the environment also falls into two subsections. First a section of the literature is concerned with awareness of the ecological problem. A second body of work embraces human superiority and natural domination over nature (Bacon, 1561-1626; O'Riordan, 1977). Subsections are not, however, mutually exclusive. Many concepts are equally acceptable in all subsections of literature. This is inevitable when dealing with such a cross-disciplinary subject area as the environment. Basic management theory and characteristics of the Small and Medium-Sized Enterprise (SME) will also be considered to place the research into context.

The final group forms a category of its own, being neither purely ecological nor business oriented but both. This literature, forming the final section of Chapter 3, relates to alternative, holistic solutions. The majority of literature reviewed post-1989 (the year Margaret Thatcher influenced business thought through her *Royal Society* speech) in the U.K. fits in to this category.



According to Roberts (1992), however, this too can be subdivided further into four categories with distinctions being made between: a) work undertaken by environmentalists and business (Winter, 1988; Elkington, Knight and Hailes, 1991); b) individual firms and business organisations (World Industry Conference on Environmental Management, WICEM, 1984; Confederation of British Industry, CBI, 1989); c) critiques of the green business movement (Dauncey, 1988; Irvine, 1989), and d) academic summaries of business environment studies (Cope and James, 1990). Much of this work is in its embryonic stage with little or no work challenging the legitimacy of the connection between business operations and environmental repercussions, with the exception of Nordhaus (1990a and 1990b). More co-operatively and holistically oriented alternative approaches to sustainable development are also reviewed.

2.2. Pre-1900

There has always been a relationship between humankind and the environment, but it is the nature of the relationship that is pertinent. The Bible, with its ambiguity of teaching concerning people's role on earth is the earliest text relevant to this review. Depending on interpretation, the Old Testament offered humankind dominion over or domination of nature. This is central to the contemporary business/environment debate in relation to a business's freedom to use (or dominate) nature in its own way (Cooper T. 1990).

Hippocrates in the 5th Century BC, arguably began the environmental determinism debate. He suggested that a deterministic and causal relationship existed between nature and man (Glacken 1967). This philosophical line of thought became pre-eminent in the nineteenth century (Carl Ritter amongst others developed it further) and is still cited today. Environmental determinism is central to the understanding of contemporary environmental business issues as it creates a split between man and nature thus requiring a need for some kind of causal and deterministic relationship. Without this split it could be argued that most of our environmental problems today would not exist. However, this would have to be at the expense of modern industrial development. The Aboriginal society is an example of how people can live in harmony with the environment without forging a split between the two.

Other writers have traced contemporary philosophy, action and thought back to the twelfth and thirteenth centuries to Aristotelian philosophy and Judaeo-Christian theology. White (1967), Lovejoy (1974) and Mills (1982), for example, discuss how certain theological issues in history have influenced humankind's actions. There are two opposing arguments here, one suggesting theological teaching and Christianity in particular, have given people a "free-holding reign" over their environment and the second saying Christian teaching preaches stewardship over nature. Dominion not

Domination. This basic disagreement is at the heart of the environmental debate and has particular significance to business (Cooper T. 1990). The argument is that, attitudes towards environmental issues are determined by perceptions of the human relationship with the environment. One can relate this to the famous Margaret Thatcher speech at the Conservative Party Conference in 1988 when she talked about nobody having a free holding reign on the planet. This in turn was the catalyst for the Pearce Report (1989), the government's ensuing document "This Common Inheritance" and the Environmental Protection Act of 1990, which has had a significant impact on large U.K. businesses with respect to their environmental policies.

There is little doubt that the application of new techniques in science and technology are at the root of most global environmental problems. White (1967) suggests that science actually developed in the eighth and twelfth centuries, far earlier than is customarily accepted and believes that it was only when this science was married with technology that the scientific revolution of the sixteenth and seventeenth centuries was allowed to take place with its consequential implications for the environment.

However, it is also important to highlight the main point of the pre-scientific era discussed at length by Pepper (1984). In that period humankind lived as part of the universe and did not seek to dominate it. Medieval cosmology is very much holistic in nature putting what we now call the 'environment' on a pedestal. It was more of a modern day humanistic, qualitative approach as reflected in the thoughts of the 17th Century Diggers and Levellers and the present day "Deep Greens" (Devall and Sessions, 1985; Naess, 1973, 1990).

According to Pepper (1984) a change occurred in 1543. Following on from the work of Copernicus, the scientific revolution lasted until 1687 and the era of Issac Newton's Mathematical Principles of Natural Philosophy. Up to this point humankind may

have had the will to dominate but did not have the capabilities. Writings were mostly subjective analyses of philosophical bias which could easily be (and regularly were) challenged:

In 1553, Copernicus suggested a simple revision to the cosmography whereby the position of the sun and the moon were reversed, but the implications of this were so enormous that it needed 150 years to construct the new cosmography that was required. (Pepper, 1984, p47).

A framework for understanding the emerging dichotomy of thought between philosophical ecological writing and business ecology literature, (possibly stemming from this point in history), could be O'Riordan's (1977) dualistic separation of environmentalists into 'Ecocentrics' and 'Technocentrics'. He distinguishes between technologically optimistic environmentalists, technocentrics, who believe that technology will always provide solutions to environmental problems, and ecocentrics who mix ecology with the non-scientific philosophy of Romanticism. An example often cited by technocentrics, is how the depletion of natural reserves of nitrate in Chile was combated by the development of substitute synthetic nitrate. Ecocentrics believe that one cannot blame the progressive degradation of the biosphere on technical failings in the implementation of our socio-economic policies. They believe it is the policies themselves that are at the root of the problem. They also question the acceptance and normality of the existing paradigms of science and economics, blaming this dogma for the present global economic problems and ecological crises (Goldsmith 1992).

O'Riordan (1977) and Pepper (1984) discuss the genesis of what they believe this separation to be. The revision suggested by Copernicus is seen as the root of the technocentric movement as it questioned the existing cosmology and eventually led to the blossoming of what we now call the root of classical science. According to Pepper (1984, p46), these principles are sometimes known as the Newtonian Paradigm.

Key pieces of work in the evolution of technocentric thought include Johannes Kepler (1571-1630), the development of mathematical reasoning, by Galileo Galilei (1564-1642) and Rene Descartes' (1596-1650) radical geometric observations of matter being no more than extension in space. Descartes also introduced the dualistic concept in modern thought between mind and matter (which has become known as Cartesian Dualism). This proved to be fundamental in environmental thought progressions as it forged a split between man and nature. Nature was regarded as being composed of objects metaphysically separated from man. Man was of primary importance and objectively based. Nature and the mind were of secondary importance, being subjectively based and consequentially analysed. Although this 'split' was created in theory it was accepted that the action of either man or nature, mind or matter would have a significant impact on each other, they were not mutually exclusive. This is in essence an extension of the conceptual analysis of environmental determinism raised by Hippocrates.

Following Descartes, Francis Bacon (1561-1626) asserted that science was equitable with human progress and that scientific knowledge meant power over nature. Bacon used deductive reasoning to argue his case whereas Descartes was inductive in his approach. Schumacher (1973) suggested this approach, not only to scientific thought but to all forms of analysis, leads to knowledge becoming divorced from values.

With the progression of science, the concept of objectivity (first suggested by Galileo), flourished. This was to become the central focus of the technocentrics in the environmental movement. Only if something could be proved objectively and scientifically could it be accepted as reasonable (a point later to be made by Schumacher, 1973). Yet it is interesting to note that as Prior (1954) says of Bacon in Bacon's Man of Science scientists were in Bacon's view "democratic, compassionate, humble, radical, socially aware, philanthropic, honest, unselfish, serene, noble, dedicated, priestly, good, cosmopolitan and apolitical". There is, however, one notable exception to this list of epithets: objective. In fact the majority of the list are subjective in nature. If this was deliberate or not is unclear but what is clear is that science has hardly been objective in history and continues to this day to be highly selective (Kuhn, 1970; Polanyi, 1978). Otherwise it is difficult to explain the fact that both Technocentrics and Ecocentrics, to use O'Riordan's neologisms, both "use science and scientific method to investigate nature but they come to very different conclusions about it" (Pepper 1984, p116). This refers to the technocentrics use of science in the Baconian creed to dominate and control nature and in the ecocentric language from their systems perspectives. According to Merchant (1980), the Judeo-Christian God-given right of domination of nature was embodied in modern science superseding the previous organic view of nature that restrained exploitation (Mellor, 1992). One of the first exponents of the change was Bacon.

Bramwell (1989), in her recent work Ecology in the 20th Century, traces the origins of the Ecology movement back to the 1880's and Ernst Haeckel (1834-1919) and his Generelle Morphologie (1866). Haeckel highlights one of the problems of using O'Riordan's framework as he was an holistic scientist. Bramwell talks of Haeckel coining the phrase "Oekologie", meaning "the science of relations between organisms and their environment". The word ecology comes from the Greek words, *Oikos* and *Logos* meaning, broadly speaking, looking after the home (Oikos). Bramwell suggests that it is only when this holistic scientific method is coupled with the new "energy

economics" of the early 1970's that ecology gained the strength of an independent discipline. Under O'Riordan's framework we have been able to see some of the main points that lead to the development of the scientific side of the environmental debate. O'Riordan's framework provides a basis for further analysis of the beginnings of ecocentric thought.

Before considering ecocentricism it is interesting to note that neither Pepper or Bramwell in their respective analyses of the environmental movement mention Adam Smith. Adam Smith's 'invisible hand' lead to the development of what we know today as rational economic man, or *Homo Economicus*. This abstract animal underwrites the major concepts of neo-classical economics (marginal utility and price theory) and has been a fundamental in the evolution of our present economic system. It has been argued that it is the preponderance of *Homo Economicus* that has designed an economic system bereft of morality and social justice (Daly and Cobb, 1989). Smith also said, however, that "the land constitutes by far the greatest, the most important, and the most durable part of the wealth of every extensive country" (Smith, 1776). His influence on the environmental sphere is so fundamental it is curious he is not mentioned in this context. Historians of economic thought have, however, been equally selective in their reviews of leading thinkers. As Daly (1973, pp12-13) has shown, 19th Century economists like J.S. Mill provided early warnings of the unsustainability of unbridled industrialism.

A number of writers have turned to the middle/late period of the Romantic movement after the Enlightenment to explain the present day philosophies of the Ecocentric environmentalists. Russell (1946) describes the Romantic oriented man in at least two ways. Firstly he is imaginative, passionate and unoppressed in nature and consequently:

The type of man encouraged by Romanticism

*is violent and anti-social, an anarchic rebel
or a conquering tyrant.*

(Russell 1946, p656)

Quite how the two depictions correlate is open for debate, but it suggests that the basis of the Ecocentric argument (if we are to take O'Riordan's premise) is at least in one sense, anarchic in nature. This fits in well with geo-anarchists like Kropotkin (1842-1921), one of the most influential philosophers of the time, whose arguments are still cited today (Naess, 1990) by radical elements of the environmental movement (Kropotkin, 1955).

Lovejoy (1974) takes a less aggressive stance, talking more of the uniqueness and diversity of the Romantics. He takes the analogy of a chain. If one link breaks all is disconnected like a series circuit in physics. This and his connections with medieval cosmology make Lovejoy's arguments fit in well with O'Riordan's ecocentric man. The Romantic period is thus the re-launch of ancient ideals of morality and idiography which are still the fundamental nucleus of deep green thought today.

Pepper, too, makes these links:

*Romanticism was and is the antithesis of
everything scientific, logical behaviour, order,
authority. Indeed it has been regarded as a
sweeping revolt against rationalism and the
Enlightenment.* (Pepper 1984, p77)

He also suggests that this free will of spirit was annexed to more securely scientifically based work by Darwin and Malthus, providing the scientific support for some modern ecocentrics. Ironically, the eco-fascists have also adopted both Malthusian and Darwinian philosophy as heavyweight support for their beliefs that the

growth of global population is the central problem and that there are only so many resources to go around (developed later by Hardin, 1974).

With Malthus's quantifiable results and Darwin's revolutionary text The Origin of Species (1859), the ecocentric school was provided with a systems view of nature, inextricably linking humankind with nature. However, Darwin's work also essentially pitted man against nature, introducing the concept of survival of the fittest which inevitably means there must be a loser. Both Darwin and Malthus were extremely influential 19th century figures whose work made a lasting impression on the environmental debate. The work of Darwin in particular made the final link in the full circle back to Hippocrates in the 5th century BC and the concept of Environmental Determinism.

So, using O'Riordan's framework one could suggest that the more technical, practical and light green business side literature of the late 20th century is mainly technocentric in origin and that the deeper green more structurally philosophical literature of this period is ecocentric.

2.3. 1900-1980

The relationship between science, technological development and environmental imbalance has already been made (Merchant, 1980 *et al*) and many see the industrial revolution as the beginning of its manifestation (Schumacher, 1973; Porritt, 1984; Mellor, 1992). It is from this point that the literature becomes far more specific in nature. Gradually environmental literature began to separate out into specific subject areas, such as economics, philosophy, sociology and business management. They are all important to the development of environmental business literature, in differing degrees.

Much of the early worker, producer and consumer, co-operative writings are directly relevant to the environmental debate in an historical perspective (Webb, in Coates ed. 1976; Huddleston, 1937; Bonner, 1961; Bradley and Gelb, 1983; Stephen, 1984; Bayley and Parnell (eds) 1987; Bartlett, 1992 *et al*). The impact of the co-operative movement on the U.K. economy, however, has been limited to date. Beatrice Webb, at the turn of the century, suggested that it would be difficult for "islands of socialism to survive in a sea of capitalism" (in Coates 1976). This has been proved correct, in that worker and producer co-operatives are acceptable mainly as a means to reduce the unemployment figures. "The development of co-ops and the introduction of various training schemes are no substitute for the creation of *decent, permanent* jobs in Britain" (emphasis added, GMBATU 1986). This line of thought has reduced the impact of the co-operative movement in the U.K. but does not render it insignificant. The co-operative certainly has a significant role in the localised development concepts of bioregionalism and permacultural design. Two concepts of regional economic development that will be considered in detail later.

Jevons (1905), Gray (1914) and Hotelling (1931) examined the concept of exhaustibility of resources in economic terms and Pigou (1932) discussed quality of life, post industrial revolution. However, it was Galbraith (1958) who provided an early critique of the morality of development in terms of the human environment. He crystallised the dichotomy that had previously existed, but had not really been articulated, between the rich and poor societies. There is little doubt that this text had a significant influence on the direction of literal work to follow. It debatably challenges Silent Spring (Carson, 1962) as the base text of contemporary environmental literature.

The influence of Silent Spring is unparalleled in the history of environmental business literature. It popularised the environmental cause for the first time with its discussion of the effects of DDT (the chemical fertiliser) on the human food chain. It resurrected

the smouldering embers of the holistic, scientific debate but was far more influential than previous attempts to do this because of the nature of the content. This was a contentious public issue and therefore received far more publicity than much of the abstract theoretical work that had preceded it. Silent Spring contains a rigorous theoretical analysis. One can make a comparison here with the boom of green consumerism in the late 1980's and general interest in environmental issues after the high publicity of the effects of industry on the ozone layer, the Greenhouse effect, and the destruction of the tropical rainforests in the 1980s. High media profile based primarily on self-interest leads to a significant increase in the interest of the general public towards environmental concerns.

Pepper (1984) locates four periods in history when the environmental debate in general has been high on the public agenda: the 1890s, 1920s the late 1950s/early 1960s and each decade after the mid 1970s. These were all times following periods of sustained economic growth. They were consequently (according to Pepper) "well off" reactions to the existing materialist values. The question of the ability of the individual and indeed businesses to be environmentally friendly because of the implied 'cost of green', began to be discussed rather later (Elkington and Burke, 1989).

Between Carson and the next bench mark of the Limits to Growth, (The Club of Rome, 1972), there were a number of notable texts written, all with different contents and levels of significance. Boulding (1966) began to address the concept of environmental cost and laid the foundations for the search for alternative indicators to Gross National Product (GNP) and the accounting for the environment debate of the late 20th century (Anderson 1991). Mately (1966) made a connection between Marxism and the geographical environment which influenced work later done by Fry (1975) and Burgess (1978) on Marxism and the environment. Also Mishan (1969) addressed the concept of the cost and benefits of economic growth following on from Boulding (1966).

Perhaps the most well known work of this intermediate period was The Population Bomb, Ehrlich (1968). This text popularised further the ecological cause, appealing not only to the moral green converts of the 1960s but also to the right wing global conservatives and neo-Malthusians. Like Hardin (1974), Ehrlich suggested a global population problem was not just a third world problem but a Western one as well. Population growth would place intolerable strains on the Western environment and the developing world threatening the standard of living of the west. His basic message was that too many people were chasing too little food and there was a need for a drastic reduction in the human population worldwide. If nothing else this book highlighted the concept of finite resources.

With work by Commoner (1967) addressing the idea of free use of the environment, the late 1960s and early 1970s provided a strong platform to lead in to the extremely important year of 1972. Earlier it was suggested that there are two paths of literature leading to the understanding of environmental business, one of them being business orientated. The majority of work reviewed so far has been ecologically based, but 1972 saw the publishing of an influential text that included a significant input from the business fraternity. It was commissioned by The Club of Rome, a select group of concerned individuals whose only common interest was in the environment. The group of scientists, academics, businessmen, economists, humanists and international civil servants came from an initial meeting in the Accademia dei Lincei in Rome in 1968 to form the Club of Rome. The Club commissioned the Massachusetts Institute of Technology (MIT) in 1970, to produce a report on The Predicament of Mankind. Their initial response was ambitious, but they did signal the first serious concerns of international business regarding their role in the environmental equation.

The work MIT came up with was Limits to Growth (1972) a neo-Malthusian observation of the exponential growth of mankind and its activities. Pepper suggested

in his 1984 work that Malthus gave the ecocentrics part of their scientific credibility. However the work of certain neo-Malthusians worried about the total carrying capacity of the globe comes very close to what some have called eco-fascism. This is not to suggest that the Club of Rome were eco-fascists, although one of their primary conclusions in the early 1970s was that technical solutions delay rather than extinguish the possibility of environmental disaster.

The Club of Rome asked MIT to run computer projections of future ecological developments in five areas: human population; agricultural production; natural resources; industrial production; and pollution. The rather apocalyptic conclusions acted as a catalyst for the emerging green movement and sounded a firm warning to industrialists (the majority of them being at this stage unaware of the environmental tide) about the practical aspects of environmental management.

Business environmental awareness evolved rapidly, particularly among the larger global companies with the resources to invest in R&D to extrapolate future gains and understand the concept of efficiency and the consequential cost savings. This is due in part to the influence of the landmark article which set the environmental debate firmly in the public domain. A Blueprint For Survival [Goldsmith (ed). 1972] by the editorial board of The Ecologist, largely ignored by the business community, presented an ecocentric, global survival kit. Developed in part from Goldsmith's earlier work (Goldsmith, 1971) and other influential contributors of the time (Jarret and Mishan, 1969; Graham F. 1970), 'Blueprint' included a radical revision of the economic order of the western world. The philosophy of the work was not in keeping with contemporary industrial practice. It entailed a wholesale revision of the relationship between business and the environment, providing an early prescriptive solution based on the causes of environmental impacts rather than consideration of means to alleviate the symptoms.

Up to this point industry had regarded the environment as a free resource. The Blueprint For Survival challenged this and consequentially challenged and threw down the gauntlet to the business sector. The repercussions of this were immense and have culminated in the new economic movement of today (Ekins and Carcasson, 1982; Ekins, 1986 and 1992; Daly and Cobb, 1989; Anderson, 1991; Lang and Hines *et al*). The 'Blueprint' looks in part at the concept of GNP (quoting from Boulding, 1971), demonstrating that the use of the environment is not reflected as a cost to business, while the levels of fines for pollution of externalities and policing of them remain inadequate. It also considers how increased consumption of raw materials and levels of pollution are reflected as additional to GNP. If someone is injured in a road accident, or taken to hospital with asthmatic breathing problems due to the combination of low climatic pressure and vehicle emissions, the costs of care will *add* to the nation's National Product through the present national accounting procedures. According to the Blueprint for Survival "GNP...provides the most misleading indication of our well-being" (Goldsmith ed. 1972). The 'Blueprint' considers all aspects of environmental degeneration, including the correlation between environmental degradation and social disorder. The work takes the neo-Malthusian stance that further increases in population can only exacerbate social pressures and put further strains on potential economic growth. These ideas are covered extensively by Ehrlich (1968 and 1971).

In 1973 E.F.Schumacher produced Small is Beautiful. Although he is often misinterpreted as proposing 'small' to the exclusion of all, the influence of this text on contemporary environmental thought is immeasurable. Schumacher did not see small scale industrial development as a panacea:

*There is no single answer. For his different
purposes man needs many different structures,
both small ones and large ones, some exclusive,*

some comprehensive.

(Schumacher 1973, p57).

Schumacher's work may have been so widely acknowledged because of its more positive approach to the environmental problems of the times. It is certainly not in the 'doom and gloom' category and does not challenge the concept of business *per se* since it offers solutions and not just criticisms, it was, therefore, more immediate and acceptable than much of the previous influential work [Goldsmith (ed.) 1972].

Schumacher furthered the economic angle of the environmental debate as he discussed economics "As if People Mattered", (the sub-title to *Small is Beautiful*). This ethical dimension, so evidently vacant within neo-classical economics, has become one of the central variables of the new economic movement of today. Schumacher avoids alienation of subjects and highlights their interrelationship. However he finds Christianity (or at least the institutionalisation of the religion) unsatisfactory for his analysis of economic utopia, and turns to Buddhist economics to fill the gaps. He concludes that what has been missing from the Western social and economic system and has consequently lead to (amongst other things) environmental disequilibrium, is the presence of moral values. Schumacher argues that large businesses and their android treatment of employees lend support to this advocacy of the decentralisation of economic power. This, he argues, would not only give the *land* back to the tiller but also return *economic power* and *self determination* to the citizen.

One of the first distinctions Schumacher makes is that in Buddhist societies *work* and *leisure* are inter-linked, making the holistic experience a social experience. Over-use of environmental resources, therefore, jeopardise the existence of leisure. Hence, over-consumption of natural resources is seen as barbaric. In the west increased consumption is regarded as synonymous with an increased standard of living, a totally opposite view that obviously has immense consequences for the environment. Our

present system of economics measures values in purely monetary terms. Because of this, according to Schumacher, one "Measures the immeasurable" (Schumacher, 1973, p42) with reference to the environment. There are plenty of contradictory arguments about standards of living and economies of scale that could justify large scale economic organisation. What Schumacher argues, however, is that this way of life will inevitably be self-defeating. A comparison with Marxist doctrine could be made in relation to the self-destructing nature of capitalism.

Parson's (1977), Bramwell (1989), Schmidt (1971) and numerous other writers on Marx and ecology or the environment (Mately, 1966; Fry, 1975; Burgess, 1978; Marx and Engles, 1984) make the rather obvious links between capitalist over production and the consequences on the environment, whilst not really offering too many well formulated alternatives. It does seem that the link between Marxism and the environmental debate is a little tenuous, an attempt to fit unrelated bits of reference together. However the business practices and the consequential environmental disasters of the former Soviet Union cannot be taken as examples of how Marxism regards the environment. Nicaragua, in the mid 1980s would be a far more accurate case study to take, bereft of any totalitarian order. It is also important to point out that with the apparent decline in the popularity of Marxism and the planned economy, the freer market is not exactly providing environmental protection either. Elements of the planned economy may yet still be required to fill the ethical gap in the free market system. Indeed there is an ironic contradiction in the arguments of orthodox economic theory with respect to the environment. On the one hand the suggestion is that the price mechanism can regulate for social concerns and the environment and on the other there is a requirement for intervention to protect the environment in the form of taxation and subsidy. Theory and reality seem to be at odds on this issue (Mulberg, 1993; Hutton, 1994).

1972 certainly proved to be an extremely important year in environmental terms not only with the publication of Blueprint for Survival and Limits to Growth, but also with the first United Nations (U.N.) conference on the environment in Stockholm. Daly (1973) edited a collection of mostly philosophical work that includes essays from many of the most influential ecologists of the time. The theme is that economic growth for the sake of economic growth is destructive and unsustainable. Subject matter ranges from physics to theology showing the boundary crossing nature of the environment as an academic subject. The book's main emphasis is, however, on political economy. Work includes, Schumacher, Cloud, Ehrlich, Boulding, Lewis and Hardin. Hardin's (1974) contribution on the "Tragedy of the Commons" has had a particularly lasting influence as he attempts to explain the problems of cumulative irresponsibility on common land. He suggests, through an agricultural analogy, that a farmer may increase his individual utility by adding one further animal to his herd. He will not necessarily pay the full price of the strain increased grazing would impose on the land. This is because everybody shares in the reduced fertility of the common land. If all farmers increase their herds by the same amount, increasing diminishing returns from the land sets in, so removing the source of sustaining wealth for all (also see Ecologist Vol. 22 No4, 1992).

This 'Tragedy' has become central to a section of the green movement's philosophy as it explains very simply the risk of over using the earth's finite resource stores. In fact Hardin (1974) also indirectly showed how the issue of the environment so easily crosses the political divides, with his '*Lifeboat Ethic*' concept. This has been adopted by many right wing ecologists and politicians as an argument against offering aid to starving nations, as there are only a limited amount of resources and food to go around. Such neo-Malthusian arguments, distract from the real issues of over-exploitation by western industry (Goldsmith, 1992 *et al*).

1974 in fact not only saw Hardin's work published, but also the first Conference on Environmental Management Systems (EMS) held by the International Chamber of Commerce (ICC). This was a positive response from, what Roome (1992) would later call, the '*Leading Edge*' companies, to the demands of the increasingly influential, environmental movement and the U.N. Stockholm conference. It also proved to be an important watershed with business beginning to realise the threat of the environment as an issue and the possibility of competitive advantage to be gained from it. However it was on the whole the larger companies who could afford to plan proactively.

As the 1970s toppled into recession, business interest rather tailed off but academic work continued with political explanations, theories on the recession and links to the environment. After all it has been argued that oil (a limited natural resource) was central to the recessionary decline of the 1970s (Callenbach, 1978). Literature on the crisis of capitalism and possible alternatives began to emerge once again (Stretton, 1978). The re-emergence of Marxist literature was also prominent, as it always has been in times of capitalist recession (Burgess, 1978).

In 1979, Lovelock developed the concept of the earth as a self regulatory mechanism in the form of the Gaia hypothesis. This hypothesis has become central to many New Age ecologists' work as it personifies the earth as a goddess (Gaia) and explains how the earth could require the eradication of the human species to guarantee its continued existence. Most ecologists have been influenced by this work, from Porritt (1984) to Goldsmith (1992).

With Willy Brandt's report to the U.N. North/South Divide (Brandt, 1980) on the dichotomy of lifestyles and environments, and population problems, the West came to regard global population issues as not just somebody else's problem, taking a neo-Malthusians stance. Preservation of the environment in the south was as much a

northern problem as it was for the indigenous populations. The early 1980s generated, in the main, pessimistic ecological literature. It was educative and informative, but lacked direct solutions, preferring to dwell on description of the symptoms of pending ecological disaster and socio-political explanations for these states of affairs (Schnaibergs, 1980; Bookchin, 1980). On the positive side, the literature was educative and diffused information regarding the 'impending ecological crisis'. Works by McRobie (1981) and Goldsmith and Hildyard (1986) are amongst the more positive texts of the early to mid-1980s suggesting clear human response to the, "Case of the environmental impasse" (Allissa, 1991). It is to this response that we now turn with a review of relevant management texts with relation to the environment.

CHAPTER 3

THE BUSINESS-ENVIRONMENT

PERSPECTIVE

3.1 Environmental Management

Although contributions on the business environment side have been minimal until the 1980s, environmental management is an age old phenomena. Early Nomads and Settlers understood the concept of over-exploitation of the land, the basis of environmental management. The concept appears in the context of business terminology in Beale (1980), setting out the principles of business environmental management, on strategic and operational levels. As Beale aptly comments:

*Environmental management does not mean,
management of the environment. It does mean
management of activities within environmentally
tolerable limits.*

(Beale, 1980)

Beale explains why global industry responded so slowly to the U.N. call in 1972 and to the obvious signs from nature:

*There is almost a complete lack of organised
material related to the definition and
practicabilities of fashioning a coherent
environmental decision making framework.*

(Beale, 1980)

To a certain extent this is still the case today, although since Beale (1980) and Winter (1988), in particular, this situation is changing, with the gaps being slowly filled. According to Beale (1980) four pressurising forces, *Technical, Legislative, Consumer* and

Administrative structures have their impact upon business. Subsequently business literature has become interested in the environment as an issue.

The early and mid-1980s may not have seen too much environmentally concerned literature written that was directly applicable to businesses, but it did see the beginnings of recognition of the environment by the CBI. Also, in the USA the 1980s saw a huge increase in environmental legislation following the establishment of their Environmental Protection Agency (EPA) in the 1970s. This forced business to assess its environmental performance and to change certain environmental practices or face gaol sentences or fines. Managing directors are now directly responsible for their businesses environmental performance and gaol sentences of up to five years have been served.

In the U.K. regulation of business was limited to the Control of Pollution Act (1974) until the present day Environmental Protection Act (EPA, 1990). Neither of the acts has been rigorously enforced. Endorsements by influential figures like Margaret Thatcher in the late 1980's had a profound effect in increasing awareness in industry and so providing the framework for the more applied literature that followed. Porritt (1984) and Seymour (1987) certainly had their influences on the political and consequently business agenda. In Britain, however, there was one piece of literature and one political event in the 1980s that finally encouraged writers from academia and business to write specifically about U.K. business and the environment. First, Elkington and Hailes (1987) informed the public on environmentally destructive and friendly products in the U.K. Second the success of the Green Party in the 1988 European elections (where they won 15% of the vote) had significant implications. There were a number of political reasons for this success, which has proved not to be a permanent electoral swing. However, it made politicians of all persuasions realise that environmental issues were now major issues politically and that policy statements and new legislative promises were now required.

The effect on business was remarkable. From this point on we saw a huge increase in the amount of literature that was written directly addressing the practical problems that faced business and the solutions that they could employ. From business advice guides (Bic, 1991; Ralston/Church, 1991; Davis, J. 1991) to specific environmental management systems (Winter, 1988; Roome, 1992; Rickmann, 1992; Welford and Gouldson, 1993) the literature rapidly attempted to satisfy both consumer and producer.

Although the work of Elkington and Hailes (1988) had an indirect influence on businesses, making them more aware of the green consumer, the text was not written specifically for business application. This may have been a superb piece of marketing in itself, since Elkington followed it up with a book co-written by Burke (1989). Aimed at business people who were already committed in some way to the future importance the environment would play in business, this was a 'solid text book', full of concepts and philosophies that are the foundations of environmental philosophy in business:

*Most excellent companies now include
environmental quality objectives among
their core values.*

(Elkington, 1989, p16)

Elkington was influenced by a number of contemporary texts. The Winter Model (1988) is based on the Integrated System of Environmental Business Management, forming a practical guide to businesses management of the environment. It is not really an EMS, in fact it is more operational than strategic in nature. However, it does pose strategic questions, e.g. why is environmental management necessary? The Winter Model itself is more of a check-list than a model, developed in a live trading company. It covers all the

main aspects of management, (corporate objectives, worker motivation and training, materials management, production technology, waste disposal, building, international relations etc) and is geared to a planned and gradual implementation process in companies. It is better than most of the 'Guides' although suffering somewhat from vagueness, the "useful addresses" section is particularly useful.

Emerging alongside the business guides of the 1980s came the development of what is now being called 'new economics' (Daly and Cobb, 1989; Anderson, 1991; Hines and Lang, 1993 *et al*). Although much of the content of this school is not new the critique gained in strength as it supported the environmental movement of the 1980s. The distinction between new economics and the more traditional environmental economics seems to stem from the requirement within new economics to develop an alternative measurement for the environment other than one based on financial yardsticks.

On the one hand, Mulberg suggests, the price mechanism is viewed as the ideal regulator within the capitalist system and on the other taxation and subsidies are required to "protect" the environment. With this intervention comes an attached recognition that the capitalist economy is not an untouchable. This therefore requires subjective intervention. As soon as this decision has been made the artificial bubble of objectivity attached to the market has been burst. Vested interests become the motivating factor. Hence the Austrian New Right (a school of economics from the turn of the century) argues that the only truly efficient way of preserving the environment is through allowing prices to regulate ecological considerations (Mulberg, 1994).

At the moment the environment can only be valued purely in financial terms. There is no intrinsic value attached to the environment. In orthodox economic terms Pareto optimality (as part of Welfare economics, Curwen 1990) is the only measure of efficiency

and this is one of allocative efficiency. Society is seen to improve if personal utility can increase for one person without reducing the utility function of another. The problem is the measurement is necessarily financial. It cannot take account of costs or benefits outside this. This leads to a number of logistical problems. For example, the measurement of environmental impact through the Cost Benefit Analysis (CBA) technique is flawed. CBA attaches financial value to parts of ecology that are not tradeable commodities. Clean sea water would be an example. The attachment of financial value creates a tradeable commodity. If one is to accept the predominance of the price mechanism, therefore, all ecological goods should be tradeable.

The literature relating to valuing the environment is extensive (Maler, 1974; OECD, 1975; Pearce, Markandya and Barbier, 1989; Pearce, 1991b; Barde and Pearce (eds) 1991; Markandya and Richardson, 1992 *et al*). Most of it has taken the view that the ecology can be valued in financial terms. Indeed it has been argued that any ecological decision *implies* a monetary evaluation (Barde *et al* 1991), that ecology can be valued through CBA. For example, in considering the environmental impact of noise pollution and attempting to place a value on it one could draw a measurement based on the market prices for noise absorbing windows. As in all economic theory, ability to buy is not taken into account. Alternative techniques such as contingent valuation, hedonic pricing and the travel cost method have also been used for valuation purposes. The contingent valuation technique creates an artificial market for the non-tradeables like clean air and tries to decipher the total economic value of these non-tradeables. Hedonic pricing is an attempt to judge how much value we place on the environment through an analysis of the property market and the condition of the environment around the houses bought (Pearce *et al*, 1989). Alternatives to these monetary valuations of the ecology are presently being developed. The supposition that neo-classical economics and subsequent economic rationalism is objective, is however under question. Planning decisions that take account

of ecological concerns are necessarily subjective. Taxation or subsidy are two examples. An alternative theory that considers a truer representation of reality by including ecological considerations will be more objective. It is certainly feasible to consider a regional economic system that accounts for ecological considerations without placing monetary evaluations on it (Hines and Lang, 1993). Such a system is, however, still in the process of development.

Other important economic revisions include the questioning of the measurement of GNP. Environmental economists and accountants backing this challenge, Anderson (1991), Pearce (1989 and 1991), Gray (1990) and Kestigan (1991), have recently had very influential pieces of literature published. The challenge is seen as the development of alternative economic indicators that more accurately express the wealth of a nation. These four in particular have considered the concept of GNP and its fallibility with Anderson in particular developing alternative indicators based upon quantifiable social and environmental impacts (Anderson, 1991).

Dauncey (1988), Pearce (1989), Cairncross (1991) and Jacobs (1991) have all looked closely at the fundamental nature of the economic problem offering a range of economic solutions. Issues such as 'The Polluter Pays', 'Tradeable Permits' and the price mechanism as an indicator are all high on the agenda. They certainly do not all come to the same conclusions. Pearce in particular alienates himself from some sections of the green movement, with his pro-price mechanism stance, seeing the price mechanism as an adequate control for environmental resource scarcity. Opposing this, Cairncross (1991) says:

*To rely solely on the market, however ingeniously
harnessed to clean the environment, is as naive
as relying solely on government intervention*

However, all demonstrate how a changing economic climate could effect the business community. Most of the environmental economists already mentioned see consumption as the root cause of impending environmental disarray. Galbraith (1958) suggested that western culture accords consumption great social value. This view is supported by Daly and Cobb who argue that the attempt to turn a naturally subjective discipline of economics into an objective science has lead to a number of questionable concepts, not least the predominance of rational economic man or *Homo Economicus* (Daly and Cobb, 1989). Daly and Cobb argue that although the theory of marginal utility is sound, there is an unwarranted bias towards the consumption element. Neo-classical theory states that the action of giving can increase an individual's utility function but this benevolence variable is limited in that a third party cannot derive utility from another's altruism. However, perhaps more fundamental is the recognition that although the social welfare function can collate group utility, the theory requires that utility is derived from the transaction. There is no provision for altruistic behaviour for its own sake, as there needs to be a 'gain' in the individual/community utility function. They argue this is unrepresentative of reality and has lead to a number of misguided policy directions. Alongside this is the challenge to price theory. Neo-classical theory states that *Homo Economicus* has an insatiable desire for commodities. The reasoning is that once rational economic man has satisfied his want for a good he will move on to another good, *ad nauseam*. Daly and Cobb argue, that this is not always the case in reality and conclude that rather than being objective *Homo Economicus* is in fact subjective and biased towards self-interest. Lee, Tarpy and Webley conclude along similar lines:

*The axiom of greed must be rejected because
real people, unlike Homo Economicus,
are not insatiable*

(Lee, Tarpy and Webley, 1987, p111)

The argument is developed further by Daly and Cobb. They argue that the following statement made by Robert Samuelson (a neo-classical economist) proves the fallacy of the objective claim of neo-classical economics. "Efforts to help small businesses as a class are no more virtuous than aiding large business as a class" (Samuelson, 1982 in Daly and Cobb p90). They argue that the decision to make no moral distinction in the market is a value judgement in itself and therefore firmly establishes the theory as subjective, self-interested economics.

If, therefore, neo-classical economics is subjective and biased towards self interest and reality does not match this picture, a false abstraction of reality is personified in *Homo Economicus*. This, Daly and Cobb argue, has led to misplaced economic practice and the development of an economic system that is unlikely to become sustainable if left to its own devices. This conclusion suggests the need for a revision of economic thought if accurate practical application of theory is to be extrapolated and if sustainable development is to be achieved. These considerations have led to the new economics characterised by a literal conceptualisation of reality and including more community, social and ethical considerations than traditional orthodox economic theory. New economics exists to counter the perceived incongruency of present economic theory which holds (as Norman Lamont, Chancellor of the Exchequer, 1992 argued) that consumption brought Britain into the current recession and consumption will get it out. New economics is developing an economic theory that places importance on sustainability rather than 'end of pipe' economic tinkering (Anderson, 1991; Jacobs, 1991 *et al*). Characteristic of the new economic theories is community or collective interest. This requires responsibility for an altered course of action from industry.

However, most of the economic guidance accepted to date has been from the more moderate environmental economists like David Pearce who reiterates Hotelling's

premise that the business community may have its hands tied to radical clean up if the economic system decides that price cannot control finite resources and the environment around us. J.M. Keynes also suggested that important economic problems should not be overestimated to such an extent that matters of higher and more permanent significance are sacrificed to its supposed necessities. Hence, using the philosophical concepts of some of the more moderate environmental economists like David Pearce, writers like Elkington (1989, 1991), Ralston and Church (1991) and Davis J. (1991) began to write more specialised literature. Their aim was to make the often complex concepts of the intricacies of green issues, accessible to businessmen. These green business texts of the late 1980s/early 1990s are mostly philosophical and strategic in approach. The importance of green as a strategic issue became the target, with additional "steps to excellence" sections included at the end.

The "ten steps" in The Green Capitalists is arguably the most relevant to a business. It does not try to be a panacea or to over-simplify the 'steps to excellence' as, e.g. Ralston and Church (1991) with their ten steps to a Greener office. All these texts are very short on practical green policies. Although all have sections on legislation and its potential effect on businesses, this is usually based on UK and EC directives on pollution emissions. These are less and less relevant as the UK industrial sector becomes increasingly retail and service based. Davis J. (1991), in Greening Business, goes one step further by only discussing legislation on a theoretical level, with few concrete facts beyond how legislation will be an important variable. Environmental law is one of the most rapidly changing legal areas of the present day (Ball and Bell, 1991; Hughes, 1991; Garbutt, 1992; Journal of Environmental Law) but is not dealt with in Greening Business in any depth. Greening Business, perhaps the most Ecocentric 'guide' of them all, is certainly a text for the firmly committed. Similar to Elkington's The Green Capitalists

(1989) it is more interested in the need for a change in values within business and the need for businesses to realise the "New Rules" (p163) of the business world.

Although a pro-active stance can be relevant, Davis preaches a little too much, alienating his readers. What Davis does manage well, however, is to offer suggestions for product formulation and diversification. These are not exhaustive, but offer positive catalyst ideas, suggesting businesses in ironing and creches at places of work to name but two examples. His section on the psychology of business and his analysis of Maslow's *Hierarchies of Human Needs* model, is also particularly perceptive.

In the same year a more user friendly guide was published by Elkington in collaboration with Knight and Hailes (1991). As its sub title suggests, "How to take up - and profit from - The Environmental Challenge" stresses the potential for profit that could be created from a sound environmental policy. Knight and Hailes (1991) set out what they feel are the most important issues for business, in a very accessible format. The key issues emphasised are: Legislation; Investments; Marketing; R&D; The Workplace; Personnel and Corporate strategy. Offering summaries, case studies for examples, check points and most importantly, useful addresses, it provided the type of information required by the business community. It is, however far from conclusive in its subject matter (especially with its lack of small firm analysis) but provided a useful starting point for businesses interested in the area of environmental business strategy.

The appearance towards the end of the 1980s of these 'greening' business texts, marked an important watershed in environmental literature, creating what one could call, strategic environmental management literature for business. Environmental Management Systems (EMS) have been around for years, in one form or another. Pollution control, for example, has been an area of public concern since the industrial revolution, leading to the

Clean Air Acts of 1956 and 1968, and the Control of Pollution Act in 1974. Much of the work done in the 1970s and early 1980s was either UN commissioned or produced by organisations like the International Chamber of Commerce (ICC). The Business of Environmental Management (1986) or the British Institute of Management (BIM) Managing the Environment. With a few exceptions, (the BIM report for one) this kind of literature was concerned with managing the environment on a global scale, with industry as but one variable. The individual business manager requires more focused information.

Indeed, much literature on the environment has direct relevance to business, but only deeply committed business people have the time to read it. For the majority, the issue of the environment is only one more external factor to be taken into account when planning business strategy. In marketing terms it is a PEST(E) (ie. an external strategic issue).

It is this approach to the environment issue that has been seen as the root cause of the problem. As the next piece of work suggests, the answer lies in pro-active value change. Adams, Hamil and Carruthers (1991) highlight the various unscrupulous environmental companies in the U.K. The authors have subsequently established their own magazine, The New Consumer. It is in fact this type of literature that alienates business further from the environmental debate as it becomes more and more of a 'pest'. This is of course exactly what it is designed to do: namely to replace the inadequate legislation by raising public awareness and so forcing changes in company policy. There is evidence to show this kind of literature and campaigns like the Friends of the Earth 'Green Con Award' have had an effect on companies like ICI, who have radically revised their U.K. environmental policy well ahead of current legislative requirements.

With the establishment of *The Department of the Environment (DoE)* the U.K. Government showed the first signs of serious interest in British environmental heritage.

Mrs Thatcher's Royal Society speech in 1989 raised the profile of the DoE which became the lynch pin of the 1990 Environmental White Paper, This Common Inheritance.

However, by far the most important service the DTI and DoE provide is as information and contact diffusion agencies. For example the DTI produces Environmental Contacts - A Guide For Business, quarterly, produced in conjunction with the DoE. However, because of the nature of the Conservative government's philosophies on private enterprise, the majority of publications simply provide information contacts and broad philosophical sermons like:

*Pressure for environmental improvement is now
a strategic issue for business, whether it comes
from rising consumer demand for environmentally
improved goods and services, tighter
environmental regulation, or both. It demands
a positive, properly planned business response
aimed at meeting requirements while maintaining
competitiveness.*

(DTI, 1991, p19).

These are very good to arouse interest in business but not very practical in advice. The Enterprise Initiative established by the DTI provided the above quotation plus numerous consultancy agencies and contact addresses. The Conservative government of the 1980s and early 1990s clearly felt the private sector was in the best position to deal with these issues. This general policy also boosted the argument that there was and still is, money to be made from the environmental sector. How much the Government should employ the

'carrot-stick' philosophy to businesses through legislation and subsidies for BATNEEC for example, is another issue. BATNEEC stands for Best Available Technology Not Entailing Excessive Costs and is part of the Governments Integrated Pollution Control. Although we have not seen much evidence of practical support for BATNEEC in the U.K. so far and even the *pro*-environmental literature coming from government sources has been more re-active than pro-active in its advice to U.K. businesses (Gray R. 1990). Governmental literature has presented general platitudes and slogans suggesting that the environment means business. In practice, however, environmental business incentives have been few.

'The Environment Means Business' is, in fact, the Confederation of British Industries (CBI) environmental slogan under which it has provided newsletters and contacts for businesses on environmental issues. The CBI has also been heavily involved in promoting NAGEL (National Advisory Group on Eco-Labeling) an organisation which has been working on the EC Eco-Label launched in the Autumn of 1992. The scheme covers a limited range of products and operates on a voluntary basis.

More practical advice and suggestions have come from vested interest organisations. For example, the Environmental Data Services company (ENDS, 1992) *Business in the Environment* (Bie) is part of Business in the Community (Bic), an organisation run by businesses for business. Bie produced a D-I-Y Review for companies in 1991 called Your Business and the Environment. This was intended to provide the basis for a company to review its environmental position, with sections on all the environmental issues that may be of importance to companies. Although predictably generalised it is practical in approach and highlights the following "Key Issues";

1. Atmospheric emissions
2. Water use and discharge
3. Solid waste
4. Energy
5. The natural environment
6. Corporate and market pressures
7. Human health
8. Accidents and emergencies

(see Table 3.1; Bie 1991 p Annex v).

The text details the detrimental effects on the environment and on human health of specific business practices, and presents a range of alternative strategies. This guide is probably the most user friendly piece of literature reviewed here. It is not so much an environmental management strategy or system as an educational guide, discussing possible areas of concern and once again providing further information addresses. Perhaps its most useful sections are the legislative sections, although in such a dynamic field these tend to become rapidly antiquated.

Table 3.1

ENVIRONMENTAL PRESSURES - UNDERSTANDING THE KEY ISSUES

Atmospheric emissions	Water use/ discharge	Solid waste	Energy	The natural environment	Corporate market pressures	Human health	Accidents/ emergencies
Acid rain	Effluent discharges	Packaging	Energy efficiency	Deforestation	Awards/ grants	Health & safety	Accidents
Chl ₂ /ozone layer depletion	Water supply	Paper	Energy sources	Environmental impact assessment	Environmental auditing	Noise	Site management
Global warming		Recycling		Sustainable resources	Environmental labelling	Ergonomics	
Other air pollutants		Waste management			Taxes and economic instruments		
Solvents					Information management		
Vehicle emissions					Insurance		
					Investors/ shareholders/ lenders		

Adopted from Bie/Coopers and
Lybrand Deloitte

With relation to the environmental auditing process, Hastam (1991) produced a relatively detailed guide filling the gap in the literature noted by Hemming (1992).

The environmental audit can be defined as:

The evaluation of a site, plant, or production and processing system in relation to the laws regulations, policies and good practices that directly or indirectly affect the environment

(Ed. Cockburn, 1990, p52).

Hastam (1991), (see Table 3.2), gave four main reasons why companies should undertake an environmental audit: they are legal; economic; professional and ethical. Hastam also pointed out that the control of risk is an aim of all well managed organisations. Risks must be identified before they can be controlled and monitored. The Hastam guide is similar in aim to the Bie guide, although it surpasses it easily in content. A 'useful addresses' might have been useful, however.

Table 3.2

ENVIRONMENTAL AUDITS - THE KEY ISSUES

MANAGEMENT OF RESOURCES	MANAGEMENT OF OPERATIONS	MANAGEMENT OF PRODUCTS	MANAGEMENT OF WASTE	MANAGEMENT OF EMISSIONS AND DISCHARGES	MANAGEMENT OF ENERGY	MANAGEMENT OF TRANSPORT	MANAGEMENT OF PEOPLE AND TASKS	MANAGEMENT OF LAND AND PREMISES	MANAGEMENT OF CHANGE	MANAGEMENT OF FEEDBACK	MANAGEMENT OF EMERGENCIES AND SPECIAL CASES
Environmental policy:	Supplies and raw materials	Assess product	Waste inventories	Emissions & discharge monitoring/ release	Energy inventories	Transport inventories	Communication	Land inventory	Implementation of change	Incident recording & analysis	Emergency plan
Scope	- Record	Usage	Waste	- containment	Energy usage	Maintenance and monitoring	Mediation	Acquisitions and deposits	Assessment of change	Incident investigation	- contents
Objectives	- Assess	Environmental impact	- control	Controls	Energy efficiency	Spills and leaks	Objectives	Management of land	Monitoring the effects of change	Audits & reviews	- arrangements
Organisation	Process materials	Disposal	- handling	Environmental monitoring		Management of drivers and operators	- international	Premises inventory	Monitoring and feedback	Information from outside the organisation	Insurance cover
Arrangements	- Record		- storage	Management control of emissions and discharges		Strategy	- local	Management of premises			
Communication	- Assess		- disposal	Records			- employees				
Review	Products		- generation and treatment	Emissions and discharge control			- customers				
	- Record		- management of contractors	Device failure			Systems of work				
Resources to implement policy	- Assess		Record keeping				Training and development				
	Packaging						Supervision of tasks				
	- Record										
	- Assess										
	Storage of materials										

Developed from Hastam, 1991

Unlike Cockburn (1990) whose audit is very much operational, Hastam (1991) considers both strategic and operational issues under the umbrella of the environmental audit and not management systems. There has always been specialised literature available on the intricacies of specific environmental issues, pollution abatement, and energy conservation

and other environmental issues. Hence an all encompassing book on environmental business would be an impractical proposition.

3.2 Strategic Management

Since the late 1980s work on strategic environmental management has increased considerably. One definition of business strategy (as opposed to environmental strategy) is:

A stream of decisions that a) guides the organisations ongoing alignment with its environment and b) shapes internal policies and procedures.

(Fannin and Rodrigues, 1986)

Before considering the concept and development of pro-active strategy formulation in the literature it is necessary to put strategic management into context. There are numerous definitions of management (Kast and Rosenzweig, 1974). The following definition, however, seems to encapsulate most of the criteria: namely management is; "the process of planning, organising, directing and controlling the activities of employees in combination with other organisational resources to accomplish stated organisational goals" (Steers, Ungson and Mowday, 1985).

Thurley and Wirdenius (1989), identify two basic paradigms of management theory: first the crucial objectives, techniques, systems and framework theories; second the more prescriptive approach to management solutions. They go on to further subdivide these two paradigms into five main areas of management theory (see Table 3.3).

Table 3.3

Types of Management Theory

TYPE	ISSUES DISCUSSED	EXAMPLES	COMMENT
A) Individual manager behavior (How to behave as a manager)	1. Great men biographies 2. Empirical role studies 3. Behavioral science prescriptions	Sloan, Iacocca Carlson, Stweart & Styles Mintzberg, Marples McGregor, Blanchard Herzberg	Role models as prescriptions Analysis of complexity of roles played Organisational people theories
B) Manager subordinate relations (How to lead and integrate people in systems)	4. Leadership - traits - philosophies - styles - power - behaviour - work tasks	Bingham, McGregor Blake, Bakke, Macoby Likert, Dalton Cartwright, Whyte Sayles, Carlson Thurley-Wirderius Fiedler-Yelton	Covers different aspects of leadership and integration
C) Organisational/ Systems Design (Factors in planning system)	5. Functions 6. National culture 7. Environmental uncertainty	Fayol, Drucker England, Hotstede Burns-Stalker Woodward Lawrence-Lorsch	Factors which make management different in different organisations
D) Management process (what management has to do)	8. Decision making - Rational - Satisficing 9. Techniques	Schumpter, Mintzberg Simon Cyert-March Drucker Kepner-Tregoe	Activities and processes required
E) Planning for Change (How managers should plan and organise change programmes)	10. Strategic management 11. Organisational culture development 12. Change management	Ansoff, Porter Schein, Bennis Tichy, Beckard Argyris, Thackway	Critical aspects to watch in change situations

Adopted with changes from Thurley and Wirderius

The first two subsections, 'Individual manager behaviour' and 'Manager subordinate relations' relate to early prescriptive internal and behavioural theories. Section C relates to Organisational Systems design literature which is cross tabular in analysis and more concerned with the external business environment than Sections A and B. Section D relates to Management Process which could be seen as operational management, and the nucleus for Environmental Management concern. These are the day to day activities and processes required to run a business. The concept of the Environmental Management System (EMS) (see Rickmann 1992) would fit between this section and Thurley and Wiridenius' final section E, Planning for Change. This effectively relates to strategic management and could well be the area of management theory most relevant to the greening of U.K. business. For these reasons Sections D and E are most relevant to this review as they encompass most of the relevant literature for this work.

Strategic management divides the environment in which businesses operate into two, the external and internal environments (Porter 1985). For this reason it is suggested that the formulation of a strategy is:

*Concerned with matching the capabilities
of an organisation with its environment*

(Johnson and Scholes, 1989)

There are numerous other definitions of strategic management, (Mintzberg, 1973; David, 1989; Higgins, 1991) which highlight stages of strategic management development from strategy formulation through implementation and evaluation. All have the common principle of pro-active response, stressing the need for an effective strategic plan to

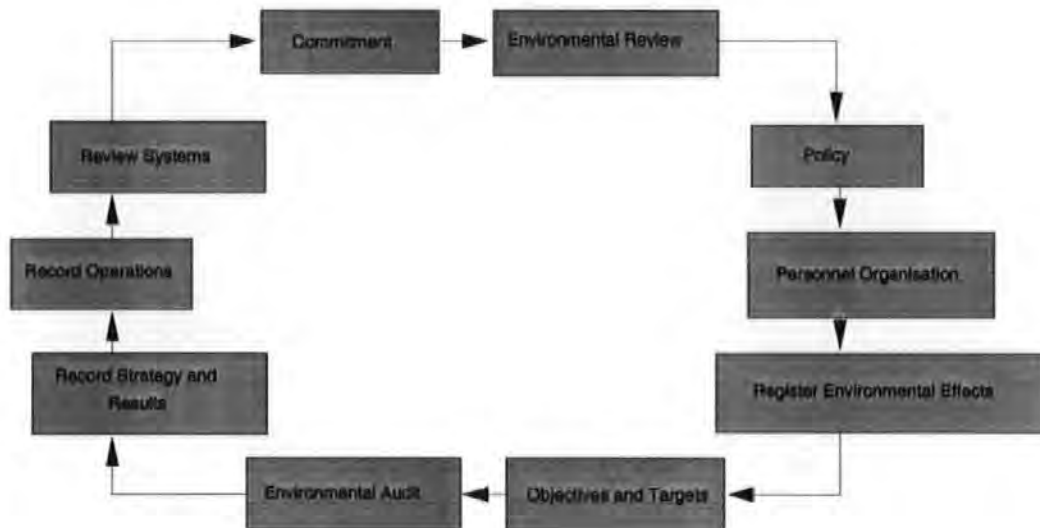
develop successful operational management while releasing any latent potential for growth.

There are five fundamental stages of strategy development a company must go through to be engaged in strategic management (Jauch and Glueck, 1988) it must develop a Mission Statement: set its objectives; undertake an external environmental analysis; undertake an internal environmental analysis; and implement a relevant strategic programme suitable to the company. This process should then be revised and fed back to constantly update procedures. Not only is the written commitment essential but this statement of values must be diffused effectively to the workforce.

The concept of the Mission Statement is fundamental to the EMS models created so far, (see BS 7750, Figure 3.1). The BS 7750 is principally strategic in nature, and has been heralded as the panacea for businesses environmental concerns (see Appendix 4). A written commitment to the environment is absolutely central to the success of the process (Welford, 1992). The standard has a dual function, first to provide assurance for the company of appropriate control measures to achieve its defined environmental standards and to provide a mechanism to publicly demonstrate this compliance. The standard follows a positive feedback loop control system. Development of an environmental policy is based on a thorough environmental emissions and impact review of the companies operations allowing objectives to be set. A cycle of monitoring audits and reviews then allows performance to be checked and policy to be continually reassessed (BS 7750, HMSO, 1992). Prepared under the direction of the Environment and Pollution Standards Committee in response to increasing environmental concerns and piloted in 1992, BS 7750 has now become established (alongside the EU Environmental Management and Auditing scheme, EMAS) as an accepted measure of environmental quality (Pearce H. 1993).

Figure 3.1

ENVIRONMENTAL MANAGEMENT SYSTEM BS 7750



BS 7750 includes a processes of reviewing and auditing two procedures that are inherent but separate parts of the system. "Audits assess both the effectiveness of the environmental management system and the achievement of the environmental objectives. Reviews check the continuing relevance of the environmental policy, update the evaluation of environmental effects and check the efficacy of audits and follow up actions" (HMSO, 1992). The BS 7750 was designed to compliment the quality standard BS 5750 (and the international standard, ISO 9000) with which it shares common management system principles.

BS 7750 considers the internal environment in the main, the external business environment however is considered by a number of authors, Bourgeois, *et al* (1980); Jauch and Glueck, (1988); Johnson and Scholes (1989). Porter (1980, 1985) considers the following factors as the four original external factors:

1. Political
2. Economic
3. Social
4. Technical

'Ecological' has recently been added to this list (Johnson and Scholes, 1989) creating the acronym STEEP. This is a significant addition as it shows that even traditional management theory feels that the green 'threat' merits serious attention. Johnson and Scholes (1989); Jauch and Glueck (1988) and Bedeian (1990), consider the analysis of the business environment. Johnson and Scholes (1989), suggest a five stage process model to understand a firm's strategic position as a business. This includes: the auditing of environmental influences; an assessment of the nature of the environment; identification of key environmental forces through structural analysis; identification of competitive position and the identification of key opportunities and threats. The fourth stage of this model is explained by Porter (1980, 1985). Porter considers in detail the concept of competitive rivalry within industrial sectors. Porter's *Five Forces* suggests that the threat of new entrants, the threat of substitutes, supplier bargaining power and buyer bargaining power all create competitive rivalry. It has been suggested on a number of occasions in the past by prominent figureheads of environmental causes, (Prince Charles for the Bie, 1990; Rt Hon. Michael Heseltine, DTI 1990 as well as academics like Hunt and Auster 1990 *et al*) that becoming more environmentally friendly as a business

will increase competitive advantage. It is for this reason a firm must consider where the environment fits in to the business environment.

However, Nielson (1988) argues that firms can be more efficient by adopting a sustained *co-operative* strategy between organisations rather than relying on the external market mechanism for efficiency. Dundas and Richardson *et al* (1980) proved internal co-ordination and co-operative strategies within can be more efficient than the more traditional competitive management practices. Nielson (1988) cites the Japanese as examples of a successful trading nation that is developing *national co-operation strategies* for its small business sector to allow them to become internationally competitive.

This view is supported by Jarillo (1988) amongst others and has lead to the development of the co-operation critique of the competitive advantage paradigm. This has been enhanced by work on network developments that require a form of co-operation to take place (Jarillo and Ricart, 1987; Jarillo, 1988; Hakansson and Johanson, 1988). Johannisson in particular has made the case for localised development in the form of co-operative networking (Johannisson, 1983). He has argued for the requirement of a strong local community and a well structured business climate. This would include a local authority that is supportive to local needs in its distribution of resources. Although this particular point may be more relevant to northern European countries than the U.K. at present, the concept of regional self-reliance is undoubtedly theoretically ubiquitous.

This approach is supported by a Danish model for SME co-operative networking. Networking is defined loosely as having four linear dimensions:

1. Joint solutions and common problems

2. Development and exploitation of mutually complementary strengths
3. Developing the quality of subcontracting links
4. Individual access to end markets.

(Jakobsen and Mertinussen, 1991)

Here they suggest that the regional co-operative networking model established in 1989 has had encouraging results. In particular they suggest that the model has increased the competitiveness of a significant number of SMEs. The reasons given in this case (and in a number of other cases) is that co-operation reduces the transaction costs in the traditional contractual relationships.

Although trust is an important aspect of the networking principle it is suggested that this does not necessarily mean that the network will collapse. Jarillo (1988) says that if long term relationships are established trust develops. This would seem to be rather obvious and the question remains limited to the short-term time period. His suggestion is that one can try to modify the game through a number of variables which include, co-operation; reward, opportunistic gain and punishment. However there would seem to be a place for collective, co-operative SMEs in this system. Indeed, they could as a short term measure be based on traditional concepts of competitive advantage through co-operative networking (Jarillo, 1988).

Johannisson suggests that the challenge for the SME sector is to create a climate that simultaneously supports individualism and collectivism, anarchy and order. He sees the necessity to move from functional specialisation to an area of specialisation where SMEs co-operate to survive. This point is strengthened by empirical research from Sweden that suggests that many local communities do not either want or need to grow. Therefore the criterion applied to business theory is quite different from that in larger urban areas

(Johannisson, 1978, 1983). With Galtung *et al* (1980) arguing that the 'arena perspective' where SMEs co-operate for mutual benefit, generates self-reliance, self-respect and a prosperous local economy not reliant on one or two large industries, evidence suggests that SMEs have a central role to play in North European community development. Johannisson in particular sees collective networking as a central aspect of developmental economics and the role of the SME as pivotal to this theory (Johannisson, 1983).

Linking this work with earlier work from Jarillo (1988) one could therefore suggest that what is required is a revision of 'the game' in the form of a new approach to socio-economic decision making to enable SMEs to trade locally in co-operative formats that include certain aspects of networking.

Porter (1985) considered the internal environment. His 'Value Chain' considers the role a company's resources play within this environment. This includes human resources as well as inputs. The model links human resource use to the support activities required to lubricate the corporate machine, for example to computers and building infrastructure. The central idea of the model is to allow a measurement of the margin of profitability. Will the added value of the outputs exceed that of the inputs? McKinsey 7's in Peters and Waterman (1982), compliments Porter's work. The emphasis of the Value Chain is on the component parts of the business as a single entity. The human resource element is seen as a catalyst for activity to make the Value Chain work. McKinsey's 7's framework looks more closely at this particular element. People within the organisation, for example, relate to the skills required, systems in place and style expected.

Smith (1992) adapted the Value Chain to explain the primary and support activities required to become a more environmentally friendly company (Table 3.4). This framework leads Smith to comment that too many businesses are concentrating on the

marketing and service elements of the Value Chain, rather than on the more integral fundamental activities. He suggests that the changes that are occurring within industry are cosmetic rather than operational in nature. This belief is strongly supported by the bioregional movement considered later in this chapter.

Table 3.4 THE VALUE CHAIN				
SUPPORT ACTIVITIES	Procurement	Transportation inputs Storage modes	'Green' consumables Clean technologies Recyclable packaging	Storage modes Transportation modes
	Technological development	Waste minimisation through source reduction Alternative raw material resources	Clean technologies Pollution minimisation and control	Finished product recyclability
	Human Resources Management	Staff selection Supplier selection	Corporate culture Training programmes Corporate environmental awareness	Sub contractual arrangements
	Management Systems	Inventory reduction Recyclability	Just in-time	Cradle-to-grave responsibility for products Recycling and recovery infrastructure

Source: Smith D. (1992) adopted from Porter M.

The criticism from Smith and the more radical bioregionalists (Bookchin, 1980; Kelly, 1984; Sale, 1985; Morehouse (ed), 1989) is that business is not best placed to regulate change as it will always put self-interest first and the environment second. The need is therefore for either more stringent legislation or a new system. The later option is favoured by the bioregional movement.

Meredith (1992) makes the environmental strategic link by suggesting that strategic management is essentially a balancing of these internal and external factors. The reference here is to the SWOT and PESTE (STEEP) analyses. SWOT relates to a

company's internal business environment and stands for Strengths, Weaknesses, Opportunities and Threats. Meredith also suggests that social responsibilities and the environment have now come in high on a managers external agenda, although this is not supported by any empirical analysis. Shrivastava (1992) goes even further, arguing that there has to be a fundamental change in the definition of the business environment from its preoccupation with competition, ie. barriers to entry, economic power of buyers and suppliers and the economic exploitation of the resource base to gain competitive advantage, to a more ecological approach (in Smith, 1992). An alternative approach could be the more co-operation based approach touched on by Nielson (1988).

Table 3.5 - Opportunities and Threats of Environmental Management

THREAT	OPPORTUNITY
Potential cost of a reactive approach	Potential benefits of a pro-active approach
1. Decreased market share	1. Increased market share
2. Fall in corporate standing	2. Climb into corporate standing
3. Increase in cost of manufacture	3. Decrease in manufacturing costs
4. Increasing material costs	4. Reduction in material costs
5. Increasing energy costs	5. Reduction in energy costs
6. High level of pollution taxes	6. Minimisation of pollution taxes
7. Large increase in disposal costs	7. Decrease in disposal costs
	8. Opportunities for diversification and technology supplier, recycling and waste
	9. Increased world competitiveness, competitive advantage.

(Gacpar 1993)

This also allows for more effective diffusion of information including environmental procedures, a central problem to many businesses interested in improving their environmental performance. Shrivastava (1992) goes further, saying that this is the only way to fully integrate Green issues into the strategic management process.

However, as mentioned above, the conclusions reached from the analysis of the external and internal environments are then focused by the S.W.O.T analysis Kotler (1984). Table 3.5 provides an example of how this concept can be expanded to encompass the management of environmental issues. Gacpar (1993) details the growing costs of a reactive approach to environmental management in contrast to the benefits of a pro-active approach.

From the S.W.O.T. analysis assumptions are made, strategic choices developed, objectives set and a strategy formulated. The strategy can then be implemented and with most management models, the results being fed back and revised over time. An example of a strategic policy suggested above is *Ansoff's Options Matrix*. This allows a company the flexibility to consider new markets, products and acquisitions. Essentially they are diversification strategies rather than retrenchment strategies (Ansoff, 1965).

The idea of focused strategies was developed by Porter (1980, 1985), with the evolution of his 3 Generic Strategies, which are:

1. Cost
2. Differentiation
3. Focus

Cost leadership relates to a strategy of maintaining a low cost structure. Differentiation relates to a strategy of making a product stand out. Focus relates to operating in a sub-sector of the market, utilising either cost leadership or differentiation.

3.3. Strategic Management in the SME Sector

BS 7750, (see Figure 3.1), requires *commitment* to the environment as well as effective diffusive flows of the knowledge of this commitment within the business to the workforce. In this respect one could assume that the SME will be able to do this more effectively than its larger counterpart because of the autonomy of authority, minimal hierarchical layers of management and short communication channels. Indeed, SMEs can achieve success and compete with larger firms as their thin organisational structures allow a higher level of flexibility. Also endemic in their nature are the lower cost structures which can enable them to exploit the narrow niche markets that are uneconomic to larger companies.

Literature on the SME and environmental management or sustainable development has, however, been limited (Barrow and Burnett, 1990; ACBE 1992, 1993a, 1993b; Hendry, 1992; Leicestershire TEC, 1993; Patton *et al* 1994). The SME has not moved quickly to embrace the concept of environmental management, suggesting that there is a fault somewhere within the diffusive pathways between theory and practice. Research into attitudes and practices may reveal the reasons for the occurrence of this unexpected fault.

Employment of a certain level of strategic management in companies certainly allows for more efficient managing of the company, but the level of strategic management in SMEs is low, according to Sexton and Auken, (1982); Gibb (1983); Birley and Gibb, (1984); Mescon, (1984); Gibb and Davis (1990); Faulkner *et al* (1986) and Perry (1986). Indeed

most of the writers from 1961-1982 summarised by Robinson *et al* (1984) are negative in their descriptions of the SME as far as strategic planning is concerned. They have focused heavily on the unstructured, irregular and incomprehensive nature of SME strategic management (Brytting, 1990). Buack and Mathys comment, however, that strategic planning can be improved in SMEs as a result of environmental considerations (Buack and Mathys, 1989). A section of the literature, however, does consider strategic management both appropriate to SMEs and conducive to small business growth (Wheelwright, 1971; Cooper A. 1979; Van Hoorn, 1979; Kotter, 1982; Churchill and Lewis, 1983; Graham, 1991).

Robinson's summary suggests, however, that most SMEs do not have strategic plans, and when they do occur they are fragmented and short term. However, Storey *et al*, (1987) point out that SMEs are fundamentally different from large companies, therefore comparison of performance and level of strategic planning cannot be verified. Dilts and Prough, (1989) agree with this analysis and concluded that smaller firms are not simply smaller versions of large organisations.

Indeed Dilts and Prough as well as Rice (1983) go further, suggesting that many SMEs do in fact have strategic management plans but that they differ in nature to the prescriptively accepted large firm models. Their research highlights the strategic options available to different sizes of organisation. For example, a co-operation strategy may well be a more efficient strategy for a smaller business than a more competitive one. This is confirmed by Nielson (1988). Not only would a co-operative strategy reduce costs but it would also allow for easier diffusion of environmental information through the support organisations. The concepts of management development and management for change, however, are central to the business environment debate. The environment is, in strategic

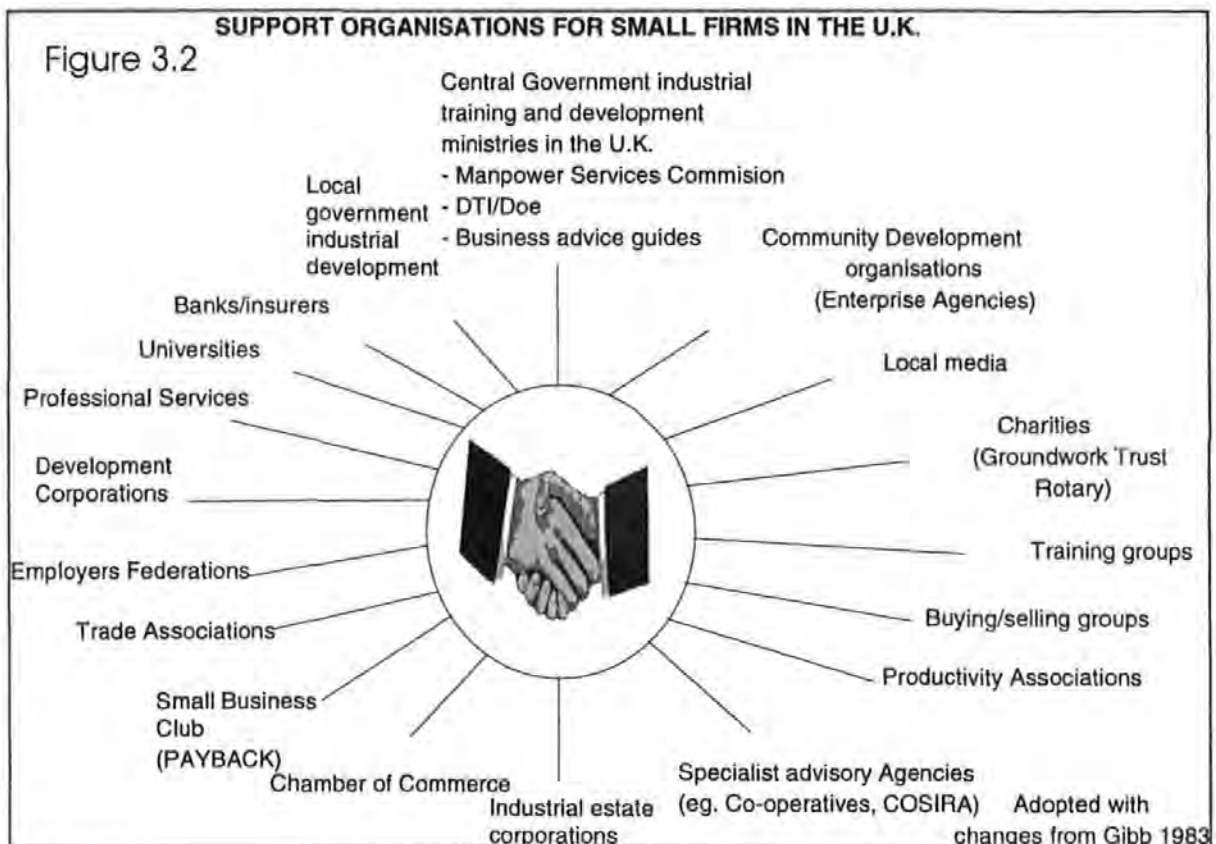
management terms, a Threat and an Opportunity to a firm and therefore needs to be taken account of and planned for.

One can conclude that although there is some disagreement about the levels of strategic management within the SME sector, the descriptive analyses of the characteristics of SMEs are fairly accepted. In general SMEs have limited market share and lack resources to do much about it (Sutton, 1984). However they succeed by following niche market strategies and by concentrating on their strength of being flexible (Macpherson, 1992). SMEs also concentrate on tasks rather than pro-active scientific planning. They could gain from educational training (Birley and Gibb, 1984) and Management Development, (Beckhard, 1985; Houghton, 1986; Alexander, 1987; Mumford, 1987; Wagel, 1987; Storey, 1989). This may be the area that management theory should be addressing in terms of the SME and EMS. If their strengths are in operational task management, education on critical incidence situation management could be more effective than strategic management implementation advice.

The characteristics of the SME have been considered in great depth in the literature, from the internal operations and strategies employed to the characteristics of the entrepreneur. However, most of the work has revolved around the latter as analysis seems to be seen as easier to collate (Perry 1986). In fact, as Dilts and Prough (1989) point out, most research has traditionally been focused on large firms anyway and small firm research has traditionally been neglected and fragmented. Ramstrom (1975, 1986), similarly suggests that small firm research is as fragmented as small firm theory. However, one area of relative expansive literature is that of *Growth Models* for SMEs. D'Amboise and Muldowney (1988), have a relatively well summarised table of the development of these models and their respective authors from 1972-1984. The most significant area of this

work for this particular study is the heavy concentration on co-operation as an integral variable in the growth model.

Most of the literature on the development of the SME stresses the requirement for increased diffusion of information and technology (Sutton, 1984; Nielson, 1988). Co-operation generally leads to increased efficiency in a wide number of operational areas and Bamberger (1989) further suggests that the strategic decisions made by the firm are determined by the flow of information from the environment and the internal capacity of the company. Because of the lack of capital, resources and time an SME has at its disposal, the only way to keep up with these information flows is through some sort of co-operation. This explains why there are so many different sorts of small business support organisations (see Figure 3.2). The problem seems to be one of co-ordination and information diffusion since small businesses often do not realise help and advice is available. This is especially relevant in the environmental area, where co-operation can reduce the individual costs of operational implementation.



Indeed, many writers have already highlighted the fact that healthy co-operative systems are unlikely to develop without well established secondary support organisations (Vanck, 1970, 1975; Campbell, 1977; Horvat, 1980, 1982). Just as with the theories and models of small business research, the organisational structures available to support them are also fragmented and lacking in resources (Bennett and McCoshan, 1993). There may therefore be a definite requirement for the focusing and agglomeration of these organisations to clarify small business advice. This is the thinking behind the latest Government development of the One Stop Advice Shop Business Centres that were established in the spring of 1993. However with little increased funding because of the Governments belief in the lack of intervention in both private and public sectors, one cannot see them being any more successful than the Manpower Commission which they superseded.

Much of the work in the SME sector has focused on the personal characteristics of the entrepreneur (Perry, 1986). Bamberger (1983) looks in particular at the values of the entrepreneur and how they affect the decision making process and management process. This area has not received much attention in the literature because of the complexity of the research. Its importance is, however, significant particularly within the field of business and the environment.

Clearly management development, information diffusion, values and strategy formulation are linked. An entrepreneur begins trading with a set of values from his/her past: these values could lead directly to the development of a business strategy or be influenced on the way by some sort of information flow which will in turn affect the entrepreneur's strategy. Therefore, if a concept like environmental protection requires a change in an entrepreneur's values to become effective (this presupposes that individual regulation is the most effective catalyst for change) then relevant authorities need to increase the flows

of information regarding various aspects of the environment and increase their effectiveness. Large amounts of information flowing in the wrong direction swiftly become redundant and ineffective.

One can now clearly see the scale of the problem for the SME sector in adopting an environmental management policy. The existing solutions proposed by the EC and British Standards require a high level of strategic planning to take place yet according to Collins (1990), most small businesses do not formulate plans and strategies. Hence according to Cranfield School of Management, only 10% carry out environmental audits and these are only for energy and waste (Barrow and Burnett, 1990).

Many factors militate against the small firm: time; manpower; investment capital; information shortages and lack of strategic plans. In addition, the policing bodies responsible for new legislation lack the resources to prosecute on a large scale. As Dilts and Prough *et al* (1989) indicate in their diagnosis, research findings are not wholly transferable from large firms to small enterprises because of the differences in company fabrics. This is central to the problem raised earlier in this section about the formulation of a Mission Statement and the relevance of Management Systems to small businesses. If the hypothesis that SMEs are not simply smaller versions of larger corporations is valid, then it follows that systems or models developed for large scale organisations may not be applicable to smaller businesses. This may explain why SMEs response to green issues has been so low. If the management solutions are not applicable company inertia is likely to be high. This area requires clarification in order to assess the relevance of existing management tools in the environmental area.

3.4. Environmental Management within the SME Sector

The literature review has, thus far, studied the emergence of ecological business literature and the strategic management process. This penultimate section looks rather more closely at the solutions offered by theory to the business environment problem. In particular it considers the Environmental Management Systems literature and possible applications to the small firm. This will be followed by a final section that reviews the more holistic bioregional literature.

The U.N. Stockholm conference in 1972 could be viewed as the platform of development for strategic environmental thought. The oil crisis of the early 1970s and the need for economic growth, however, had failed to secure much commitment from industry (Meredith, 1992). Prior to this, environmental management literature was specifically technical in nature, solving particular problems usually in the scientific domain. These writings have continued since Stockholm alongside the development of source writings, ie. the tackling of the cause of environmental problems and not just the symptoms. There seems to be a consensus of opinion that "Going Green requires a commitment, and then it requires a strategy" (Carson and Moulden, 1991). The technical writings and answers to specific problems are important but they fit into the equation rather later on, after there has been commitment by the firm to adopt an environmental philosophy. Ecocentrism precedes technocentrism. Vandermerwe and Oliff (1990), agree with this but add that there needs to be a genuine adjustment of strategy. This came in response to survey results where companies saw no point in going green unless the information was communicated heavily to stakeholders and customers.

Smith (1990) writes of the opportunities in periods of rapid cultural change for far-sighted businesses to jump ahead of the competition and gain real competitive advantage.

He advocates an early internal environmental SWOT analysis for companies and the implementation of an Environmental Management System. This view is echoed by most writers of environmental business management (Hunt and Auster, 1990; Porter, 1991; Stern, 1991; Kleiner *et al* 1991).

However, by 1990, 60% of the firms surveyed in a CBI questionnaire (1990, survey of Green Businesses) had developed some kind of environmental policy, but only 40% had instituted a management system to put this policy in place. Significantly, these results reflect the Cranfield 1991 survey where 51% of the SMEs surveyed had some sort of measures to protect the environment. This is less than the CBI survey suggested, but to be expected within the SME sector, as it is generally the smaller companies who take the reactive approach to environmental issues (Meredith 1992, p229).

There is very little written on environmental management of any kind for SMEs. However it is suggested that:

*Companies taking the reactive (passive) approach
are typically the smaller and medium sized
organisations.*

(Meredith, 1992)

This view is supported by a survey done by the Cranfield School of Management in 1990, where 30% of the 200 SMEs surveyed thought that green issues were unimportant in their business sector and 49% took almost no measures to protect the environment. The Cranfield survey is, however, only a survey with little or no analysis or discussion, it simply describes the findings. A further caveat is the extremely low response rate of the survey (below 10%) making the findings questionable. This is a rather surprising lack of

literature as the combination of damage done by a large number of small businesses on the environment is very significant. According to Winter (1988), environmental damage caused by small firms is likely to exceed that of larger companies in a cumulative form.

Marketeers like Davis J.J., suggest that, "A prerequisite to the development and marketing of true Green products is an appropriate corporate plan and outlook" (Davis J.J. 1991 p15). Hunt and Auster, add: "to avoid potentially debilitating problems, corporate managers must begin to consider environmental management a critical component for sustaining competitive advantage" (Hunt and Auster, 1990, p7). All emphasise the need for commitment as a prerequisite for environmental management.

However, between Winter (1988) and the development of EMS, literature did appear on environmental affairs and business strategy. Hooper and Rocca (1991), stressed the need for "guiding principles" in strategy and the linkage of environmental affairs with operations at all organisational levels. Apart from a philosophical digression highlighting the profit side of environmentalism, they generally take the acceptance of the need for an environmental strategy, for granted. Issues such as senior management participation are reiterated. Suggestions of how to promote good internal environmental practice are offered, but most significantly Hooper and Rocca, suggest that:

*Product design, manufacturing, transportation,
customer use and ultimate disposal of a product
should not merely reflect environmental
considerations, but be driven by them*

(Hooper and Rocca, 1991, p30)

Smith (1992) explains why environmental issues should be on the strategic rather than just the short term operational agenda. He says that the fears of companies that legislation will make an unlevel playing field and lose U.K. companies the critical edge of competitiveness have to be put aside. Smith makes a distinction here between "Environmental improvements and standards of living and economic prosperity" (Smith, 1992, p1). He seems to be saying companies must change their ethical stance, a view held more commonly in the philosophical environmental literature than the business strategy literature of the late 1980s-early 1990s. In The Environment means Business (CBI, 1990) the more prominent message was:

*With complete disregard for conventional wisdom,
a few companies have demonstrated that the
conjunction of environmental affairs and
operations can produce real synergies.*

(Hooper and Rocca, 1991, p28)

Smith makes a link between the traditional morally driven environmental attitudes of managers to the well established strategic agenda (Johnson and Scholes, 1989 and Porter et al, 1980) therefore suggesting the need to move away from the *ad hoc* environmental policies of the past and to develop a regulatory framework into which environmental issues could fit. This provides a cue for the development of EMS. He points to the need for the education of managers in the importance of including environmental issues on the strategic agenda, rather than merely educating them on the potential gains of this move.

Building on these works and that of Winter in the 1980s-early 1990s, writers and theorists have developed Environmental Management Systems defined by Rickmann as:

...a strategy which firstly involves the formulation of a policy statement setting out the organisations philosophy on the environment and the aims to be achieved. Secondly a detailed assessment of the environmental status and performance of the operation is then undertaken, key issues identified and targets set. The performance of the operation or unit is then regularly audited to measure progress toward the target set

(Rickmann, 1992, p15).

This is by no means an exclusive definition of an EMS. Many writers see them in different terms. For example although Welford agrees "there has to be commitment at all levels of the organisation" (Welford, 1992, p27), his criteria for an EMS is quite different, including environmental policy but concentrating on environmental committees and action teams. Welford also links EMS with Total Quality Management (TQM), the phenomena of the 1980s. "For many forward looking organisations environmental responsibility has become an aspect of the search for total quality and as such zero-defects also mean zero-negative impact on the environment" (ibid, p25). It should be noted, however, that this link was broken in a subsequent publication (Welford, 1995). For discussion on the British Quality Standard 5750 see Walsh, (1993).

Roome identifies five strategic options available to the firm in the discussion of Environmental Management Strategies:

1. Non Compliance
2. Compliance

3. Compliance Plus
4. Commercial and Environmental Excellence
5. Leading Edge.

(Roome, 1992)

Evidently, although Rickmann sees Environmental Management Systems as the same as Environmental Management Strategies, a distinction does seem to be made by Roome. He identifies strategic options and then discusses integrated Environmental Management Systems in relation to a firm in the *compliance plus* category of the strategic options strategy.

Like Welford, Roome sees a link between TQM (or in this case the British Quality Standard BS 5750) and environmental management, but his criteria for an integrated EMS are quite different. Roome takes a fairly standard management strategy of mission statement to strategy and policy, through to performance measurement and review, and requires that each one of these stages be considered with respect to five aspects of:

1. Health and safety programme
2. Emergency planning programme
3. Compliance programme
4. Pollution reduction programme
5. Product stewardship programme

(Roome, 1992, p21)

There is little or no discussion about the content or definition of the above. The positioning of the *product stewardship programme* as last on the table seems misplaced. First place would appear a more appropriate positioning as the product begins the life

cycle. However, Roome once again seems to agree with Welford when commenting on communication which seems to be the central point to Welford's EMS, or at least the diffusion of information and policy. He sees a need "to improve communication and participation through network and cluster organisations or quality circles" (Roome, 1992, p22). Roome also stresses that his *compliance plus* or excellent companies have their environmental policy and management run by senior management.

From the late 1980s onwards to the present day there has been a quite unparalleled increase in the volume of business environment literature. Most of it has been naturally geared towards the large corporate manager and strategic implications or towards the marketing advantage to be gained from being more environmentally friendly (O'Neill, 1990; Forrester, 1990; Bijapurkar, 1990; Newall, 1990; Simms, 1990; Bertsch and Williams, 1991; McKee, 1991; Stead, W. Stead, J. 1992; Smith D. (ed.) 1992; Foecke, *et al*, 1992; Bennett and Wilson, 1992; Jackson, 1993; Wiesmann, 1994; McCloskey and Maddock, 1994; Karls, 1994 *et al*). Concurrently there has also been a large increase in the number of academic and practical journals, including a few articles which suggest businesses have been getting too much praise for environmental innovativeness (Cairncross, 1992; Doyle, 1992). Literature has also included a large increase in the business ethics grouping, which have begun to incorporate environmental considerations as a major component (Donaldson 1989, 1992; Hoffman and Moore, 1990; Chryssides and Kaler, 1993 *et al*).

The banking and financial sectors are starting to put the environment on their agenda with pressure from central government to include the environment in their business loan criteria, following the practice in the USA (Thomas, 1993, Cowe, 1993). This trend is likely to continue as the Government has proposed that the banking and insurance sectors apply grass roots pressure on companies to clean up their act, under the new ACBE

(Advisory Committee on Business and the Environment, 1990a and 1990b; Whitaker, 1993).

This is perhaps the most intriguing area of literature and has inspired work on the development of a new concept of an *Environmental Credit Rating Agency* (Tanega, 1992). Indeed ACBE proposals have also suggested the possibility of public companies being required to divulge more environmental information as possible new policy. All these factors will have a profound affect on the SME in the not too distant future.

However, a large proportion of the more recent writings seem irrelevant to the SME owner manager, for many of the reasons outlined above. Only Gruber and Brand (1991), Welford, (1992) and Kok, Welford, O'Laoire, (1993), Welford and Gouldson (1993) and Hendry (1993) have made any significant comment on the SME and environmental business practice. Gruber and Brand explore the possibilities for external consulting within SMEs with respect to energy usage. They argue that service charges could be calculated on a cost savings basis (Gruber and Brand, 1991). This idea is taken further by Hutchinson and Chaston to include all of a small company's operations (Hutchinson and Chaston 1993). Welford in particular has been instrumental in developing the regional orientation of management theory for the sustainability of the SME sector by advancing the concept of the Catchment Management System and by reviewing, on a regional level, possible developments of SME management skills. Welford and Gouldson also offer a model for SME environmental management based on flexible specialisation and quality (Welford and Gouldson, 1993). Regionalisation of industrial behaviour is not, however, new. *Functional regionalism* (where a state is responsible for regional demarcation) has formed the basis for economic geographical research for a number of years (Rees *et al*, 1981; Rokkan and Urwin, 1983; Knox, 1984; Massey, 1984; Nijkamp, Van Der Mark and Alsters, 1988). Concurrently, what is broadly known as the *regional movement* with

feelings of collective identity which are not rooted in an officially defined region but emanate from a grass roots identity, has existed from the beginning of time, (Bennett R. 1985; Smith G. 1985 *et al*). The present day separation is perhaps seen within this typology. The functional regionalists correlate to the regional economists and industrialists. The regional movement could relate to the bioregionalists discussed later in this chapter. The northern Europeans Johannisson, Jarillo, Galtung *et al* also fit into the regionalist genre and provides a strong argument for the requirement of regional development based on co-operational strategies. Their arguments support the analysis that the differing economic and social conditions of small regional economies dictate the requirement for alternative economic and industrial management strategies be developed in order to understand and create the "arena perspective" where SMEs and communities alike prosper (Johannisson, 1978, 1983; Galtung *et al* (eds) 1980; Jarillo, 1988). Johannisson in particular links the success of the locally based SME economy to community welfare (Johannisson, 1983).

Most of the literature reviewed in the 1980s and 1990s has had an endemic bias towards business. Indeed, the 1990s has seen the publication of a whole host of environmental management material, mainly for large businesses. Few, however, consider the broader picture. This requires analysis of the inter-relationships of economics, politics and society. The place industrial development has within this more holistic picture is gradually emerging. The next section, therefore considers some of the more alternative approaches to industrial development into which secure the future of the SME sector within a framework of bioregional and permacultural thought. To date no work has specifically been documented within this area with regard to the SME *per se*. The nature of the systems described, however, are small scale and localised, offering the potential to locate the SME at the centre of bioregional and permacultural theories.

3.5. Sustainable Development - Alternative Models

The majority of work discussed within this final section derives from the perception that existing economic and political systems have failed to provide the framework necessary for sustainable development. Most of the literature reviewed is an attempt to understand the underlying propensity of the industrial system to cause environmental damage. The philosophies discussed are holistic in their approach and require a lateral analysis of the environmental questions facing contemporary society. Although this research is limited geographically it is necessary to understand the broader external economic and industrial influences that exercise a determining influence on the future possibility of sustainable development within the locality.

The analyses within this section derive from the need to address sustainable development. The Brundtland Report concluded that because economics, politics and society were so inter-related there was a fundamental need to consider them so in research (World Commission for the Environment and Development, 1987). Whereas orthodox economics argues its neutrality, objectivity and separation from ethical subjective considerations (i.e. politics) the 'new economics' touched on earlier fully accepts this requirement. The new economic movement accepts the reality of economic policy and the need for definite value judgements attached to these theoretical applications. This holistic and practical approach to economics forms a part of the first alternative concept, *bioregionalism*.

Bioregionalism is necessarily holistic in nature, considering the whole picture of society, economics, management and politics. It proposes that an alternative way of life is required if sustainable development is to be achieved. Bioregionalism is an attempt to fit

ourselves to a particular place and not to fit a place to our predetermined tastes (Sale, K. in Dobson (ed), 1991).

It is only a matter of time before bioregionalism accumulates as many definitions as sustainability (around 73 to date) because of its endemically diverse content. Bioregionalism comes from "bio" as in life and "regio" as in regions or territories. It addresses the concept of life form equilibrium and asks questions about the integration of human affairs and nature. For further discussion on bioregionalism see Callenbach, (1975); Sale, (1985, 1991); LeGuin, (1986); Andruss and Plant, (1990); Plant (ed), (1991); Ponting, (1991); Dobson, (1991); Seymour, (1991); Mellor, (1992); Plant and Plant, (1993). However this rather alienates the human spirit from nature. It suggests a separation exists between humans and nature. Bioregionalism could perhaps be described more accurately as a *regionally autonomous collective thought movement for sustainable lifestyles*.

Bioregionalism is a reappraisal of *place* on the earth both in spatial and idealistic terms. It is about reinhabiting the local environment and learning to live there again, rather than converting Devon into the USA. Bioregionalism stands for collective living, regional identity and localised priority trading. It is a broad concept by necessity as it allows for a multitude of expressions. It challenges our existing priorities and asks questions about our self consciousness. The "bio" centralises ecological concerns and could succeed in challenging the dominant capitalist paradigm where state socialism failed. It has already been suggested that the green movement in politics (if taken in conjunction with socialism and feminism) will provide the new alternative to capitalism (Mellor, 1992). Placed within a bioregional framework these concepts begin to shape a credible alternative. Green business strategy, like green politics may have so far failed, because it

has lacked a credible holistic strategy. Bioregionalism encompasses all that green politics and economics stands for within a well structured frame.

The economic mechanisms of bioregionalism can accommodate the type of principles outlined above, i.e. trading locally first, regionally second, nationally third and internationally as a final resort. This implies a form of 'new protectionism' of the kind outlined by Lang and Hines (1993). New Protectionism requires some traditional protectionist barriers (tariffs and quotas on a regional level). In the main, however, it concentrates on the need to re-educate the community on issues of sustainability, used here in the sense of economic *and* environmental sustainability. New protectionism emphasises the need for a more realistic appraisal of the 'cost' of goods and services. This includes the environmental and social costs. Lang and Hines argue that a locally oriented trading system would reduce unnecessary transport costs and provide many more jobs. This under utilisation of the human resource is seen as a critical aspect of the present economic system that does not take the loss of unemployed labour in to account when considering the cost of goods and services. This may sound simple or naive, but Lang and Hines argue that an on-going underlying theme to the change towards bioregionalism would be education. The concept of new protectionism argues that if the region or community can be educated about the economic benefits of trading locally, i.e. the fact that employment would be increased as the locality learnt to be self-sufficient they are more likely to want to buy locally. In the long term this would reduce the need for the more traditional economic barriers around the region.

Aberley suggests that a central element to bioregionalism is the development of regional maps to understand the locality within which the individual and industry operates (Aberley, 1993). This educative process of mapping a region's trade flows, cultural information points, physical geography and geology, political initiatives to promote

sustainability enables the community to live 'in place' again and reduces dependence on external investment. The underlying argument is that it is both economically and ecologically beneficial for a region to be self-sufficient and self-reliant (Sale, 1985; Torry, 1988).

The practicalities of this vision could be realised by the application of a practical and philosophical theory *permacultural design* (Mollison, 1978). This holistic system of living, designs lifestyles and business practices with the maximum regard for ecological and sustainable considerations. Permaculture could be defined as the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability and resilience of natural ecosystems (Mollison, 1993):

*Permaculture (permanent agriculture or
permanent culture) is a successful approach
to designing sustainable environments.
It is based on the philosophy of
co-operating with nature and caring
for the earth and its people*

(Permaculture Vol 1 No.3 p2)

Permaculture is a holistic, localised design system. It considers all aspects of life, the economy, the individual's place within the bioregion and attempts to provide a system based on sustainable philosophies. It is essentially a design concept used to create sustainable human habitats (Mollison, 1993), be they in cities or in rural areas. When applied it empowers the individual to become more self-reliant and acts as a central part

of the re-education process called for by so many of the bioregional writers to alter value perceptions in the wider community.

Consumption patterns, dictated by both the demand and supply side, will have to change according to Lang and Hines. This requires a certain level of re-evaluation by the individual. Jones has suggested that this 'inner journey' by each individual is central to sustainable development and would lead to an enlightened community. Further, according to Jones, only through individual self-appraisal on a spiritual level will sustainable change occur Jones (1993).

There is a growing consensus that these spiritual issues can not be ignored in the effort to understand the holistic picture of sustainable development (Carson 1962; Schumacher 1968, 1973; Capra 1983; Porritt 1984; Spretnak 1985; Bahro 1986; Dobson 1990; Mellor 1992). The spiritual dimension has effected most bioregional thought, raising philosophical questions along the lines of: 'what is the point of looking after the earth to preserve it for future generations if we are all eventually going to die?'; 'why pass anything on?' 'At the end of the road, when the earth finally explodes, the 'inheritance' vanishes and the last remaining people have no one to pass the inheritance to.' In the long term we are all dead, as Keynes so rightly remarked, conservation would therefore appear pointless. It is possible to argue, however, that life has intrinsic value and is therefore worth respecting. There are no definitive answers to these questions. All depends on the view of the individual.

One can clearly see from the above debate, the plurality and extent of the question of sustainable development. Motivations, and subsequent solutions, vary depending on the individual's perception of the problem. If the primary motivation is short-term profit maximisation and cost reduction the analysis and subsequent research will take one

direction. Different requirements are necessary if it is deemed desirable to consider the long term implications and the cost to society of ecological destruction.

This research will take the view that the problem is the attainment of sustainable development, defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development, 1987). The cosmetic greenwashing of the SME sector is considered here neither useful nor desirable. Since the environmental summit in Rio De Janeiro in 1992 the U.K. government has been committed to sustainable development through the signing of the Action Plan for sustainable development *Agenda 21*. It therefore seems pertinent to accept this as the defining problem to be solved. This is an important distinction. A considerable proportion of the literature on the subject of environmental management has not necessarily been directed towards this particular aim. Bioregionalism and permacultural design are however, geared towards an holistic ecological appraisal of the system in an attempt to achieve sustainable development.

Both bioregionalism and permacultural design stem from the ecological or ecocentric thoughts discussed earlier. In one respect they provide the beginning of a re-evaluation of philosophical thought. In essence the ideas are not new. They are communal, socialistic, collective and ecological in essence. By socialistic, one means that the economic systems which would feature reduced economic conflict with the ownership of the means of production by the majority rather than the minority (Hutchinson F. 1994).

Theory has offered a solution to the issues and problems facing U.K. businesses. However, whether this theory is relevant to the SME sector still has to be verified. The literature suggests that SMEs may be endemically different from larger companies and

that different strategies need to be employed to succeed in achieving sustainable development (localised networking, co-operational strategies for example).

As Ramstrom (1975, 1986), suggested, small firm research has a tendency to be fragmented and neglected. This emerges as the case in the SME literature on business and the environment. Research is required to establish awareness levels and operational behavioural patterns within the SME sector in order to lay the foundations for explaining why, if the solutions exist, they are not being used in the SME sector. Further, operational models designed to accommodate the needs and resources of the SME sector require development.

Although much work has been done within the field of Environmental Management and sustainable development, it seems that the balance between ecological idealism (as a prerequisite for motivation, commitment, strategic and operational management), practical frameworks and the Small and Medium Sized Enterprise, has still to be clarified.

The literature review has covered a number of diverse subject areas in order to understand all the implications of theory in the subject area of sustainable development and the SME. A gap in the literature has emerged, with little analysis of the implications of sustainable development to the SME sector. Further, analysis of the future role the SME has to play to achieve sustainable development is undeveloped.

CHAPTER 4

RESEARCH AIMS

AND

METHODOLOGY

4.1. Research Aims and Questions

The literature review covered the development of ecological literature from the roots of environmental determinism 5th century BC through to the debates on sustainability in the 1990s. It also considers the strategic management literature and other relevant management writings (supplying the chronological framework into which this work will fit).

The review then specifically considered the limited amount of work available on SMEs and environmental management. No work specifically related to Devon and Cornwall. It concluded with a resume of alternative models to sustainable development which included issues of co-operation, bioregionalism and permacultural design. In an early stage of development in the UK, both concepts of bioregionalism and permacultural design and their repercussions were viewed as significant to the SME and the question of sustainable development. An important distinction was made, however, between the writings, motivations and objectives of the bioregionalists and the management strategists. This was considered significant as the definition of the problem delineates the solution.

Having established the relevant literature, a research plan was devised to structure the research (see Figure 4.1). This chapter will explain this diagram by systematically considering each phase. The research plan explains the flow of the research, both diagrammatically and textually. Its fundamental purpose is to display the research flow from beginning to end and to explain the background behind the research hypotheses.

FIGURE 4.1

RESEARCH FLOW DIAGRAM

	Phase 1	Phase 2	Phase 3	Phase 4
Aims	What is happening?	Why is this the case?	How is this significant?	Conclusions
Hypotheses	Primary hypotheses 1-3 inclusive	Primary hypothesis 4		
Methodology	Mail survey 1	In-depth interviews Mail survey 2	Case studies and model building	
Chapters	Chapter 5	Chapters 6 & 7	Chapter 8 & 9	Chapter 10

RESEARCH DIRECTION



Clearly there was a gap in the literature generally with respect the SME and sustainable development. The initial research question was what part has the SME sector to play in the attainment of sustainable development? To answers this question it was necessary to research what SMEs were doing and were capable of doing to improve their environmental performance. Attitudes in particular decipher future possibilities for a change in management practices. The research literature has suggested that the pathways to sustainable development are twofold. On the one hand traditional industry considers the environmental management systems (EMS) as the best route. Alternatively or concurrently, more stringent *legislation* could be developed (although there are question marks over both of these concepts in the light of the Uruguay round of the GATT talks). Finally there are the broader bioregional visionaries who feel that the attainment of sustainable development requires a total change in the socio-economic structures. The question posed within this research is where does the SME fit? Are the management

systems solutions devised primarily for the large company applicable to the SME? Is legislation going to make any difference and is it feasible within the present movement towards free unregulated trade? Or is there a requirement to consider alternative pathways? and if so is there a need to devise a new conceptualised model for the SME?

To answer these questions it was necessary to understand the present position and to analyse if there was a need for a revision of theory. The revised research aims, therefore, consider: the attitudes, awareness and practices of SMEs to environmental business practices and environmental issues in general; and if the existing solutions and support systems are adequate for the SME.

Revised Research Aims

1. To determine the level of awareness and perception of environmental issues within the SME sector and to assess prevailing attitudes of owner/managers to the importance they attach to managing this aspect of their business operations.
2. To gain an understanding of the scale and nature of response to environmental issues across a broad section of SMEs and to cross tabulate results.
3. To utilise the knowledge gained about awareness, attitude and organisational response to assess the relevance of the environmental management systems so far developed to and to link this to achieving sustainable development.
4. To draw upon the expertise of owner/managers and appropriate institutions to validate and if appropriate further refine new/and or revised systems as necessary.

5. To assess the possibilities for sustainable development within the SME sector.

Having clarified the research aims it was now necessary to consider how best these questions could be researched. For this purpose it was decided to apply the empirical, quantitative, deductive hypotheses testing method to produce a foundation from which qualitative analysis and interpretation could then flow. The following primary, deductive null hypotheses were designed for this purpose.

4.2. Research Hypotheses

Primary Null Research Hypotheses

1. There are no significant differences within the SME sector with respect to attitudes towards environmental issues.
2. There are no significant differences within the SME sector with respect to awareness of relevant environmental issues.
3. There are no significant differences within the SME sector with respect to levels of environmental management.
4. There is no significant variation of response within the SME sector to why levels of strategic and operational environmental management are at such a level.

These primary null hypotheses were designed to establish the empirical foundations for the subsequent qualitative, inductive analysis and model building stages highlighted in the research plan.

A pilot survey was undertaken through the Chamber of Commerce to ascertain if the above hypotheses were worthy of consideration and to develop the rudiments for the first mail survey. It was decided that the hypotheses were valid and worth researching and the first mail survey was constructed accordingly.

Before considering the methodological concepts in more detail the ideological foundations for the methodological routes chosen will be considered. This section provides the base by which the methodology chosen can be understood.

4.3. Ideology

To understand the relationship between data and theory one has to consider the philosophical aspects of research. These 'choices' determine the direction research takes and the methods used and are fundamental to the outcome of the work. Philosophers have argued for centuries about the nature and philosophy of research and a clear dichotomy of thought has developed since the Quantitative Revolution of the 1950s. Work by Comte A. (1853) led the development of the research philosophy *Positivism* which challenged the previously subjective, inductive research technique which became known as *Phenomenology*, (Husserl, 1946).

One can see here a clear distinction in the philosophy of research. On the one hand there is the factual, deductive, objective, external reality of Positivism and the other is the subjective, inductive, socially constructed world of phenomenological research philosophy. The outcome of the research is obviously dependant on which philosophy is prevalent. Fortunately it is not necessary, within a large body of research, to have to use either philosophy exclusively. In fact many writers argue the benefits of combining the strengths of the two philosophies (Easterby-Smith, *et al* 1991). For example if one takes

this work as an example, the large data collection process of the mail survey, lends itself well to the positivist school of thought. This requires large samples, value free observations based on facts, independent observations and the use of hypothetico-deductive methodology. Whereas the more qualitative techniques of the interview research format more accurately ally themselves with phenomenology. For example, focusing on exploratory research, meanings and social effects.

It is important to understand that the chosen philosophical base with which one approaches research determines the research methodology used. For example if one acts within a positivist framework, then one has to use quantitative research techniques to satisfy this research criteria. Whereas using a phenomenological philosophical framework one would have to use qualitative techniques like the semi-structured in-depth interview format.

Effectively positivism (and the related methodological techniques) excels in helping to explain *what* a situation is descriptively. Whereas phenomenology tries to understand and explain *why* there are different experiences. It does not search for external fundamental laws in an external objective reality. Although most positivists argue that this form of philosophical ideology is value free, one has to suggest that no research is totally value free. The choice of research in the first place requires some sort of subjective judgement. In this case, as explained earlier in the chapter, the definition of the perceived problem is undecided therefore the pathway of research is immediately unclear and open to value judgement.

So to conclude, one can see how Phase 1 (Figure 4.1) has been designed exclusively within a positivist philosophical framework. Phases 2 and 3 also have this dimension as well as an element of phenomenology philosophy (in the form of the in depth interviews).

The deductive, factual, quantitative and objective mail survey is endemically positivist and the inductive, qualitative, subjective action learning, (Morgan 1993) of the in-depth interviews and case studies portray the requirements of phenomenological research philosophy. However, within the second mail survey there are open ended questions which ally themselves more accurately to phenomenology. This is because the survey is trying to decipher *why* a certain situation is the way it is. Therefore one can see that the two philosophies can be interconnected and work well in co-operation. Just as quantitative and qualitative research methodologies can also be interchanged effectively.

4.4. Methodology

Data Collection and Analysis - Sampling

a) The Company Sample

Table 4.1 below describes the economic characteristics of the South West (figures are not available for Devon and Cornwall alone). This explains the characteristics behind the company sample. It shows that although the South West has a higher percentage of people employed in the primary and tertiary sectors than the national average, the two sets of statistics are fairly close. Therefore (if one takes employment as a measure of size of industrial sector) national population inference would be valid. However, one can see that the figures for GDP at factor cost and per employee show a totally different picture of the size of industrial sectors. Therefore although the vast majority of people in the South West are employed in the service industry, the GDP (here calculated by the incomes method) shows the manufacturing sector to be the largest in these terms. This discrepancy is exacerbated when the figures are further modified to take into account the percentage number of employees in the sector.

Table 4.1 - Economic Fabric of the South West Sample

Sector	% No. of Emplo- yees	% No. of Emplo- yees	GDP, Factor Cost	GDP, Factor Cost	GDP, Per Emplo- yee	Survey Resp- onse Rate
	S.W.	UK.	£m	% 's	% 's	
Primary	3.73	2.82	N/A	N/A	N/A	4
Second- ary	18.79	21.17	9807	30	44	40
Tertiary	77.48	76.01	14064	42	27	55.4
Totals	100	100	N/A	N/A	N/A	100

South West, UK Classification of Industrial Commodity Groups (1993).

One can see how a brief analysis of the sizes of industrial sectors is rather vague. The general conclusion is that the service sector is the largest in the South West as it has a similar GDP to the manufacturing sector but far more people employed in it. However, the sample does contain similar characteristics to the national average. The analysis of the size of sectors is required to analyse the response rate per sector. The universe was defined as Small and Medium Sized Enterprises. This was limited spatially to Devon and Cornwall. The population concerned in the winter of 1992 was 58,250 companies in Devon and Cornwall (14,500 Cornwall, 43,750 Devon).

The Random Non-Probability Sample

Due to cost limitations, it was not possible to obtain a complete sampling frame (a complete list of the relevant population in Devon and Cornwall). Therefore, although the frame included the vast majority of companies in Devon and Cornwall one has to accept that the sample was a non-probability sample rather than the more accurate Probability Sample (Sandy, 1990). However, to reduce any further inaccuracies a random sampling technique was employed for all of the mail surveys. The first two surveys were taken from a list of 4040 companies in Devon and Cornwall and a random sample of 600 were taken for both.

The random sample was used to identify 600 SMEs in Devon and Cornwall. The data lists came from Enterprise Plymouth and the Cornwall Industrial Directory and the random sample was generated using the random sampling command in the statistical package SPSS PC and then translated into a word processing package for mail merging purposes.

Yates (1981) suggests five criteria on with which one can evaluate the sampling frame. They include five criteria;

1. Adequacy - The sample frame should cover the population to be surveyed and it should do this adequately related to the purpose of the survey
2. Completeness - The frame should include all those units of the population that should be included
3. Duplication - Each unit should appear once only, multiple entries can result in bias

4. Accuracy - Many sampling lists contain *non-existent* units owing to the dynamic nature of these populations
5. Convenience - Accessibility of the list and suitability of its arrangement for the purpose of sampling.

Although the sampling frame used in this research does not totally satisfy all of the Yates criteria it comes close to most of them. The fact that a 'perfect' list was not convenient because of the price and the dynamic nature of the list (due to companies starting up and failing constantly especially in recessionary times) vindicates the sampling frame used in this research.

Simple Random Sample

This technique was used to identify companies who would be willing to take part in the in-depth interview stage of the research. This was taken randomly from the respondents to the first survey and interviewees were asked if they would be willing to participate by telephone, as it was thought that it was harder to decline to offer over the phone. There were, however, some constraints to the sample, it was felt to get a balanced picture the simple random sample should be taken from each industrial sector group, rather than from the total sample. This procedure for the first set of in-depth interviews located 14 companies. This was felt to be a sufficient amount of companies for a semi-structured, qualitative, exploratory study.

This was also the technique employed in the model building stage (phase 3). Relevant organisations and individuals were contacted selectively to attain as much relevant information for the model as possible.

The Inclusive Sample

The inclusive sample was used to identify the companies for the second mail survey. It was decided that because of the interactive effect and the reduction in response rates, that a new random sample would be taken from the original data base. Cross referencing between survey's would still be possible as a number of questions relating to company characteristics would be duplicated. This also has a dual purpose as it acts as a verification process.

b) Data Analysis Techniques

Since the Quantitative Revolution of the 1950s the dominant paradigm has been quantitative rather than qualitative research methods. This paradigm shift, however, has not removed the need to use qualitative methods in certain circumstances. The strength of the two methods in co-operation is much underrated, they are not mutually exclusive by any means. Indeed, as in this research, qualitative and quantitative methods can compliment each other rather effectively.

The data analysis was designed into four distinct phases. (Figure 4.1). Each phase was either complimentary or chronological to the previous stage. The initial phase included a mail survey to decipher *what* the current situation was in the SME sector regarding environmental performance and attitudes. This was a straight forward deductive, quantitative exercise designed to create the foundation of the work. It also briefly asked *why* this was the position. This was designed to be a link with the qualitative research of phase 2.

Phase two was structured in the form of in-depth interviews. They were semi-structured as to reduce the subjectivity of the research, but were qualitative in nature allowing for the flexibility in response required to satisfy the aims. They were also inductive, meaning that the research exercise considered in field observations and retrogressed to theoretical patterns. The aim of phase two was to link the first and second surveys together by considering in more depth the question *why* SME behaviour towards the environment is the way it is. It also considered in an informal way how relevant the existing solutions were to the interviewees.

Phase 2 not only considered *why* environmental behaviour is the way it is in the SME sector but also *how* relevant the solutions offered were to the sector. It took the answers from the inductive, qualitative research and tested it on a deductive, quantitative level in the form of a mail survey. One can see here how the two types of research methodology can be complimentary.

Finally a series of case studies/in-depth interviews were undertaken in Phase 3 of the programme. These were again semi-structured to allow maximisation of information and inductive in nature. The reasoning here was to gain an understanding of the best practices and examples of innovative environmental practice in Devon and Cornwall with relation to the generalised model formulated from Phases 1 and 2.

Mail Survey

The mail survey is a quantitative research technique that allows mass data generation over a large geographical area. Its highly structured and deductive format tests pre-determined hypotheses in the field.

There are a number of problems attached to the mail survey: the response rate; the bias produced by the non-response; the availability of the population; the size of the subsequent standard error of the sample with relation to the population and therefore subsequent population inference and the design of the survey (readability, superficiality of closed questions and subjectivity of open ones). Each of these factors will be considered below. It remains, however, the most systematic way of generating large amounts of information from diverse sources. Mail surveys are also generally simple to use and analyse (assuming a strong design).

i) Mail Survey Design

The design of a questionnaire is of paramount importance to the success of the project. A poorly designed questionnaire will lead to numerous analytical problems. Tull and Hawkins (1990) provide excellent advice on this stage of the research considering aspects such as:

1. Initial considerations
2. Question content
3. Question phrasing
4. Types of response format
5. Question sequence
6. Questionnaire layout
7. Pre-test, revision and final version of the questionnaire.

The classic works of Oppenheim (1966) and Moser and Kalton (1971) also provide sound advice on the design stage even though they are rather dated. More practical advice is

provided by Youngman (1984). There are of course many texts in this area all of which say pretty much the same thing.

ii) Response rate

This is probably the greatest problem attached to the mail survey and has lead to multifarious comment. Jobber and Horgan (1987) suggested that low response rates may be due to the limited interest of the respondent in the subject area. Erdos (1970) also recognised that this low response rate could destroy the randomness of the sample. Therefore one has to consider all possibilities to reduce the non response of the survey.

The issue of response rates is a highly debated area. It is generally accepted that one can statistically work with 30 cases. How representative they are of the population depends on the percentage this is of the sample. Although the Advertising Research Foundation recommend 80% or above as a minimum requirement, 50% response rate seems to be the minimum acceptable rate to allow for population inference, without some sort of non-response test being undertaken, (Erdos, 1970). This can be done through the analysis of first and second wave respondents. If the second wave respondents are similar in their responses to the first wave respondents one can assume that the non respondents would answer in a similar way to the respondents, (Erdos, 1970). There are of course limitations in this exercise and a second follow up survey of the non respondents, by mail or by telephone, would be a more accurate way of testing the non-respondents. Therefore the first and second wave respondent technique was used to test the non-respondents in Devon and Cornwall. Another similar survey was mailed in a new geographical location to further verify results. This procedure also allowed for comparative analysis.

The main influences on the response rates are the nature of the subject, the educational level of the respondent and the size and length of the questionnaire. However, inducements to respond are also important factors. Response rates can be significantly increased with incentives to return, like money, gifts or reports related to the survey. In this case a report was used as an incentive to respond.

Although response rates are of course of great significance, Belson (1986) suggests that low response rates are not completely void. The suggestion is that one requires a high response rate to make accurate predictions of likely events in the future. Low response rates can provide useful information on general patterns.

In order to increase the response rate certain procedures were undertaken in accordance with the literature: an explanatory covering letter (Webb, 1992) was used to explain the importance of the research; a report of the research was offered; the covering letter also stressed the speed in which the survey could be completed; freepost envelopes were included with each survey, (Belson, 1986); the survey was printed and spaciouly laid out in a vertical format, (Erdos, 1970); the research was given further credibility through the printing of the collaborating establishments (in this case the Chamber of Commerce and the Groundwork Trust) on the cover (Webb, 1992). A pilot survey was also undertaken, (Scott, 1961).

Survey 1 (see Appendix 1)

Questions 1-4 were objective factual questions designed to acquire back ground information on the companies to be studied. This was to allow for cross tabulation, comparisons of group means and various other multivariate analytical techniques to be used. Questions 5 and 6 clarified the perceptions of the companies and the individual

respondents towards specific environmental issues. Question 7 addressed company awareness of environmental legislation and regulation. Questions 9-12 considered actual environmental practices within the SME sector. Questions 8 and 13 were concerned with the perceived solutions the SME sector has to the problems it faces.

Survey 1 was designed to satisfy research aims 1 and 2. First, to determine the level of awareness and perception of environmental issues within the SME sector and to assess prevailing attitudes of owner/managers to the importance they attach to managing this aspect of their business operations. Questions 5 to 8 inclusive considered questions of attitude and awareness: questions 5a, 5b and 6a-6m relate to attitudes of importance of environmental issues; questions 7a to 7h look at awareness of regulations; and questions 8a to 8e consider the most effective ways of improving environmental business practices.

Second, to gain an understanding of the scale and nature of response to environmental issues across a broad section of SMEs and to cross tabulate results: questions 9a to 9j consider operational company practices and questions 10 and 11 relates to strategic orientation. Questions 12 and 13 are not analysed within the main body of the text as they were designed to provide initial information for the subsequent in-depth interviews. Statistical analysis can however be seen in Appendix 1.

Survey 2

Survey 2 was designed to consider further the issue of *why* SMEs responded in the way they did to the first survey and the subsequent in-depth interviews. In particular it considered the issue of strategic environmental management in SMEs. Again linking to the third phase of the case study analysis, it also considered the issue of the proposed solutions offered and asked how relevant these were.

Questions 1-5 dealt with objective, factual information about the company. This was necessary as it was decided to use a new random sample for the second survey to vary the input and increase the expected response rate. Questions 8-12 then considered the proposed solution for improved environmental business practices of SMEs. This section included for the first time some open ended questions. These were designed to extract unexpected response and new ideas. Questions 13 and 14 referred to the companies' external business environment. Finally, questions 15-19 dealt specifically with the business support organisation PAYBACK (which is run through the Groundwork Trust). Therefore effectively questions 8-19 further developed the *what* the solutions are to the problems raised in survey 1 and the In-depth interviews, with particular regard to the lack of strategic environmental management in SMEs.

Designed to satisfy research aims 2 and 3, survey 2 aimed to gain further understanding of the scale and nature of response to environmental issues with particular regard to strategic inclinations. The literature review suggested that strategic management can be low in SMEs, this is not, however, definitive. It was necessary, therefore, to understand the sample characteristics to deduce the optimum solution to the initial research question. Questions 6 to 12 related to issues of strategic environmental management. The requirement was for a fuller understanding of the motivations of SMEs with regard to environmental concerns. Questions 13 to 19 considered present and future environmental support initiatives and deduced perceptions from respondents. The second mail survey, therefore, helped to satisfy the third research aim to assess the relevance of the environmental management systems so far developed to and to link this knowledge to the issue of sustainable development.

In-Depth Interviews

All interviews were based on a semi-structured format relying in the main upon open ended questions. They were all taped to allow for accurate transcriptions to be made at a later date. Interviews can be classified according to their degree of structuring. They are placed on a continuum between structured and unstructured, (Walker, 1985). There are however, certain caveats attached to this research process, in particular that of the interviewer bias. Issues such as voice inflection, lack of appropriate etiquette in a particular situation, induced answer suggestion and voluntary expression of the interviewer's opinion can all lead to biased analysis, (Easterby-Smith, *et al* 1991). There will always be a certain level of bias within this research technique and it is essential to understand the pitfalls and caveats in order to minimise their effects.

The in depth interview technique was used as the research was in an under researched area that required *Action Learning* from the interviewee. This qualitative research technique was specially designed by Morgan (1993) to allow a dualistic approach to research in an area that requires a level of problem solving or the unlocking of a new kind of initiative:

Action-learning approaches to research build on the idea that it is possible for the research process to have a dual objective in, a) trying to produce useful research knowledge while, b) using a process that can help the people involved in the research gain a better understanding of their situations

(Morgan, 1993 p296).

The process allows the researcher to keep an open mind during the research and to become immersed in the issues. This facilitates the development of new knowledge rather than having pre-formulated ideas to test in a deductive way in the field. It is an inductive form of subjective research that has some structure in the form of question and answer analysis. For example three distinct forms of answers are suggested allowing the analysis of response to have a somewhat structured format.

Action-learning links theory with practice, developed through the work of [Dewey (1929, 1933); Lewin (1948, 1951); Argyris (1985); Trist (1976, 1982) and Trist and Murray (1990) all in Morgan (1993)]. They considered issues like Action-research and Action-science. The research tries to get the situation to speak for itself. Hypotheses and value judgements are suspended to allow for new insights to emerge.

There are three 'classes' of data, *Class one* refers to the so called objective facts of the situation: *Class two* represent all social constructions of reality other than the above, *eg.* what people *say* about situations, what they say about other people and how they interpret what is happening. *Class three* represents the researcher's social constructions of reality, *ie.* the way the researcher reads the situation. Although the distinction between the three classes is somewhat arbitrary however, it does allow for a certain amount of structure within an endemically unstructured process. This makes the analysis of the responses a little easier to interpret.

The aim is to "provide a rich description of the situation [that has been] encountered together with an accurate record of thoughts and interpretations", (Morgan, 1993, p303). This allows one to trace one's own influence throughout the course of the whole intervention.

Action learning improves understanding of each individual situation. This facilitates comparison elsewhere, for example spatially. The suggestion here is that one can gain an understanding of a particular situation in one area (academically or geographically) and then use this experience elsewhere. However it does not allow one to say because A equals B in one area that C will automatically equal D in another area. One can only make general observations about the new situation from the previously studied area.

The aim of the in-depth interview stage of the research was to clarify issues within the first survey and to link it to the second mail survey. It considered why respondents answered the way they did in the first survey. This was an exploratory question in the first survey that required further research. So, although data already existed on this area in the first survey, using the action learning technique questions were not specifically angled towards the responses of the first survey. The aim was to compare the responses in an in-depth interview situation with the responses of the company in the mail survey (to verify consistency) and with the average responses of all the other respondents in the first mail survey. The other general aim was to consider what companies felt were the solutions to the need to improve SMEs environmental performance, (or if there was a need to act in the first place).

Case Studies

The literature review and empirical analysis revealed that SMEs were not moving substantially towards sustainable development and that this situation was unlikely to change in the foreseeable future. There was, therefore, a requirement to consider alternative options and models. The case studies provided the practical observations for these alternatives. The case studies were semi-structured in nature and applied the action learning approach. The research aims were to gather relevant information from the field

that could be used in the development and re-evaluation of the conceptual model. Therefore, rather than interviewing companies who would explain how they were reducing energy usage as far as possible and using more and more recycled paper as examples of best practice, it was decided to take a more holistic approach to the problem. This meant the consideration of the application of a number of concepts introduced in the literature review, including networking, co-operation, bioregionalism and permacultural design. The model is, therefore, designed from theory and primary source observation.

Research Conclusions and Recommendations

This provides the focus of the research where the answers to the original research questions are answered. The research recommendations suggest areas of research that require further analysis as they place this research into context and recommend future research study.

CHAPTER 5

RESULTS -

MAIL SURVEY 1

5.1 Sample Characteristics

Three primary, null hypotheses are tested in this chapter. All concern the relationship between the SME and environmental concerns, and are as follows:

1. There are no significant differences in the attitudes of the SME sector towards environmental issues.
2. There are no significant differences in the awareness of SMEs to environmental issues.
3. There are no significant differences in the levels of environmental management within the SME sector.

To test these hypotheses a mail survey of 600 randomly selected companies was conducted. This was done through the random selection feature on SPSS PC+. The survey framework was developed from a pilot survey (Appendix 1). The response rate was 40.17% and a non-response error test was undertaken by comparing first and second wave respondents. Since no significant difference was found, it was concluded that population inference would be valid. Surveys were sent to named managers and a freepost envelope was included to increase the response rate. For full statistical analysis of the results within this chapter see Appendix 1.

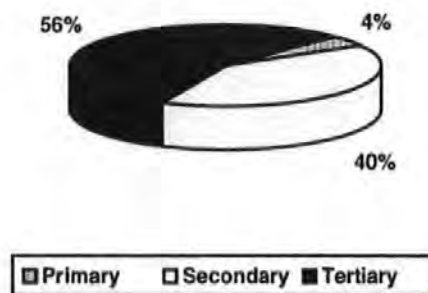
Table 5.1 shows the industrial classifications used in the survey and the valid response rates from each sector. Any 'valid' percentage means that the missing variables are missing from the percentage.

Table 5.1 - Industrial Classification

INDUSTRIAL SECTOR	VALID PERCENTAGES
PRIMARY	
Agriculture - Forestry and Fishing	3.3
Energy and Water Supplies	0.9
SECONDARY	
Mineral Extraction and Construction	1.3
Engineering and Vehicle manufacture	9.2
Other manufacturing	23
Construction	6.7
TERTIARY	
Distribution and Retailing	5.4
Transportation and Telecommunications	2.1
Financial Services	5.9
Other Services	42.2

Figure 5.1 displays the industrial response rates. These are taken from Table 5.1 to allow a more accurate comparative analysis to take place. The amalgamation of groups was not arbitrary, however, it was determined by the Standard Industrial Classification (SIC) breakdown.

Figure 5.1 - Reduced
Response Rates



The response rate of the primary sector is significantly lower than the other two sectors. Therefore interpretation of these comparisons should be approached with a degree of caution. Although the most useful comparisons will be between the secondary and tertiary sectors, the primary sector will be included in some of the comparative analysis. If the response rates of the survey are compared with the economic fabric of the South West economy (Table 4.1) it is clear that the manufacturing sector has responded in larger numbers than would be expected. Although the majority sector is the tertiary sector (one would expect this as nearly two thirds of employment comes from this sector in the South West), the secondary sector accounts for a higher percentage than would be expected from the employment and GDP figures.

Having described the sectoral breakdown of the sample, Tables 5.2 and 5.3 display further sample characteristics.

Table 5.2 - Business Types

Value label	Value	Frequency	Percentage	Valid %	Cum. %
Single Site Business	1	161	66.8	67.6	67.6
Head-quarters	2	33	13.7	13.9	81.5
Subsidiary/ Branch of National Enterprise	3	38	15.8	16	97.5
Subsidiary/ Branch of Foreign Enterprise	4	6	2.5	2.5	100

Table 5.2 shows that the majority (67.6%) of respondents were single site businesses while 18.5% were subsidiaries of national or foreign enterprises. As the economy of the South West is predominantly driven by small, owner managed, single site businesses (Gripaios, 1989, 1990, 1991) this distribution is not unexpected.

Table 5.3 - Number of Employees

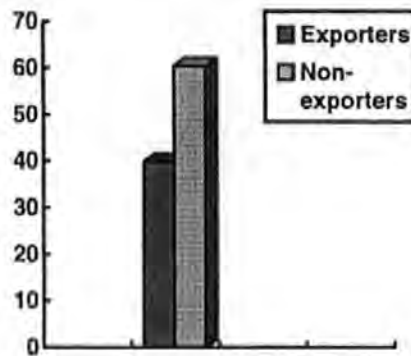
Value Label	Value	Frequency	Percentage	Valid %	Cum. %
Employees					
0-10	1	133	55.2	55.6	55.6
11-25	2	48	19.9	20.1	75.7
26-100	3	42	17.4	17.6	93.3
101-200	4	8	3.3	3.3	96.7
200+	5	8	3.3	3.3	100

Table 5.3 shows that the majority (93.3%) of respondents had under 100 employees. Only 3.3% had 101-200 or over 200 employees. Therefore any comparisons made or interpretations induced using the larger company data should be approached with caution. The *value* category is an SPSS assignment and the frequency is the frequency of response.

Having descriptively analysed the sample, this subsequent section considers the sample characteristics in more depth. It will consider the component parts of each significant sample characteristic and highlights any relevant deviations from the mean. The single site business category corresponded in nature to the sample average response, i.e. the nature (industrial sector, exporters or non-exporters, number of employees) of the single site businesses were similar to the overall sample. Being the largest respondent group, this distribution is to be expected. The headquarters units had, however, a greater proportion of tertiary respondents than the average (66.7% compared with a sample average of 55.6%). The national subsidiaries or branch plant respondents were skewed further towards the larger, secondary industrial sector companies and 50% of the foreign

subsidiary or branch plant respondents had over 200 employees. The sample average of companies with over 200 employees was 3.3%. 100% of the subsidiaries of foreign enterprises were from the secondary sector. A caveat, however, is the relatively low level of response from this sector.

Figure 5.2 - Percentage Number of Exporters and Non-Exporters



Of the companies with 0-10 employees, 84.1% were single site businesses (the sample average was 67.6%), there were no subsidiaries or branches of foreign enterprises and 65.4% were from the tertiary sector compared with a sample average of 55.6%. In the category of 11-25 employees, 6.3% were from the primary sector, which is a relatively large deviation from the sample average of 4.2%. Of the respondent companies with 26-100 employees, 33.3% were national subsidiaries or branch plants, compared with an average for the sample of 16%. 59.5% were from the secondary sector. The general trend that the larger the company, in employee terms, the more likely it would be a subsidiary or a branch plant of a national or foreign enterprise, continued in the 101-200 and 200+ categories.

Figure 5.2 graphically displays the percentage response of exporters and non-exporters. Just over 60% of the companies who responded were non-exporters, which is to be expected with the predominance of small, owner managed firms in the sample area. None of the companies within the primary sector were foreign based companies, neither did they have above 100 employees. The secondary industrial sector category had a bias towards the larger nationally owned companies than the sample average and the tertiary sector respondents corresponded to the average sample response.

5.2 Perceptions and Attitudes

Primary Null Hypothesis 1 - There are no significant differences in the attitudes of the SME sector towards environmental issues.

The survey results are full of apparent contradictions suggesting that the SME sectors level of awareness of environmental issues is low and knowledge is confused.

Figure 5.3. - Percentage Importance of Environmental Issues

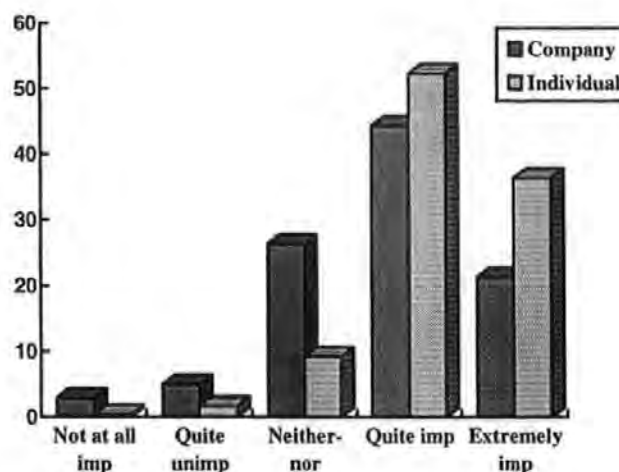


Table 5.4 - Percentage Importance of Environmental Issues

Environmental Issue	VALID PERCENTAGES				
	Not at all important	Quite unimportant	Neither imp nor un-imp.	Quite important	Extremely important
Acid rain	13.9	4.2	44.7	21.9	15.2
CfCs - Ozone depletion	11	5.1	38.1	24.6	21.2
Global warming	11.9	3	40.9	23	21.3
Water pollution	8.4	2.9	26.9	25.2	36.6
Energy usage	5	1.7	15.9	42.3	35.1
Effluent waste disposal	9.2	3.4	28.2	26.1	33.2
Deforestation	13.1	2.5	39.4	22.5	22.5
Noise pollution	5.5	2.1	30.3	36.6	25.6
Vehicle emissions	10.1	2.5	33.3	32.9	21.1
Solid waste disposal	10.1	1.3	28.2	32.4	28.2
Resource depletion	8.9	4.2	33.5	29.7	23.7
Employee health and safety	2.1	0.4	4.6	27.2	65.7
Financial support for environmental groups	12.2	8.4	47.7	21.9	9.7

Respondents were asked how important environmental issues were to their business practices (Appendix 1). Answers ranged from *extremely important* to *not at all important* (Figure 5.3). Most respondents stated that environmental issues were important to their business practices. This was encouraging, at least on a subjective level, as it suggested a high level of interest in the environment as a business issue.

However when asked about specific environmental issues e.g. global warming and acid rain, answers converged more on the *neither unimportant nor important* point on the scale (Table 5.4). This suggests limited understanding of the particular environmental issues considered and appears to contradict the previous answers on the importance of environmental issues. After saying environmental issues in general are important to their business practices, respondents regard most specific issues as *neither unimportant nor important* to their business practices. It could be argued that an amalgamation of a number of less important specific issues creates one larger cause for concern. In this case it must be assumed that, to date, SMEs have placed little importance on understanding the issues themselves.

Energy usage was considered either *quite important* or *extremely important* to their business practices by 77.4% of companies and 62.2% felt noise pollution had the same levels of importance. Employee health and safety, energy efficiency, noise pollution and waste disposal ranked as the most important environmental issues.

The questions in this section were designed to fall into two broad groupings to aid further analysis. The issues in Table 5.5 can be seen as either 'micro' or 'macro' environmental issues. The micro issues relate to any localised environmental issue that has a tangible effect on the operations of a company: energy usage would be an example. The macro environmental group relates to more global problems that may well owe their existence to

localised practices but are not felt directly by company operations. The intention was to see if there were any associations between groups. Although micro and macro issues are interdependent and interrelated, a distinction was made to clarify a point of general awareness.

Table 5.5 - Specific Environmental Issues - A Factor Analysis

Environmental issue	Factor 1	Factor 2	Communalities
Acid rain	0.51	0.72	0.77
CfC / Ozone layer depletion	0.43	0.75	0.75
Global warming	0.48	0.73	0.76
Water pollution	0.76	0.33	0.69
Energy usage	0.79	0.14	0.64
Effluent waste disposal	0.74	0.31	0.65
Deforestation	0.61	0.59	0.74
Noise pollution	0.81	0.09	0.66
Vehicle emissions	0.74	0.35	0.66
Solid waste disposal	0.79	0.2	0.66
Resource depletion	0.61	0.45	0.59
Employee health and safety	-0.08	0.45	0.21
Financial support for environmental groups	0.31	0.65	0.51

Eigenvalue	7.24	1.05
Percentage variance	55.7%	8.1%

Factor 1 - Classified as Micro environmental issues

Factor 2 - Classified as Macro environmental issues

It could be argued that while all environmental issues are localised in essence, some have global cumulative effects. Therefore a useful distinction could be made between those activities having a tangible effect on everyday business management and those with effects which are less immediate because of the scale of the impact e.g. global warming.

To research the possibility of a dichotomous grouping here, a confirmatory factor analysis was undertaken (see Table 5.5 and Appendix 1). Factor analysis groups variables, according to common factors (Child, 1990). In this case the variables were grouped together according to the scale of the environmental issue. The results confirm that most items load on two interpretable factors when using a conservative loading factor of 0.5 (Cureton *et al*, 1983). The significance of the factor model was tested by applying the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy as well as the Bartlett Test of Sphericity.

With both tests the factor's model was highly significant. The KMO was very close to the perfect figure of 1 at 9.1059 and the Bartlett test resulted in 2076 with a significance level of 0.00, which is highly significant. Factor one interprets as the micro environmental issues and factor two as the macro environmental issues, with the only anomalies being deforestation and employee health and safety. Deforestation fell into both groups, whereas employee health and safety did not classify in either. Respondents felt that the more localised micro environmental issues were more important than the global, macro environmental issues.

Using the T. Test, (Appendix 1), further analysis of the company characteristics of each factor group showed that the larger SMEs considered micro environmental issues to be more important than the macro issues (e.g. acid rain and global warming). This suggests that the larger the company, the more educated and aware it is of relevant environmental

issues. Smaller less informed companies generally quoted the more popular and higher media profile environmental issues as important, (e.g. deforestation and global warming), even though these had less immediate impact to their present circumstances.

Having constructed a descriptive picture of SME attitudes towards environmental issues, the sector was comparatively analysed. For this purpose a more detailed analysis of the relationship between business sectors, exporting and non-exporting companies and the different sizes of company was made in order to see if there were any significant differences between these groups in relation to the level of importance they placed on environmental issues. The multivariate analysis of variance test MANOVA was employed (full results can be seen in Appendix 1). MANOVA is a multivariate analysis of variance technique that allows for comparison of two (or more) sets of data. In the following hypotheses the data is said to be significant if the following criteria have been satisfied. First, that the multivariate test of significance *Wilks Lambda* has been minimised below 0.05 and second, that the following univariate F significance test was also below 0.05. (See Table 5.6 for an example of MANOVA). If these criteria are met then the null hypothesis can be rejected at the 5% significance level. Which means that the relationship could occur by chance 5 time out of 100. A significance level of 0.00 means that one can say with 100% confidence that there is a relationship. In most cases it is acceptable to say with 95% confidence that the relationship has not occurred by chance. This research will predominantly use 5% as the critical statistical significance level (Tabachnick, 1989).

The industrial sectors analysed were reduced from ten specific sectors to three more general ones for comparative purposes. The number of responses for the smaller industrial sectors would have invalidated many of the statistical tests, so the results were

amalgamated into primary, secondary and tertiary sectors (see Appendix 1 for univariate and multivariate analysis of all sectors of industrial activity).

In order to analyse the results effectively a number of secondary hypotheses were designed. By testing these secondary null hypotheses and accepting or rejecting them it would be possible to make a more accurate analysis of the primary, deductive hypothesis. In certain cases variation in response from different groups have not been included in the main body of the research but are available in the relevant appendices. For example, one set of secondary, null hypotheses may include cross sectoral analysis, the differences in response of exporters and non-exporters and respondent variation between company types, whereas another set of null hypotheses may not include analysis of exporters and non-exporters, but may include further discussion on large and small SMEs and the variation in response between those two groups. This is to reduce the amount of unnecessary repetition.

Secondary Null Hypotheses

1. There are no significant differences in the perceptions of environmental issues between industrial sectors.
2. There are no significant differences in the perceptions of environmental issues between exporters and non-exporters.
3. There are no significant differences in the perceptions of environmental issues between large and small SMEs.

The reasoning behind this group of hypotheses was to decipher how important environmental issues were to the SME sector. This includes analysis of company size, type and sector differentials.

Secondary Null Hypotheses 1

There are no significant differences in the perceptions of environmental issues between industrial sectors.

As far as the importance of environmental issues were concerned, there were no significant differences (when answering on behalf of the company and as individuals) between industrial sectors regarding their perceptions of the importance of environmental issues (Table 5.6).

Table 5.6 - MANOVA importance of Environmental Issues - Company Response By Industrial Sector.

Test name	Value	Approx. F	Hypoth. DF.	Error DF.	Sig. of F.
Pillais	.01695	1.00020	4.00	468.00	.407
Hotellings	0.1713	.99352	4.00	464.00	.411
Wilks	.98310	.99686	4.00	466.00	.409

Table 5.6 tabulates the multivariate significance test in the full appendix form. Because it is only the Wilks Lambda statistic that is used to judge the significance of the multivariate model, future tables will include only the Wilks Lambda figure and univariate F. statistic, which is the statistic that indicates any significance differences in the comparative

analysis. This reductive methodology will also be applied to any univariate tables within the main body of the text (Table 5.7).

To confirm that there is no significant difference between categories of industrial sector perceptions of the importance of environmental issues to their business practices, a further MANOVA test was run with respect to the specific environmental issues.

Table 5.7 - Univariate F. Tests

Variable	Hypoth SS.	Error SS.	Hypoth MS.	Error MS.	Sig. of F.
Q5A	1.59214	209.175	.79607	.89391	.412
Q5B	.66845	121.02776	.33422	.51721	.525

No significant differences between industrial sectors response to any of the issues were detected. This is a somewhat surprising statistic, as one would expect, the secondary sector to find water pollution more important to their business practices than the tertiary sector. The inference is, the SME sector has either little understanding or interest in the issues.

The null hypothesis that there are no significant differences between industrial sectors perceptions of the importance of environmental issues, is therefore accepted at the 5% significance level.

Secondary Null Hypothesis 2

There are no significant differences in the perceptions of environmental issues between exporters and non-exporters

Using the MANOVA multivariate analysis of variance, Wilks Lambda was minimised below 0.05 (at the individual respondent level) suggesting that there was a significant difference in the attitudes of managing directors or owner managers in the exporting and non-exporting sectors. Exporters found environmental issues to be significantly more important than non-exporters.

However, similar to the previous hypothesis, there were no significant difference in response between exporters and non-exporters when answering on behalf of the company. This trend tends to suggest that respondents were more inhibited in their responses when answering on behalf of the company rather than as individuals.

Having established this fact however, MANOVA did show significant differences in certain perceptions between exporters and non-exporters on a company level. Although there had been no significant difference between exporters and non-exporters when asked generally about the importance of environmental issues to business practices, when asked more specific questions about individual environmental issues there were some significant differences (Table 5.8).

Exporters found global warming, water pollution and effluent waste disposal significantly more important to their business practices than non-exporters. Without further analysis of the specific companys' characteristics, however, one can not really comment on these results as their significance will lie in the nature of business practices.

Table 5.8 - Importance of Environmental Issues for Exporters and Non-Exporters

VARIABLE (Importance of)	SIGNIFICANCE OF F.
Environmental issues to company	.352
Environmental issues to individual	.012
Acid rain	.355
CfC/Ozone layer depletion	.101
Global warming	.014
Water pollution	.002
Energy usage	.165
Effluent waste disposal	.047
Deforestation	.498
Noise pollution	.688
Vehicle emissions	.529
Solid waste disposal	.897
Resource depletion	.544
Employee health and safety	.502
Financial support for environmental groups	.584

In general, however, exporters have greater empathy towards the environment than non-exporters. A likely explanation is the requirements to adhere to more stringent legislative and regulatory requirements in the exporting markets, with Germany and the USA being two of the major exporting locations of South West firms (see Appendix 1 for export market descriptive statistics). In both countries green issues have a higher profile than in the U.K.

The null hypothesis that there is no significant difference in their perceptions of the importance of environmental issues between exporters and non-exporters is, therefore, rejected at the 5% significance level.

Secondary Null Hypothesis 3

There are no significant differences in the perceptions of environmental issues between large and small SMEs.

Following the trend set by the analysis of exporters and non-exporters, perceptions of the importance of environmental issues continues in this sub-section. Although there were no significant difference between the different sizes of company in their perceptions of importance's on a company level, there were significant differences in the perceptions of *specific* environmental issues. There was also a significant difference between respondents answering as individuals and those answering on behalf of the company. This strengthens the alternative hypothesis that there is a significant difference between large and small SME's perceptions of the importance of environmental issues.

Although it cannot be deduced from the data that there is a significant difference between companys perceptions on a general level according to size, there are significant differences of opinion with regard to specific environmental issues. With Wilks Lambda minimised below 0.05 at 0.001 one can prognosticate, with 95% confidence, that larger SMEs are more likely to find water pollution, energy usage, effluent waste disposal and solid waste disposal more important to their business practices than smaller companies (Table 5.9). This confirms the previous factor analysis that larger firms find the more localised, micro environmental issues to be of importance, forming a significant cross reference in the validation of the research findings. The conclusion, reached through inductive analysis of the data, suggests that the larger the company the more likely it will have a greater understanding of relevant environmental issues.

Table 5.9 - Importance of Environmental Issues for Large and Small SMEs.

VARIABLE	SIGNIFICANCE OF F.
Water pollution	.011
Energy usage	.010
Effluent waste disposal	.016
Solid waste disposal	.034

Deriving from the fact that larger companies are far more likely to have the time and resources available to address their perceived, peripheral strategic issues like the environment. The results suggests that there is a statistical relationship between size of company and environmental awareness.

The null hypothesis is therefore rejected at the 5% significance level and accept the alternative hypothesis, that there are significant differences between the size of the SME and the perceived importance of environmental issues.

With two out of the three secondary hypotheses rejected at the 5% significance level, there is enough evidence to reject the primary, deductive hypothesis that there are no significant differences in the attitudes of the SME sector towards environmental issues. Clearly there are significant differences of opinion regarding attitudes towards environmental issues in a number of areas. There are also, however, a number of areas where significant differences do not exist. An example is that there is no significant difference in response between industrial sectors with regard to their attitudes towards environmental issues generally.

Having considered the question of attitude towards environmental issues and gleaned a basic understanding of SME opinions of environmental issues, it was then necessary to analyse in more detail issues of environmental awareness.

5.3 Environmental Awareness

Primary Null Hypothesis 2 - There are no significant differences in the awareness of SMEs to environmental issues.

This hypothesis relates to questions 7a to question 7h in mail survey one (Appendix 1) and considers matters of fact with particular reference to the awareness of SMEs to environmental legislation and regulations.

Before considering comparisons within the SME sector a few comments are necessary on a general level regarding the data generated. General awareness of environmental legislation and regulation is low in Devon and Cornwall's SME sector, (Table 5.10). 62.8% of respondents were unaware of the implications to their business practices of the 1990 Environmental Protection Act (EPA) and only 27.4% of respondents were aware of the implications of BS 7750. This compares favourably, however, with the EC Eco-Audit Scheme (now EMA, the Environmental Management and Auditing Scheme) of which only 16% were aware. 21% were aware of the existence of the EC eco-label, although subsequent in-depth interviews showed this figure to be over inflated. Many respondents thought they knew what the eco-label was but were confusing it with many other environmental labels. Only 13% were aware of any EC directives on the environment. This lack of interest in EC policy making, suggests a reactive approach to the environment.

Nearly a quarter of the respondents were not aware of the implications of the quality standard BS 5750. With 62.8% still unaware of the implications of the 1990 EPA, 68.8% unaware of the implications of the 1989 Water Act and 43.3% unaware of the implications of the Control of Substances Hazardous to Health (COSHH) to their business practices, it must be concluded that levels of awareness of environmental legislation and regulation are low in the SME sector.

Table 5.10 - Percentage Awareness of Environmental Legislation and Regulation

LEGISLATION/REGULATION	PERCENTAGE AWARENESS		
	Yes	Do Not Know	No
EC Eco-labelling scheme	20.9	46.9	32.2
EC Eco-Auditing scheme	15.9	51.9	32.2
Forthcoming EC directives	12.8	54.3	32.9
BS 5750	74.2	13.6	12.3
BS 7750	27.4	43.9	28.7
1990 EPA	37.2	38	24.8
Water Act 1989	31.2	42.7	26.1
C.O.S.H.H. 1988	56.6	27.2	16.2

A laggard approach towards the environment is likely to encourage a reactive management culture. This is the antithesis of the proactive management structure required to establish environmental management systems solutions.

A strong dichotomy of response is apparent: on the one hand companies feel that environmental issues are important to their business practices; on the other they are unaware of relevant legislation and regulations. A number of reasons could lie behind this ignorance. Faults in the diffusive information pathways from support organisations seem probable. There could also be time constraints on the company as well as limited financial resources available. Opinions were more positive on general attitudes towards the environment than on specific issues. It would appear that SMEs have not, in general, considered the relevance of the environment to their particular business. Alternatively they were only paying lip service to the environment as a topical issue.

A Chi-Square test was used to consider if there were any significant differences in the responses of the different business types, sizes of business and industrial sectors to the expected awareness of environmental legislation and regulation (Table 4.11). The Chi-Square distribution is one that consists of the sum of a series of independent squared standard normal random variables and is used when the data being analysed is non-parametric. To help with this analysis three secondary, deductive hypotheses were established.

Secondary Null Hypotheses:

1. There are no significant differences in awareness of environmental legislation and regulation between company types.
2. There are no significant differences in awareness of environmental legislation and regulation between large and small SMEs.

3. There are no significant differences in awareness of environmental legislation and regulation between industrial sectors.

Secondary Null Hypothesis 1:

There are no significant differences in awareness of environmental legislation and regulation between company types.

Company types categorises businesses as *single site units, headquarters units, subsidiary or branches of national enterprises* or as *subsidiaries or branches of a foreign enterprises*.

Because of the relatively large number of variables, the number of cells with expected frequencies of more than 5 (a requirement for the test according to Sandy, 1990) did not achieve the required amount (80%). It was therefore felt that collapsing the data into the following categories, would provide greater accuracy. This proved to be the case. Therefore all Chi Square tables printed in the main body of the research have fulfilled this requirement. Pearson's Chi statistic was also used on all occasions.

Hence the categories of *a subsidiary or branch of a national enterprise and a subsidiary or branch of a foreign enterprise* were amalgamated having the common denominator of *subsidiary*. It was felt that, for the purpose of comparison, this classification was valid since the original classifications were arbitrary.

A highly significant grouping of data resulted. Significant differences of observed and expected data were found in each category. The higher the Chi statistic the more significant this is. A significant difference between business types in their expected and

observed response to their awareness of the implications of the eco-label appeared. Observed frequencies of single site businesses knowing of the implications of the eco-label are lower than would be expected and observed frequencies of subsidiaries or branches of national or foreign enterprises are higher than would be statistically expected. Effectively this means that the larger the business unit the more likely it will be aware of the implications of the regulation to its business practices.

Table 5.11 - Awareness of Regulation By Company Type

VARIABLE	PEARSON'S CHI	SIGNIFICANCE
Eco-Labeling	31.98445	.00000
EC Eco-Audit scheme	24.54011	.00006
Forthcoming directives	12.90064	.01177
BS 5750	10.96817	.02692
BS 7750	19.37284	.00066
EPA	20.63949	.00037
Water Act	17.89926	.00129
C.O.S.H.H.	22.31162	.00017

The pattern is replicated with regard to the awareness of the eco-auditing scheme, with larger company units being more likely to be aware of the implications to their business practices than the smaller single site businesses or even headquarters units. This general pattern applies for all responses related here. The larger the business unit the more likely it will be aware of environmental legislation and regulations.

Although most of the significance levels are valid at the 1% significance level one can not reject the hypothesis at this level. The more general hypothesis that there is no significant difference in awareness of environmental legislation and regulations between company types is therefore rejected at the 5% significance level. The reason for this is that one loses some significance by amalgamating significance levels and it would be safer to conclude at this lower level.

Secondary Null Hypothesis 2

There are no significant differences in the awareness of environmental legislation and regulation between large and small SMEs.

Once again the data set was reduced to allow for a more accurate comparison to take place. The categories were reduced from (0-10); (11-25); (26-100); (101-200) and (200+) to (0-25); (26-100) and (101+), (Table 4.12). The statistical trend was similar to the previous hypothesis, the larger the company the more likely it would be aware of environmental legislation and regulations.

Further analysis of the cell information showed that all of the questions followed this trend. Again because one is considering the amalgamation of significance levels one has to err on the side of caution and reject the null hypothesis at the confidence 95% level although many of the individual significance levels are significantly lower than this.

Secondary Null Hypothesis 2

There are no significant differences in the levels of environmental management between large and small SMEs.

Using the same method as above, the multivariate test of significant variation was minimised below 0.05 at 0.00. The univariate F tests suggested that there was significant variation in response with the following issues: energy efficiency, waste management, environmental auditing, pollution control policy, environmental staff training and the implementation of environmental management systems (Table 5.16).

Table 5.16 - Environmental Management By Company Size

VARIABLE	SIGNIFICANCE OF F.
Recycling policy	.406
Energy efficiency	.001
Waste management	.000
Checking suppliers policy	.360
Reduction of packaging	.163
Environmental audit	.000
Pollution control policy	.004
Environmental staff training policy	.006
Environmental transport policy	.456
Environmental management system	.000

The explanation for this variance was also clear, after analysis of the cell information (Appendix 1). The larger the company (or more employees) the more likely it would either have considered or implemented the policies. The null hypothesis is therefore rejected at the 5% significance level and the alternative hypothesis that there are significant differences in the levels of environmental management between large and small SMEs is accepted.

Secondary Null Hypothesis 2

There are no significant differences in the level of environmental management between different company types.

Table 5.17 - Environmental Management By Company Type

VARIABLE	SIGNIFICANCE OF F.
Recycling policy	.159
Energy efficiency	.075
Waste management	.000
Checking suppliers policy	.026
Reduction of packaging	.136
Environmental audit	.000
Pollution control policy	.005
Environmental staff training policy	.001
Environmental transport policy	.323
Environmental management system	.002

The multivariate test of significance, Wilks Lambda, was minimised below 0.05 which suggested that there was significant variation in the responses of different company types. For the areas of variation see Table 5.17. They appear as waste management, checking suppliers policy, environmental audit, pollution control policy, environmental staff training and the implementation of Environmental Management Systems.

By analysing the cell information and the mean responses one can explain the significance of the univariate F tests. The picture for all of the tests is similar on each occasion: the larger the operation the more likely it is that they would have considered or implemented the environmental procedures.

The null hypothesis must therefore be rejected at the 5% significance level and the alternative hypothesis, that there are significant differences between company types and their level of environmental management must be accepted.

Each secondary null hypothesis has been rejected with 95% confidence. The primary null hypothesis is therefore rejected and the alternative hypothesis that there are significant differences in the levels of environmental management within the SME sector is accepted.

Evidently attitudes, awareness and levels of environmental management differ within the SME sector. This chapter has proved that the larger the company, especially in the secondary sector, the higher the likelihood it will take the environmental question seriously. This is, however, by necessity a relative comparison. If these levels of awareness, attitudes and practices of the larger SMEs are universally applied it is unclear whether sustainability would result. What is certain is that SMEs (in particular the smaller ones) are not sufficiently environmentally conscious to make substantial changes

to their practices. Therefore the question has to be, why? Why are the smaller SMEs not changing their practices significantly? Further, why are the majority of SMEs not planning for the environment strategically? Until these fundamental questions are resolved and an appropriate framework for dealing with them constructed, SMEs will continue to be reactive in their approach to environmental issues.

CHAPTER 6

RESULTS -

THE IN-DEPTH INTERVIEWS

6.1. Objectives and Sample Characteristics

Phase one of the empirical data collection involved establishing *what* the position was with regard to SMEs in Devon and Cornwall. It allowed for detailed analysis and comparison between industrial sectors and types of SMEs with regard to their environmental attitudes, procedures and practices. Phase two (see Figure 4.1.) of the empirical data collection aimed to clarify some of the questions raised in phase one and to introduce questions relating to the next major research question of why the attitudes and practices in phase one were the way they were. Chapter 6 satisfies the second research aim (Chapter 1) to gain an understanding of the scale and nature of response to environmental issues across a broad section of SMEs and to cross tabulate results.

This second phase took the form of in-depth interviews with 14 companies. The interviews were semi-structured to allow freedom to discuss ideas and for inductive, qualitative research techniques to be used. However, the loose questioning technique was sufficiently structured to constrain the interviewee to at least a certain area of discussion. This is an important consideration for discussion of an interdisciplinary subject (Walker, 1985).

It was anticipated that the in-depth interviews would also provide the basis for a second mail survey, which would test on a a larger sample the questions and issues highlighted by interviewees. Therefore phase 2 of the empirical data collection has a dual purpose, firstly to collect data from owner managers about green issues and to gauge the general feeling in the field, but it also acts as a bridge between research techniques. The questions posed and individual, company profiles can be found in Appendix 2.

The companies were selected randomly from each industrial sector to give a balanced picture. Of the fourteen companies interviewed, six were from the secondary sector and eight were from the tertiary sector. Availability of company managers was the predominant determining factor in the selection of firms for interview. All were taken from a random sample of 10 companies from each industrial sector and there was no bias towards environmentally friendly companies. No specific hypotheses were built because this phase of the research was inductively based. The general objectives were threefold:

1. To clarify specific issues arising from the first mail survey, e.g. certain management practices and any ambiguous response.
2. To explain company response, attitude and awareness in the first mail survey.
3. To gauge opinion on the prescribed environmental management solutions and their alternatives.

The in-depth interviews consider the environmental initiatives and policies in place: how companies feel about the initiatives they have employed; and why environmental strategic management in the SME sector is so low. The results from this inductive research were intended to clarify the structure for the second mail survey. This would consider the applicability of the proposed solutions offered to SMEs to reduce their adverse environmental impact, examine the cause of environmental degradation and review alternative solutions.

The in-depth interviews also aimed to elicit what SMEs would find useful as far as additional help was concerned, to reduce their adverse environmental impact. The

applicability of BS 7750, the environmental standard, is considered in the light of interviewee response.

Questions were loosely designed to allow for the Action Learning techniques discussed in Chapter 4 to emerge. This meant that on most occasions discussions were broadened quite considerably, although the semi-structured format of the interview did allow for a certain amount of directional encouragement with respect to the discussions. Questions were designed to elicit information on the following subject areas:-

1. Company details and background information.
2. Environmental perceptions, initiatives and strategies.
3. Perceived problems with environmental management.
4. Helpful solutions.
5. General issues relating to the environmental attitudes and policies of the firms.

What follows is a summary of the discussions under the following headings: *Incentives to be environmentally friendly*; *Initiatives in place*; and *Perceived solutions*. The three sections relate to the above questions in a general way and allow for a conglomeration of a number of the issues raised. Full transcripts can be viewed in Appendix 2.

6.2. Incentives to be Environmentally Friendly

In discussion it was suggested that analysis of solutions to environmental problems were hampered by inadequate delineation of the "problem". In theory and practice, green issues are so wide ranging in nature that the management structures of SMEs are simply not adequate to deal with them holistically. Companies are confused about the range of issues and effective solutions. This confusion usually leads to a reluctance to act. Most

(93%) SMEs deal with environmental problems (if at all) by employing critical incident situation management. They wait for the issue to become a problem and then apply "common sense". This reactive approach is unlikely to achieve sustainable development: by definition it is not preventative in nature. The achievement of sustainable development may require more than just critical incidence situation management. It could require education about the concept of sustainability and a fuller understanding of the businesses, potential environmental impact.

This essentially educative process takes time and therefore money, both of which are not available to most SMEs within the present system. Even if the employment of environmental strategies within an SME did lead to cost savings, many SMEs (79%) feel that the opportunity cost (or time spent) on the consideration of green issues and the subsequent implementation of these strategies, are too great. That time could have been spent selling more goods or building up more business.

A clear distinction appeared between the secondary and tertiary sectors in their motivational interest in the environment. The dominant motivation factor in the secondary sector was legislation, whereas the tertiary sector felt customer pressure to be more of a catalyst for change. However, one area both sectors seemed to agree on was the fact that environmental issues were becoming more and more of a competitive issue.

In general the secondary sector reacts primarily to legislation but there were other reasons for companies to have an interest in environmental issues. Secondary sector companies (as suppliers) found themselves under increasing pressure from larger buyers to improve their environmental performance. An integral part of an holistic environmental management strategy for a large company is to check their suppliers' environmental records. Therefore smaller companies are beginning to be affected by the self-regulatory

mechanisms of the environmental management systems employed by larger companies. Pressure to comply to legislation was particularly high amongst those companies who exported to northern continental Europe. It was however suggested that accreditation to a standard like BS 7750 can be a purely cosmetic exercise undertaken for commercial reasons only. Indeed, 86% felt cynical in about the process of environmental management and the subsequent accreditation procedure.

A general feeling, in particular from the secondary sector, was that legislation was the dominant force of change (50% felt legislation was the dominant catalyst for change). However, interviewees felt that legislative pressure (rather than self imposed regulation) encouraged companies to wait until they were forced to undertake changes and resulted in the implementation of no more than the minimum requirements. Roome has labelled these companies as *compliance companies* (Roome, 1992). It was generally felt that this system of 'worst legal practice' could never produce sustainability. A preferable strategy, could be to improve the educational provision and information diffusion to companies to persuade companies in the virtues of environmental improvement. The imposition of unwanted and incomprehensible requirements on companies was generally agreed to be severely limited in its effectiveness, by 93% of interviewees.

The use of economic instruments was regarded in a similar light. Although concepts like changing the direction of company taxation away from profits towards the use of environmental resources were seen as conceptually interesting by 43% of interviewees, change on this level was viewed with a certain amount of unease. Insurance and banking incentives to improve environmental performances were viewed with particular cynicism. The primary explanation for this was that financial matters could easily be personalised and biased as banks took environmental issues in to account with a limited empathy for the plight of specific trades. There was cynicism about the ability of external auditors to

understand the intricacies of their specific trade areas and a general feeling that companies could be discriminated against due to inaccurate information. Development of the idea of barriers to environmentally unfriendly goods was viewed as restrictive. This was due to the fact that SMEs felt that they would find themselves being discriminated against as they could not afford to compete with the larger companies in terms of innovation.

In the course of the interviews, attempts were made to explore the implications of the limitations of GNP as an indicator of sustainable lifestyles. As with most discussions on the use of economic instruments to reduce environmental damage this concept was generally not understood. SMEs are conservative and wary of large scale change in any economic or political area, they consequentially feel that the optimum response to environmental pressures is self-regulation. Self-regulation would, however, require a much higher level of environmental awareness than that revealed by the first mail survey (Table 5.10) or indeed in the in-depth interviews.

71% of interviewees felt that information diffusion to the SME sector regarding environmental issues was poor. This is theory consistent (Hendry, 1992) and emerged as one of the most important areas considered in this research. If the information required to change attitudes and practices is not reaching the SME sector, progress will inevitably be slow. Additionally environmental dissemination flows may be regarded as irrelevant when issues are imperfectly understood. It would appear that applicable environmental information flows are essential for an SME to start to understand the benefits and potential of efficient environmental management. As and when these emerge, SMEs may achieve self-regulation and aim for best practice.

Although it was accepted that increased information flows would help most SMEs with their decision making process with regard to environmental considerations, there was a certain level of unease regarding the use of information to aid compliance with legislation. Traditionally SMEs have viewed legislation as *a priori* restrictive to practices with regard to environmental considerations. This tends to occur where legislative policy formulation occurs with little consultation and when decisions are taken at a distance from the workplace. Decisions on business practices can be taken by legislators who are unaware of and unsympathetic to their own particular industrial practices. The general feeling emerged that legislative change may be impractical as the experience of the individual businesses are not sufficiently incorporated into the legislative process.

Interviewee response to the legislation/self-regulation debate was mixed. Some regarded legislation as essential. Others placed their faith in self-regulation and no clear conclusion can be drawn here. The argument for self-regulation had its critics. Self-regulation was seen by some as an escape clause allowing businesses to ignore the issues and their responsibilities and take no action. However, the market can exert a powerful influence on decision making. Where this occurs, self-regulation is infinitely preferable to imposed regulation which is reactive and often compromises the long term needs of the environment. There are a number of other problems attached to the legislation route, not least the issue of policing the legislation and enforcing penalties. This may be relatively straightforward where there is potential for a large environmental disaster and where large firms are involved. However, proof and prosecution on the SME scale is a totally different matter. It is therefore necessary to work out how SMEs can be persuaded of the merits of environmental best practice and supplied with the support framework and information to enable them to change their practices.

In theory it is plausible that the SME sector could fully understand the benefits of clear environmental management, therefore allowing radical change, in the short term, however, this is unlikely. Legislative developments are therefore an essential means to keep environmental considerations on the agenda. In practice compliance with EU directives (in the secondary sector) has provided a firm foundation from which to build.

Of the 29% that were aware of the existing environmental legislation affecting their business, 75% felt that the legislation had been drawn up without due consultation with respective trade associations. This would seem to be a critical point with respect to SME environmental management. The high level of resentment towards external decision makers imposing regulations on a trade they were not perceived to understand could be counter productive. Equally the voluntary environmental management standards developed to be universally applicable were often perceived as irrelevant and in cases detrimental to business practices. A generic approach may have been mistakenly applied to the SME sector because of the diverse nature of firms. Building a model that is as applicable to a corner shop in Barnsley as a chemical manufacturer in Birmingham is impractical. Since trade associations are highly respected it was felt that sector specific environmental models disseminated through trade association journals would be more highly regarded than the more generic British standard. These sector specific models would, of course, include a large input from the relevant industry, making implementation financially viable and logistically feasible.

Further it was felt that the location of the SME itself was a significant factor with regard to incentives to be more environmentally friendly. Businesses located in a small villages find the views of the community to be extremely important. This aspect of the theory of bioregionalism indicates that, in practice, other values compete with profit maximisation to be taken into account by the SME (Morehouse, 1993; Conaty, 1993b). Since local

residents value their environment highly a company small enough to have a real feel for the surroundings and residents feelings, gives the environment a higher priority. Larger companies with headquarters elsewhere can become detached from the locality in terms of policy formation. This would suggest that an integral part of a central business policy on the environment would encompass enhanced opportunity for small-scale operations and local trade.

6.3 Initiatives in Place

Results broadly confirmed the findings of the first mail survey (see Table 6.1.) with regard to the level and type of environmental initiatives in place. Recycling, energy efficiency, employee health and safety and waste management programmes were the most common initiatives. The tertiary sector (in particular the office based companies) considered recycling to be the most important environmental concern, being a high profile initiative that saved money and raised the consciousness of the workforce. In general the more manufacturing based companies considered recycling an extremely efficient process which could accrue a substantial cost saving.

It was suggested, however, that the unduly restrictive nature of the Duty of Care Regulation (Part Two of the 1990 EPA) could act as a disincentive to recycling. This is a reference to the fact that companies can no longer legally transport waste from their site to a recycling centre. There is a legal requirement for an independent company to undertake this task at a cost to the waste producer. Exasperation and negative feeling towards green issues has resulted especially where the initial reason for interest in the environment was personal conviction. Such legislation can be counterproductive. The very complexity of the subject area leads many companies to avoid legislative compliance. Indeed many companies feel that it is safer to avoid drawing attention to

their operations in the first place by ignoring the issues completely. Small companies also find legislative legal advice is far too costly.

Table 6.1 - In-depth Interview: Environmental Initiatives

INITIATIVE	VALID PERCENTAGE
Recycling	50
Energy efficiency policy	35.7
Waste management programme	42.8
Checking suppliers policies	7.1
Packaging policy	14.2
Environmental audit	7.1
Pollution control policy	14.2
Staff training policy	7.1
Transport policy	28.5
Environmental management system	7.1

Energy efficiency is seen as a potential cost saver and has been implemented by 36% of the interviewees. Many energy efficiency initiatives in place, however, are limited to simple procedures like switching off the lights. Few interviewees had considered more in-depth issues like insulation and energy supplies. The initiatives in place were more simple operational initiatives that required little time and financial investment. This is unlikely to change without strategic plans in place to allow for a more holistic understanding of green issues. Waste and emission control was seen as an more of an important issue for the secondary sector companies interviewed than the tertiary sector

companies. However, tertiary sector companies that dealt with large amounts of packaging also suggested that waste disposal was an important issue.

Generally, the results mirrored the mail survey. Most environmental initiatives arose from the need for legislative compliance in the secondary sector and from the customer image impact in the tertiary sector. Environmental issues on the whole were considered a low priority business issue, initiatives usually taking the form of *ad hoc*, critical incidence situation management.

Certain companies with an integral interest in the environment tended to have a more holistic approach to the environment. Some consultancies, for example, were interested in BS 7750 accreditation for commercial reasons and were therefore more likely to have considered the environment as a business opportunity. Similarly companies dealing with highly toxic substances were traditionally concerned to present an environmentally friendly image. They were therefore likely to have more environmental initiatives in place than companies who considered their environmental impact to be minimal.

In general, the inclination to plan strategically to incorporate green considerations into business practices, was low. Only 7% had an EMS in place. This confirmed the findings of the first mail survey. Indeed the inclination to formulate strategic plans at all was often non-existent. Interviewees were already over worked and disinclined to spend valuable time and money producing written policy statements and strategic plans. The Devon and Cornwall Training and Enterprise Council (TEC) has highlighted this as a crucial area of concern. They consider the increase in the level of strategic management in the SME sector as an essential requirement if the high level of business failures are to be reduced, especially just after start up (a survey by Storey, 1987, found that nearly 40% of SMEs failed in the first three years). This is not an encouraging sign since trading ethically to

take account for the environment requires forward planning and proactive management. Once mechanisms are in place for this to be achieved (i.e. willingness to spend time on strategic planning) environmental strategic planning becomes feasible. If, however, these structures are not in place the likelihood of persuading SMEs to take account of environmental considerations is lower.

The implementation of BS 7750 (or any other environmental standard) was generally regarded as a waste of time and money. It was considered a purely cosmetic exercise (as was the implementation of the quality standard BS 5750), one which would only be considered under extreme legislative or consumer pressure. 100% of interviewees from the tertiary sector felt that the standard was totally inappropriate in nature and *could not* be implemented even if they wanted to. They felt that management systems were only appropriate to large manufacturing companies and were therefore not relevant to their modest business practices.

6.4. Perceived Solutions

The above discussion has explored the critical response of the interviewees. In general, feelings were negative about environmental issues. The most commonly cited responses for lack of interest in any environmental activity requiring more than critical incidence situation management were: time constraints; financial constraints; the nature of the management systems solutions (both due to the generic nature of the standard and the fact that they are systems based); lack of relevant information; lack of subsidy support to implement any changes; lack of relevance of environmental issues to their business practices in the first place.

In this light interviewees were asked to discuss possible solutions. Suggestions varied in nature depending on the type of business and the interests of the interviewee. Those with strong personal commitments to green issues were more inclined to have considered alternatives and to have an opinion. However, 50% felt that any consideration of alternative strategies to make their business more environmentally friendly were a waste of time since they did not regard their business activities as environmentally damaging.

More positively, a common request was for an increase in the amount of high quality information and professionally produced reports being made available for senior management consultation. Such information presently reaching SMEs is neither of good quality nor from unbiased sources. Many interviewees had come to adopt cynical and sceptical attitudes to green issues for this very reason. They considered the maintenance of a decent environment and the maintenance of a certain quality of life achievable only with community or tax-payer support for educational initiatives. Further it was considered that government support was essential to implement improved performance. If forced to change and pay for the changes firms would invariably go out of business. This type of comment was more frequent among companies who considered their activities to have some effect on the environment and were engaged in environmentally deleterious activities. They were the companies that were conscious that public demand for environmentally sounder practices would have to be met by increased prices or public funding. The concept of a One Stop Advice Shop was welcomed as a positive initiative. 29% of interviewees felt that they were unsure about where to go for confidential and independent advice on environmental issues. Trade journals were cited as a regular source of reference and it was suggested that a One Stop Advice Shop could disseminate information to trade associations as well as provide an information shop for individual businesses. There were some reservations however, since neither the TECs nor the Chambers of Commerce were perceived to have the necessary expertise required.

A One Stop Advice Shop on the environment could increase independent advice to the SME sector, increasing individual commitment towards green issues and inducing a more proactive form of self-regulation. There is a danger, however, that this being a voluntary process SMEs might actively decide to abstain from any involvement with environmental improvement unless further supporting initiatives were in place e.g. public and business educational and consciousness-raising schemes.

Training courses and half day seminars were suggested in particular by the larger manufacturing SMEs. Here again the larger manufacturing companies were more positive in their suggestions. SMEs with a high environmental impact and SMEs with the lowest environmental impact appear to have the least to offer on a constructive level. Heavily polluting SMEs are conscious that their activities could lead to a sharp increase in their costs and are therefore seeking to avoid the issues. Similarly, SMEs with the least environmental impact have few practical suggestions and they feel excluded from the debate due to their lack of environmental impact. The majority in the secondary sector do however have plenty of suggestions.

The general feeling was that interest in environmental protection would only be generated if innovations were shown to be profitable. Definitions of 'profit' were not discussed. At this stage of our economic evolution profit undoubtedly refers to financial gain. However, in an alternative society profit might be perceived to include increases in the quality of life through the sustenance of a clean environment. In this event environmentally sound practices could be deemed advantageous. Further a revision of our societal and economic value structures could induce the change of attitudes within the SME sector required to allow for self-regulation of environmental performance.

Efficient environmental business means good business, by reducing waste and energy usage (amongst other measures) companies can save considerable amounts in financial terms. As yet any further steps towards environmental protection e.g. the potential reduction in the trade of unnecessary (and therefore environmentally unfriendly) goods are considered unnecessary and undesirable.

Other useful suggestions made to reduce the environmental impacts of SMEs included a free or highly subsidised consultancy and newsletters from trade specific angles regarding economically viable environmental improvements. The establishment of an environmental forum for debate and dissemination of information was considered appropriate: as a co-operative venture, an environmental forum could spread the cost of consultancy. These ideas are not particularly new. The concept of co-operation to reduce the financial strain on SMEs has been suggested by Welford and Gouldson (1993). Concurrently the suggestions of local newsletters and subsidised consultancies already exist and are operating on a small scale. The Groundwork Trust, for example, offers these services in certain areas within the U.K (the South West and the North East). The inference is that the information required to reduce environmental impacts of business practices is available but is not reaching local businesses.

50% of interviewees felt that legislation was in theory the best way to get results as it would level the playing field. Further discussion usually elicited that some were reluctant to see environmental legislation which might be restrictive to their business practice. On the whole self-regulation was the preferred solution with subsidised support for change and increased availability of information. This view typified the response of companies that had little or no environmental policies or practices in place. Companies with relatively well developed environmental policies, however, felt that a levelling of the playing field was theoretically sound and feasible in practice. These firms (usually larger

manufacturing companies) also felt that further more rigorous legislation is required. This would be in the interest of the large proactive company on a competitive level as they are already strategically planning for the environment and often have the required management structures in place to deal with any change in legislation quickly. It could also force their smaller competitors out of business.

In conclusion, the most striking observation from this series of in-depth interviews is the minimal management understanding of and response to environmental issues. Although larger manufacturing companies had a better understanding of relevant issues, the vast majority of SMEs has little or no understanding of green issues.

CHAPTER 7

RESULTS -

MAIL SURVEY 2

7.1. Hypotheses and Sample Characteristics

The purpose of this mail survey was to further develop phase 2 of the research (Figure 4.1). It was designed to clarify some of the issues emerging from the in-depth interview stage (in particular attitudes towards BS 7750) and to consider the applicability of various environmental support initiatives. Company views on various educational support initiatives were also to be analysed which would provide a more complete picture of future SME behaviour. This analysis of attitudes to future support initiatives provides an indication of likely SME environmental management levels in the future.

The survey questioned why the level of strategic environmental management was so low in the first survey and in-depth interviews. Although operational environmental initiatives often improve a company's environmental performance, an holistic environmental management plan that takes account of the environment in every aspect of company operations would be a more preferable strategy. The reasons for this apparent lack of progress on this level were therefore pinpointed for further analysis.

The in-depth interviews had suggested a number of reasons why companies were not either *able* or *prepared* to take full account for the environment. Time, finance and the nature of the regulations (amongst others) were suggested in the interviews as important reasons for not having a strategic approach to environmental management in their business practices. This survey clarifies many of these responses through the analysis of a larger sample frame.

The survey sample was changed to clarify some critical results from the first survey (e.g. level of strategic environmental management) and to increase the potential response rate.

It is generally accepted that reduced response rates occur from a previously used sample population (Erdos, 1970 *et al*).

In accordance with the general research aim to consider the reasons for the levels of environmental management in the SME sector, the following primary null hypotheses were formulated.

7.2. Strategic Environmental Management Response

Primary Null Hypotheses:

4. There is no significant variation in response within the SME sector to indicate why the level of strategic environmental management is so low.
5. There are no significant differences in attitudes within the SME sector towards environmental support initiatives.

To test these hypotheses a mail survey of 600 randomly selected companies was conducted. The selection procedure followed the random generation feature on SPSS PC+. The response rate was 30%. A non-response bias test was undertaken by drawing a comparison between first and second wave respondents as in the first mail survey. No significant difference was found and it was therefore concluded that population inference would be valid. All survey's were sent to named owner managers or managing directors. Full statistical analysis of the results to this survey can be found in Appendix 3.

Table 7.1. shows the industrial classifications used in the survey and the valid response rates from each sector. The classification used here is the same as in the first survey to allow for cross tabulation.

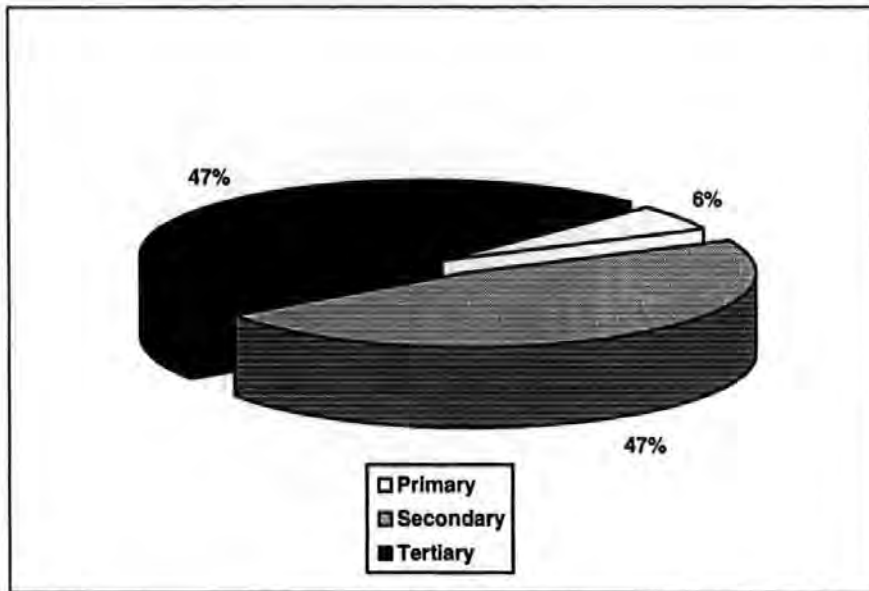
Table 7.1. Industrial Classification and Response Rates

INDUSTRIAL SECTOR	VALID PERCENTAGES
PRIMARY	5.6
Agriculture - Forestry and Fishing	3.9
Energy and Water Supplies	1.7
SECONDARY	47.2
Mineral Extraction and Construction	0.6
Engineering and Vehicle manufacture	10.1
Other manufacturing	25.8
Construction	10.7
TERTIARY	47.2
Distribution and Retailing	9.6
Transportation and Telecommunications	1.7
Financial Services	3.9
Other Services	32.0

Table 7.1. and Figure 7.1. both indicate a relatively low response rate from the primary sector. It must be emphasised that this is due in part to the limitations of the data base. Many agricultural businesses were not included on the data base as their details were not available. This could have been rectified if an alternative data base had been used, however, due to financial constraints, the research was limited to the use of the data base

from *Devon and Cornwall Manufacturing Directories*. Although a slight bias can be detected in the sample, it is evident from Table 4.2. that the response rates per sector correlate closely to the regional and national sector sizes (SIC, 1993).

Figure 7.1. Reduced Response Rates



There is an important caveat here: the primary sector has few employees but provides an extremely important provision in economic terms for the society. Commonly accepted statistical indicators (e.g. employee numbers or market share) can lead to highly misleading contrasts. Without a primary sector there can be neither secondary nor tertiary sectors, indeed no economic activity at all. Hence resource depletion and environmental pollution, which initially threatens the primary sector in the short term, provides a long term threat to the economy as a whole. Significantly since only approximately 2% of the population are involved in producing our agricultural sustenance the majority of our population are not in control of their supply of food, the basic requirement for survival. This lack of self-reliance in such a critical area is central to an understanding of why the

interdependence of all sectors within the present economic system is so imperfectly understood.

Further, with less and less people producing more and more goods (this applies to the manufacturing sector as well as the primary sector) there are fewer and fewer consumers able to purchase the goods produced. There is therefore a clear need to provide these people with the financial capacity to purchase these goods. The system has become deceptively inefficient and requires revision. The alternative is not 'business as usual' but total disintegration. This issue will be dealt with in the following chapter. Suffice to say here that the most statistically acceptable comparisons will be between the secondary and tertiary sectors as their response rates are identical. The primary sectors response rates are so much lower and although comparisons will be drawn, the limitations of the comparisons due to the reduced response rates of this particular sector must be noted.

Over a period of approximately one year (from 1993 to 1994), between the collection of the first and second mail surveys, the response rate fell by 10% from approximately 40% to 30%. It is possible that this could be due to the differing nature of the survey contents. Equally it could be that over this period environmental issues have become less important to SMEs. It is noticeable, however, that the response rates between sectors has changed with a higher percentage return coming from the secondary sector and a decreased return rate from the tertiary sector. This may suggest that employees in the tertiary sector have an altered perception of the necessity to consider environmental issues.

Tables 7.2, 7.3. and 7.4. illustrate further sample characteristics. These include: business types; business size by number of employees, company age, market (exporters and non-exporters). Table 6.2 portrays a similar distribution to the first mail survey. The majority of respondents (69.7%) are from single site businesses, with only 17% being subsidiaries

or branches of national or foreign enterprises. Cross tabulation between the surveys would therefore be valid.

Because there are no *missing variables* i.e. (all respondents answered these two questions) the percentage and valid percentage categories are identical on this occasion. Table 7.3. also displays a similar distribution to the first mail survey, with the only difference being a slightly lower percentage return from the 0-10 employees section in the second mail survey (61.2% compared with 67.6% from the first survey).

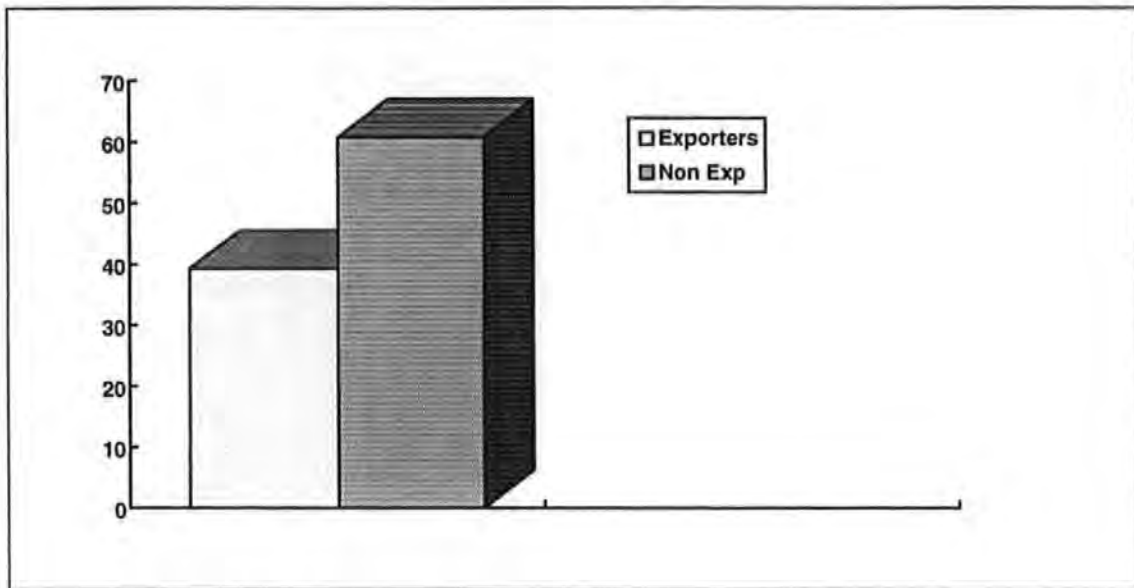
The second survey provided details on the age composition of the sample. This additional information (Table 6.4) shows that the largest response came from the 11-50 year old companies: in general the skew was towards the older companies. This may reflect time and resource pressures on young start up companies; few have the time available to answer the survey or consider implementation of significant environmental change initiatives.

Figure 7.2. graphically displays the percentage return from exporters and non-exporters. The distribution accords closely with the first mail survey, with approximately one third of respondents being engaged in the export trade.

In general the majority of respondents were from single site businesses with less than 100 employees. Since a significant proportion of the respondents were from the tertiary sector, analysis will be able to focus not only on the medium sized manufacturing companies (the usual focus of environmental management research) but also on the smaller tertiary sector companies.

The company characteristics discussed correspond closely to the companies in survey one. It is reasonable to assume, therefore, that companies in survey two would answer in a similar way to the companies chosen in survey one. Indeed the level of exporters and non exporters was almost the same. Cross-tabulation between surveys is therefore a valid statistical option.

Figure 7.2. - Percentage Number of Exporters and Non-Exporters



Having descriptively analysed the sample, the following section considers the sample characteristics in rather more depth. It will view the component parts of each significant sample characteristic and highlight any relevant deviations from the sample mean.

Business Types

Single site businesses had a slightly higher percentage of respondents in the 0-10 employee category (75%), fewer companies over 50 years old (8.9%) and a smaller

percentage of exporters (33.9%) than the sample average (s.a.). There was a marked difference in the amount of employees in the headquarters unit compared with the sample average. Only 37.5% of them were 0-10 employees. Most respondents from headquarters unit were in the larger 26-100 and 101-200, category as would be expected. A greater proportion of these were from the tertiary sector (54.2%) and were generally slightly younger than the sample average.

Table 7.2. - Business Types

Value Label	Value	Frequency	Percentage	Valid %	Cum. %
Single Site Business	1	124	69.7	69.7	69.7
Head-quarters	2	24	13.5	13.5	83.1
Subsidiary/ Branch of National Enterprise	3	24	13.5	13.5	96.6
Subsidiary/ Branch of Foreign Enterprise	4	6	3.4	3.4	100

There was a far lower percentage of small company respondents in the subsidiary or branch of a national enterprise grouping compared with the sample average. Only 25% were 0-10 employees. 16.7% were over 200 employees which compares with a sample average of 3.9%. Primary companies do not exist in this category and there is a higher percentage of tertiary respondents (54.2%). There are no companies under 5 years old and there are 37.5% over 50 years old, which compares with a sample average of 14.6%. As one would expect there is a higher percentage of exporting in this group (58.3%

compared with a sample average of 39.3%). There are also more respondents from Cornwall 31.8% compared with 23.4% s.a.

Response rates generally in the subsidiary or branch of a foreign enterprise group were low and company comparisons are therefore limited. Although accurate comparisons are problematic when cells have so few observations, it is reasonable to conclude that companies in Devon's secondary sector which fall into this category are more likely to be older, larger and more inclined towards exporting than the sample is in general.

Business Sizes

Of companies with 0-10 employees, 85.3% were single site businesses. There were slightly more from the tertiary sector and less exporters in this grouping than the sample average (31.2%). Companies with 0-10 employees had a greater percentage of respondents in the subsidiary or branch of a national enterprise section (25% compared with a sample average of 13.5%). They were also more likely to be from the secondary rather than tertiary sector. This grouping also had more respondents towards the older age of the spectrum and also more companies from Devon (80% of companies with 0-10 employees were from Devon compared with 76.6% s.a.).

Table 7.3. - Number of Employees

Value Label	Value	Frequency	Percentage	Valid %	Cum. %
Employees					
0-10	1	109	61.2	61.2	61.2
11-25	2	28	15.7	15.7	76.9
26-100	3	24	13.6	13.6	90.5
101-200	4	10	5.6	5.6	96
200+	5	7	3.9	3.9	100

The larger the company the more likely it will be a headquarters unit, a subsidiary, older in age, and an exporter. 30% of the companies with 101-200 employees were subsidiaries or branches of foreign enterprises and only 20% single site businesses. 60% were from the secondary sector and 60% were over 50 years old. 80% exported compared with a sample average of 39.3%. 71.4% of companies with over 200 employees were between 11-50 years which compares with a sample average of 47.8%. 100% of this section were exporters. The general trend was that the larger the company, the more likely it would be from the secondary sector.

Business Sectors

It was suggested in the introduction to this chapter that the response rate from the primary sector was low, therefore comparisons may be difficult. However, the general pattern suggested that the primary units were small but older than the average. They are also more likely to export than not to export (60% export). Further the percentage of primary respondents who were located in Cornwall was significantly higher than the sample average (40% compared with 23.4% s.a.).

Size, age and type of business in the secondary sector were roughly similar to the sample average, although there are significantly more exporters within the secondary sector (53.6% compared with 39.3% s.a.) than non-exporters. Although responses from the tertiary sector were more frequently from smaller, slightly younger companies, they did not differ greatly from the sample average, except for the fact that less respondents from the tertiary sector exported than the sample average (22.6% exported compared with 39.3% from the sample average).

Company Age

Responses were predictably low from younger SMEs. Lack of time to respond to surveys is a problem for most SMEs but is of particular relevance to companies in start up. The general picture is, however, that the younger the business the smaller it would be and the more likely it would be a single site business.

Responses from companies between the age of 11-50 years were the closest to the sample average because of the larger response rate (47.8% of respondents fell into this group). However, the proportion of secondary respondents were higher than the sample average, 55.3 compared with 47.2% s.a. The percentage of exporters was also higher than the sample average (44.7% compared with 39.3% s.a.).

Table 7.4. - Company Age

Value Label	Value	Frequency	Percentage	Valid %	Cum. %
Age (years)					
Under 1	1	2	1.1	1.1	1.1
1-5	2	22	12.4	12.4	13.5
6-10	3	43	24.2	24.2	37.6
11-50	4	85	47.8	47.8	85.4
50+	5	26	14.6	14.6	100

As expected the older more established, exporting companies correlated with larger business operations. However, 50% of respondents in the 50+ year group were from the

tertiary sector. There was also a greater percentage of respondents over 50 years that responded from Cornwall (30.4 percent compared with a sample average of 23.4%).

Primary Null Hypothesis 4: There is no significant variation in response within the SME sector to indicate why the level of strategic environmental management is so low.

To satisfy this primary, deductive hypothesis, a series of secondary null hypotheses were designed to be tested.

Secondary Null Hypotheses:

1. There is no significant variation in company characteristics between those companies who have a strategic environmental policy and those who do not.
2. There is no significant variation between company characteristics to indicate why they do not have a strategic environmental policy.
3. There is no significant variation between company characteristics to indicate why SMEs would not be able to implement BS 7750.

Secondary Null Hypothesis 1: There is no significant variation in company characteristics between those companies who have a strategic environmental policy and those who do not.

In the survey strategic environmental policy was defined as, *a written statement of intent to consider environmental matters as an integral part of long term corporate policy*. 16.3% said that they had a strategic environmental policy in place. This was considerably

higher than the response in the first survey nearly a year before when only 5% said that they had a written environmental policy statement. This is encouraging and suggests that SMEs in Devon and Cornwall may be beginning to approach environmental management with rather more long term empathy.

The initial surveys undertaken in this research indicate that more companies were prepared to develop a written policy statement in 1994 than in 1993. The change in practice is most clearly evident within the secondary sector rather than the primary and tertiary sectors. Companies with a written policy statement are more likely to be the larger, older, secondary, subsidiaries of national or foreign companies. They are also more likely to be exporters than non-exporters (see Appendix 3).

There is, therefore, a certain type of company that is more likely to develop strategic environmental management than others. However, because of the nature of the data (in particular the low response rate of the companies with a strategic environmental policy) the difference is not *statistically significant* at a predetermined confidence level. Both parametric and non-parametric tests (MANOVA and Chi-Squared) were carried out to see if there was any significant difference and they were all negative. It is therefore necessary to accept the null hypothesis, that there is no significant variation in company characteristics between those companies who have a strategic environmental policy and those who do not.

At this stage, the indications are that the trend is towards an increase in the number of companies developing strategic environmental management plans. Although the vast majority of companies (83.7%) still do not have environmental strategic inclinations.

Secondary Null Hypothesis 2: There is no significant variation between company characteristics to indicate why they do not have a strategic environmental policy.

For the purpose of this hypothesis, *company characteristics* refers to company type, size, industrial sector, age and exporting inclinations. Respondents were offered a number of alternative reasons for their failure to develop a strategic environmental policy. Choice was open ended and unlimited. An open qualitative section at the end offered opportunity for further comment regarding additional reasons for failure to develop a strategic environmental management policy.

Questions were asked independently of one another and there was no ranking procedure. However, the results have been ranked for analytical purposes in Table 7.5. Although the vast majority of companies still feel the environment is an important business concern (98.7% answered that green issues no longer being an important issue was not a reason for their lack of strategic action) 37% of companies feel that their operational initiatives suffice. A strong core of companies feel that environmental issues have significance for business generally but that they are not applicable to *their* business operations. This indicates a lack of awareness as all business activity has an environmental impact.

Time and limited financial resources were also seen as major reasons for failure to develop a strategic environmental policy. It is noteworthy that only 3.4% of respondents considered lack of legislation as a reason for not having a strategic policy on the environment.

Three main reasons for the absence of strategic inclinations towards the environment in SMEs emerged (Table 7.5). 36.9% considered their existing operational initiatives sufficient. In this instance there may have been some lack of understanding of the terms.

Any well implemented initiative would require a degree of strategic planning. Hence, if the company was prepared to spend at least this amount of time on environmental issues it is not unreasonable to assume that the formal statement of an environmental policy would not be considered too arduous.

Table 7.5 - Why Companies Do Not Have Environmental Policies

REASONS FOR NOT HAVING A POLICY	VALID PERCENTAGE (RANKED)
Operational initiatives suffice	36.9
Lack of time	33.6
Not relevant to business operations	32.2
Constrained by financial resources	30.2
Lack of reasons to confront the issues	14.8
Lack of information	14.1
Lack of ability to assess the future impact of the environment on performance	10.1
Lack of incentives to change	9.4
Lack of in-house expertise	8.7
Company inertia and reluctance to change	4.7
Lack of legislative requirements to conform to standards	3.4
The environment is no longer an important issue	1.3

The analysis relies on the individual company's impressions of 'policies'. Quite a number of companies suggested in the *other reason* box that their reason for not having a written policy statement for the environment was due to the inherent bureaucracy of the procedure. There is a certain logic in this approach. An ill considered, quickly drafted policy is often never implemented. Time is limited and the general feeling is that it would be better spent implementing operational changes than drafting policy documents and seeking accreditation for standards that change very little.

Although *operational environmental initiatives suffice* appears top of the list as the most frequently indicated reason for absence of a formal strategy, this figure incorporates a degree of subjective interpretation. From the figures it is difficult to assess how much the companies are actually doing. However, if one takes survey one as a yardstick it would be reasonable to assume that the majority of the respondents are referring to the fact that they have some sort of recycling procedure in place (41.8% had implemented a recycling policy).

The second ranked issue indicates that 32.2% of respondents regard environmental issues generally as, *not relevant to business operations*. This would appear to be a low level of understanding of the implications of the environmental debate. This would suggest that small companies perceive having an environmental impact as reserved for large manufacturing companies. Although manufacturing companies usually have a greater impact on the environment, *all* companies have some impact, individually and cumulatively on the environment. The wasteful energy consumption in light, heating and transport for one firm accumulates across the board to form a devastating effect on the environment.

32.2% of the respondents consider 'the environment' to be peripheral to their business practices. Until ecological concerns are recognised as a central part of the internal environment of all individuals and companies, there will be continued cause for concern. At present, ecological issues can be pigeon-holed as an external threat to most businesses, even to those who recognise the savings that can accrue from frugal waste generation and energy efficiency programmes.

Ecological issues are measured in financial terms and classed as an external business concern. In reality this could be quite different. An alternative view is that industry is in fact peripheral to the environment. The environment encompasses all of industry and every thing industry does has an effect on the environment. For industry to declare that environmental issues are not relevant to their business may indicate a shortage of relevant information and skills. Environmental issues may need to be brought into focus because without an environment there is no market place. Lack of comprehension is not confined to the business community, but is endemic in society as a whole. As the consumer has become further and further detached from the producer the latter has become less and less accountable for their actions. Often the consumer is unfamiliar with the productive processes that go into creating the products they buy. The average good purchased in the UK in 1993 travelled over one thousand miles to reach the retail shelves. The ecological impact of the production, packaging and transportation involved can be easily overlooked.

In order to assess the quantitative aspects of the statistical analysis in Appendix 3, a Chi Square test was run for each reason for not having a strategic environmental policy. Each company characteristic was considered in turn. Chi Square was selected since the absence of sufficient data cells made employment of the multivariate analysis of variance technique MANOVA inappropriate. The statistical analysis therefore took a more

descriptive format, considering group means for each possible answer (e.g. for operational initiatives suffice). For example, companies who responded that *operational initiatives suffice* had a higher percentage response in the single site business category than the sample mean response (Appendix 3).

All of the Chi Square tests run showed that there was no significant variation in the expected values compared to the observed ones. The closest there was to a significant outcome related to financial constraints. Statistically, therefore there are no significant differences between company characteristics and the reasons to indicate why SMEs have failed to adopt an environmental policy.

The descriptive contents of the data was more closely scrutinised in order to analyse some areas that may, with further research, be of interest. 80% of single site business respondents (compared with a sample mean of 69.7%) said that the reason for not having an environmental policy was that their operational initiatives sufficed. Hence single site businesses are more likely to consider that this is a significant reason (than the rest of the sample) for not having a policy. Using the same approach, respondents who suggested that *operational environmental initiatives sufficed*, also tended to be the smaller, younger, from the tertiary sector. This pattern was replicated with respect to the answer that environmental issues were *not relevant to their business operations*. Again the respondents in this section were more likely to be the younger, smaller single site businesses from the tertiary sector.

81% of respondents who answered that a *lack of information* was a reason for not having a strategic policy were from the single site businesses section. This compares with a sample mean from all company types of 69.7%. However, unlike the previous two reasons there was more a bias towards the secondary sector companies here, (57.1%

were from this industrial sector). There was also a difference to the sample means with regard to companies ages. The category, 6-10 years old were more likely to class lack of information as an important issue whereas the older 50+ companies were not. This either suggests that there are diffusional problems with relevant information reaching different companies, or that individual preferences and perceptions of information differ. This does suggest however, that the younger, smaller companies do require more information on environmental best practice, which confirms previous research (Hendry 1993).

A high proportion of respondents indicated that *lack of in-house expertise* was a relevant issue. 84% of these respondents were single site businesses compared with a sample average of 69.7%. No company over 100 employees found a *lack of in-house expertise* to implement the management change an important issue for not having a strategic policy on the environment. Respondents who felt that this was a significant reason were primarily from the secondary sector (69.2% compared with a sample average of 47.2%). They were also more biased towards not exporting (30.8% compared with 39.3%) and more likely to come from Devon. 91.7% of respondents were from Devon, which compares with an average response of 76.6% of companies coming from Devon. This may indicate either actual or perceived ability to deal 'in house' with the environment issue, is better in Cornwall than in Devon.

Lack of ability to assess future impact of the environment on performance did not rank high as a reason for not having an environmental policy. However 93.3% of companies who felt that this was a significant issue were single site businesses. However, rather more of the respondents (30.2%) found a *lack of finance* to be a significant reason for not having a strategic policy for the environment. 60% of these companies came from the secondary industrial sector. The older companies (50+ years) found this to be less of a constraint on their actions.

Lack of time was a significant reason given by 33.6% of respondents for not having a strategic environmental policy in place. It was, most noticeable the smaller and younger single site businesses that responded affirmatively to this question. Most respondents did not regard *company inertia* as a significant reason for not having a policy (only 4.7% felt this was an issue). It is difficult to assess the extent to which lack of education and information is a contributory factor for the absence of a strategic approach to environmental issues. Older companies, predominantly in Devon, did suggest that this was an issue. These indications are, however, tenuous due to the low response rate.

Over 14% of the sample were of the opinion that there was a *lack of reasons to address environmental concerns*. The incidence was highest amongst small companies in the secondary industrial sector. Of the respondents who felt that there were a lack of reasons to address environmental concerns 59.1% were 11-50 years old compared with a sample average of (the sample average for companies between the ages of 11-50 years old was 47.8%). This suggests that the older the company the more likely it would consider this to be a significant reason for not having developed a policy for the environment. Very few respondents from the whole sample felt that a *lack of legislation* was a significant reason for not having an environmental strategy. 96.6% of respondents felt that legislation was therefore, by inference, an important reason for having a strategic policy.

The nature of the data indicates no statistically significant difference between companies of differing types and their reasons for not having a strategic policy on the environment. Therefore one has to accept the null hypothesis on this occasion that there is no significant variation between companies characteristics and their reasons for not having a strategic environmental policy.

What is clear, however, is that strategic planning for the environment is low in general and this is mainly due to the way in which the problem is perceived and a lack of time to focus attention on environmental issues. As one of the interviewees said in the in-depth interviews, one cannot deal with a problem that has not been defined. At present SMEs have no reasons to relate environmental issues to the activities of their company. They are unsure about how any changes in their practices can affect the global environment.

This failure to appreciate cumulative responsibility can be attributed to the value attached to the environment. Under the present economic system value is assessed in financial terms. Goods and services exchanged on the market have no alternative value. However, many environmental resources are not traded. They are social resources and are not measurable synchronously with consumption (Mulberg, 1994). It is for this reason that the use and abuse of the environment can be regarded as a 'free' good. For instance, consumption of non-renewable resources and creation and use of non-biodegradable goods and packaging have long term impacts which are not reflected on a firm's current balance sheets. Like individuals, small businesses fail to appreciate the effect of their activities on the environment and therefore have no motivation to change the status quo.

Although this suggests that self-regulation within the present system is unlikely to achieve environmental sustainability, it is the approach advocated by industry (in particular larger companies, CBI, 1990). The reasons for this are straight forward: self-regulation allows business to determine the pace of change. In the 1980s large businesses opposed controls on the grounds that they would reduce competitive advantage and therefore damage the economic prosperity of the country. Rather than imposing new restrictive environmental legislation, public bodies were invited to track the progress of industrial environmental performance. Hence industry not only sets the pace, but also decides the route. The management systems solution to the environmental issue in the

form of BS 7750 and the European Unions EMAS, created by industrialists in co-operation with environmentalists are the result.

The 'environment' was/is regarded as an external problem or threat to industrial welfare which required a management solution, just as any other management problem would e.g. quality control or labour relations.

Indeed points of similarity between the management systems BS 5750 (the quality standard) and BS 7750 (the environmental standard) has lead to comparative analysis of the two concepts (Welford, 1992). The two concepts are interlinked: good environmental management *is* quality management, however the reasons for the existence of the two systems under the present economic paradigm are not synonymous. The pursuit of profit maximisation exclusively at the expense of ethics (an essential prerequisite for environmental sustainability) may inevitably be self-destructive.

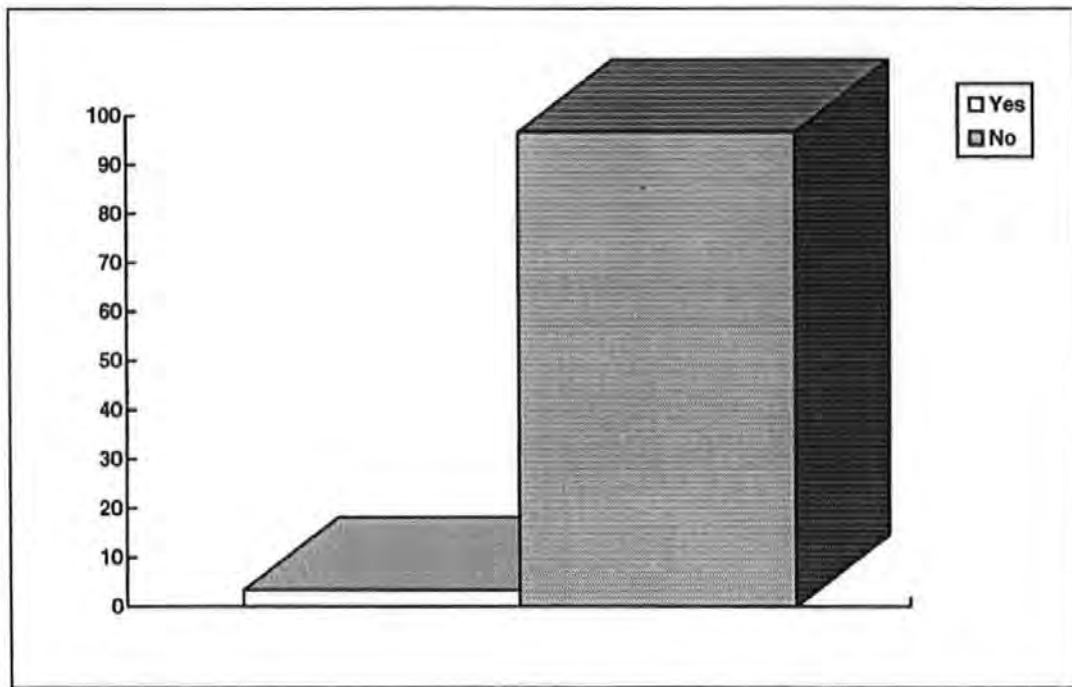
To date, however, management systems have been advocated as the solution or panacea to the environmental concerns of UK. businesses. It is to the application and relevance of BS 7750 to SMEs that we now turn.

Secondary Null Hypothesis 3: There is no significant variation between company characteristics and the reasons why SMEs would not be able to implement BS 7750.

Companies were asked a series of questions that related to the British Environmental Management Standard BS 7750. The intention was to analyse the standard and its implications for SMEs. Although it was already evident that strategic management in the SME sector was low with respect to the environment it was necessary to know why this was the case in order to prescribe any alternative strategy.

Only 3.4% of respondents had implemented BS 7750 (Figure 7.3). Most of these companies were larger, older SMEs and were from the secondary industrial sector. Of the companies who had not implemented the standard, 68% considered that even given the motivation to implement the standard they lacked the capacity to do so (Figure 7.4). The non-exporting, smaller companies in the tertiary sector were inclined towards this response.

Figure 7.3 - Percentage Number of Companies Who Have Implemented BS 7750



A series of Chi Square tests were run to see if these descriptive variations in response were statistically significant. Table 7.6 shows that there was a significant difference in the expected and observed values with regard to two issues. It was proved that it was more likely that exporters would be able to implement BS 7750 than non-exporters and that companies with a strategic management system already in place would be more likely to be able to implement BS 7750 than companies who did not have a system in place.

Table 7.6 - Chi Square - Implementation of BS 7750 By Exporting and Strategy

VARIABLE	PEARSON'S CHI	SIGNIFICANCE
Exporters/non-exporters	16.79495	.00004
Systems predominance	13.48706	.00024

It was, however, encouraging that of the 32% of respondents who did feel that they would *be able* to implement the standard, 72.7% said that they would *be willing* to implement it in the near future. Further analysis of the companies who responded positively to the possibility of implementing the standard showed that they were more likely to be the larger, secondary sector companies between the ages of 11-50 years.

This would suggest that any attempt to improve the environmental performance of SMEs through the implementation of management systems would be best directed towards the larger, older companies from the secondary sector, at least in the initial stages.

However, the vast majority of companies felt that they would not be able to implement BS 7750. Q11a to Q11h were designed to discover why companies would not *be able* to implement BS 7750. The possible responses can be seen in ranked format in Table 7.7. Respondents were also given the option of a qualitative response in the form of *any other reason* for not being able to implement BS 7750. This option was not on the whole exercised, apart from to re-emphasise earlier responses in Q11a to Q11h.

Table 7.7 - Why Companies Are Not Able to Implement BS 7750.

REASON WHY NOT ABLE TO IMPLEMENT BS 7750	VALID PERCENTAGE
Lack of financial resources	47.9
Limited available staff to implement the change	45.3
Inappropriate nature of the standard	44.4
Lack of time	38.5
Not cost effective	22.2
Not company policy	14.5
Lack of interest	10.3
Lack of internal commitment within	6.8

Companies were not asked to rank a preference of response with regard to this particular issue. The percentages in Table 7.7 are therefore statistically independent.

45.3% of respondents felt that they did not have the available number of staff required to implement the changes which may suggest that companies feel the standard relates more to larger companies than to small owner managed SMEs. Perceived implementation of BS 7750 was viewed to be difficult because of many of the standard barriers that separate SMEs and strategic management. Lack of time and finance are two obvious reasons why companies feel that it would be difficult to implement a strategic management system. It was noticeable, however, that 44.4% of respondents that said they would not be able to implement BS 7750 agreed that one reason was because of the nature of the standard. Because of the limited nature of the mail survey procedure it is difficult to expand further

on this at this stage, suffice to say that a significant proportion of respondents felt that the standard was not appropriate to their company. This area was identified as an important area to research further, in particular to analyse if these companies would be willing to change their practices under different circumstances and using alternative techniques of management.

Clearly, the response of SMEs is split into two general areas on this subject. There are those companies who feel that they are either able or at least willing to implement BS 7750 and there are those companies who feel that they are not able to implement it, for a number of reasons. The first group consists mainly of the larger, secondary companies and the latter group of the smaller tertiary and primary companies. No significant variation in response by the latter suggest why they would not be able to implement the standard.

The secondary null hypothesis 3 that there is no significant variation between company characteristics and the reasons to indicate why SMEs would not be able to implement BS 7750 must therefore be accepted. As all three of the secondary null hypotheses have been accepted the primary null hypothesis stands. There is no significant variation in response within the SME sector to indicate why the level of strategic environmental management is so low.

To appreciate the implications of this finding one has to consider the standard itself and the concept of strategic environmental management with respect to the SME. The above discussion suggests that it is the larger manufacturing companies who are more favourably inclined towards environmental management systems. One route towards sustainable development may therefore be to encourage the growth of small firms and the diversification into the manufacturing process. This argument has predominated in the

USA in recent years and also within the last round of GATT talks (Lang and Hines, 1993). The feeling is that the larger the company the more likely it will have the capacity to deal with environmental concerns and meet the costs of the environmental clean up its expansion will cause. Clearly this is not a desirable state of affairs. If sustainable development is ever to be achieved the causes of ecological irritation are more satisfactorily dealt with at source rather than at 'end of pipe'.

Small and local businesses can be regulated and measured more easily than the large company with dispersed ownership. Local ownership and management enables companies to be more accessible to the local community and therefore more accountable for their activities. Keeping business small may appear less efficient in a financial sense. This is not however, necessarily the case. A successful local economy may succeed in retaining its capital in the region rather than allowing to filter out to larger multinational corporations, resulting in a general rise in prosperity in the locality. The relinquishing of certain economies of scale allows for greater ecological accountability.

There are, therefore two critical aspects to consider. Firstly there is the applicability of environmental management systems to achieving sustainable development and secondly there is the issue of alternative approaches. Where motivation and resources allow, environmental management systems may reduce environmental impacts of certain secondary companies. The majority of companies, however, remain unconvinced that action is necessary.

The research has demonstrated that the two significant variables in question are *management structures* and *attitudes*. A new approach to ecological concerns within management appears necessary. Little has changed in the environmental practices of SMEs since the development of the first environmental management systems nearly 15

years ago, except perhaps in the secondary sector. At issue is whether the requirement is for a change in management structures or a change in management attitudes. Is it possible through information diffusion and education to persuade small companies to find the time to contemplate environmental concerns? Or could the answer lie in a more structured development of SME practices? To frame the answers to these questions it will be necessary to examine the context within which the SME operates. This will be a primary consideration of the following chapter. First, however, it is necessary to briefly discuss support initiatives in order to clarify attitudes towards future directions of environmental information diffusion and attitudes. The aim was to consider if there were any areas of support or practice that SMEs felt would be particularly helpful with respect to environmental management. In this context the following primary null hypothesis was designed.

Primary Null Hypothesis 2: There are no significant differences in attitudes within the SME sector towards environmental support initiatives.

The main purpose of this hypothesis was to analyse SME perceptions and attitudes towards future support with respect to environmental management. Companies were invited to declare their level of interest in the concept of a Regional Environmental Management System (REMS) and Environmental Performance Contracting (EPC). Definitional explanations were attached to the specific questions (Appendix 3).

A REMS was defined in the survey as *a partnership between individuals, businesses, public sector institutions and other agencies designed to systematically improve the environment*. Companies were then asked to consider how interested they would be in this concept. There was no distinction made here if this interest would be in theory or in practice. Answers were skewed towards the *quite interested* end of the scale, although a

substantial 30.5% were *neither interested nor uninterested* in the concept. The distribution of response with respect to EPC (this is where an external consultancy implements environmental changes within a company and then charges on the basis of cost savings to the company) was similar with 30.5% feeling that they would be *quite interested* in the concept. It should be stressed, however, that for both concepts the median response was *neither interested nor uninterested*. This attitude of moderately interested apathy is theory consistent with the previous results. On this occasion there were no significant differences in response to the questions with regard to any company characteristics. This is not theory consistent. One would have expected the larger secondary companies to be more positive in their response towards these concepts.

Table 7.8 - Environmental Support Provision

SERVICE	VALID PERCENTAGE INTEREST				
	Extremely interested	Quite interested	Neither interested nor uninterested	Quite uninterested	Not at all interested
Environmental telephone helpline	6.3	21.7	32.6	5.7	33.7
Up to one hour's confidential advice	6.3	20.6	35.4	8	29.7
Newsletter	4.6	33.1	27.4	8	26.9
Handbook and up to date briefings	5.7	28	32.6	5.7	28
PR for environmental success stories	4	19.4	38.3	5.7	32.6

Respondents were then asked a series of questions relating to specific support provision. This was to analyse the potential interest SMEs would have in the support provision. For this purpose the services offered by one of the collaborating establishments (Groundwork Trust's green business club PAYBACK) were used as examples of possible support provision.

Table 7.8 shows the services on offer and the percentage interest of the respondents. Only 2.2% of respondents from the survey were already members of the club and they felt that the services offered were mostly *neither useful nor not useful*. Clearly SMEs feel ambivalent towards the services offered as responses are skewed towards the middle response of *neither interested nor uninterested*.

33.1% felt that they would be quite interested in a Newsletter. This is slightly higher than the other responses and suggests that it is one of the more important possibilities to be pursued in respect of SMEs. A series of multivariate tests for variance were run to see if there were any significant differences in response between company characteristics. These all proved to be negative. One has therefore, to accept the null hypothesis that there are no significant differences in attitudes within the SME sector towards environmental support initiatives.

The second mail survey documents the extent of apathy and lack of initiative in the implementation of environment strategy among SMEs. In general, regardless of company size, business sector category or exporter/non-exporter status (except for very minor variations) environmental protection did not rank highly as a priority issue requiring investigation or action. This may be of concern as the cumulative impact of economic activity is leading to depletion and destruction of the common resource base upon which all firms draw in order to conduct the business of production and distribution.

To date, public awareness of the environment threat has been enhanced through presentation of scientific evidence by the pressure groups and publications of the environmental movement, most notably Friends of the Earth, Greenpeace and "The Ecologist". TV programmes initiated by the groups have alerted the general public, so that it has become in the marketing interests of large companies, e.g. Shell and Macdonalds to be seen to incorporate some environmental protection measures within their strategic plans. Hence the development of strategic systems like BS 7750 and the EU EMA scheme. Closer examination reveals the cosmetic nature of these initiatives (Lang and Hines, 1993 *et al*). A global market requires mass transportation systems and exploitation of resources on a vast scale in order to provide goods at the cheapest "cost". This cost does not, however, include the cost to the environment. 'Greenwashing' is neither designed nor intended to create sustainable economic development. On the contrary it has been argued that environmental protection and legislation can be manipulated by large companies to erode the market share of SMEs (Clunies-Ross and Hildyard, 1992).

This research argues that genuine environment protection is dependant on the expansion of an environmentally aware SME sector with the resources and will to implement appropriate policies. The predominant obstacle to the implementation of environmental protection policies detected by this survey is the ambivalent attitude towards change.

Appreciation of the need for strategic environmental management is low for a number of differing reasons. Survey 1 showed that operational environmental management is seriously limited in its range and effectiveness. Attitudes are ambivalent and general feeling is that regulation and legislation favours the larger manufacturers (this attitude was particularly prevalent in the in-depth interview stage). There is a dichotomous situation within the SME sector with the larger manufacturing companies perceiving

green issues as important and seeing sound environmental policies making good business sense. Although this is not exclusively the case, it does seem to be the general trend. The vast majority of SMEs on the other hand, do not consider environmental concerns as cost effective. In this event, however effective management systems may be, radical change will not occur without a fundamental shift in attitude.

A shift on any significant level will only occur through education, awareness and participation programmes. Until SMEs are convinced of the need to consider green issues holistically, little is likely to change. This raises a new question. How can change in attitude be achieved and what are the necessary support structures required? The next chapter approaches this question by considering the external environment in which SMEs operate and the constraints to effective environmental management and sustainable development.

CHAPTER 8

TOWARDS A SUSTAINABLE DEVELOPMENT STRATEGY FOR THE SME SECTOR

8.1. Introduction

The environmental management literature of the late 1980s onwards has assumed uniform motivation and awareness (from Beale, 1980 to the host of literature associated with BS 7750). The literature has considered strategic (BS 7750, HMSO, 1992) and operational (Bie, Hastam) environmental considerations but has failed to accept that SMEs are endemically different in nature to larger companies. The empirical research has shown that, management applications of theory have, therefore, been misplaced and misguided with respect to the SME. This chapter analyses the implications of the empirical research and satisfies research aims 3 and 4 (see Chapter 4):

3. To utilise the knowledge gained about awareness, attitude and organisational response to assess the relevance of the environmental management systems so far developed and to link this to achieving sustainable development.
4. To draw upon the expertise of owner/managers and appropriate institutions to validate and if appropriate further refine new/and or revised systems as necessary.

To satisfy the above requirements the objectives of the chapter are as follows: first, to explain how the research has found the theory negligent of the needs of the SME sector with respect to the environmental issue; second, to discuss why SMEs are not interested in the main in traditional management response towards the environment; third, to present the requirements for alternative theories based on local economic practice; fourth, to produce a case for a sustainable development model based on local circumstance and fifth, to present case study material to support the development of an alternative model. Rather than concentrating on changing management structures that do not exist or establishing management channels that cannot be established, this chapter argues for a

more holistic appreciation of the SME sector and how the external business environment may provide the direction required for sustainable change in the form of localised economic trading practices based on a sustainable SME sector.

The following sections summarise the salient points of the empirical research and explains why the existing management theories require revision.

8.2. Review of Empirical and Qualitative Research

8.2.1. Mail Survey 1

The majority of companies responding to the survey were single-site businesses (67%), 50% had less than 10 employees. With only 4% from the primary sector the survey reflects the attitudes, awareness and practices predominating in the secondary (40%) and tertiary (56%) sectors of environmental issues.

a) Attitudes

In general, interest was greater in specific issues, notable health and safety, water pollution and energy usage. The prevalent view in micro-firms was that environmental considerations, as a whole, were not relevant to the firm's day-to-day business activities. The larger the company, the more likely water pollution, energy usage, effluent waste disposal and solid waste disposal were to be considered important management concerns. The highest degree of interest expressed in relating environmental concerns to their business practices occurred in exporting firms.

b) Awareness

The general level of awareness of regulation was low. Over 62% of respondents were not aware of the 1990 EPA and its implications to their business practices. 87% had no knowledge of any future European environmental directives. The larger the company, however, the more aware it was likely to be of the implications of the 1990 EPA, the 1989 Water Act and other regulations listed in Table 5.10. Results also show the companies from the secondary sector were more aware of environmental legislation and regulation than their retail or primary counterparts.

c) Practices

42% of respondents had a recycling policy, a quarter had an energy efficiency programme and a quarter had a waste management policy. This evidence suggests that the SME sector is evolving environmentally sound practices. The in-depth interview stage of the research considered SMEs' environmental performance and the results confirmed the findings of the first mail survey.

Levels of strategic environmental management were low compared with previous surveys in the larger firms sector (BIM, 1992). Only 4.3% had a strategic environmental policy. Companies with strategic inclinations towards the environment tended to be the larger secondary companies. 27% of respondents felt an environmental audit would be inappropriate and in general the response was one of critical incidence situation management. This reactive approach to the environment was endemic, and there was little evidence of a proactive management response. This type of reactive management approach is highly unlikely to evolve into a pattern of sustainable development.

8.2.2. In-Depth Interviews

Although it is not statistically possible or appropriate to cross-tabulate results, the in-depth interviews were consistent with the findings of the first mail survey. Almost 93% of interviewees admitted to employing reactive critical incident situation management towards environmental problems. The opportunity cost of proactive environmental management was considered too great, creating a general ambivalence towards environmental concerns. 78% regarded time spent on the perceived logistical bureaucracy of strategic environmental management as capable of being spent more profitably elsewhere.

86% of respondents, including secondary sector companies, were cynical about BS 7750 or any EMS. Although legislation was seen as the dominant force of change by 50% of respondents, only 29% were aware of the implications of EPA to their business practices. 75% of these interviewees considered that it had been drawn up without adequate consultation as to the practicalities of implementation. Self-regulation was therefore seen as the preferable instrument for change although the present regulatory mechanisms were viewed as inappropriate to small companies, and there was little evidence of alternative sources of information. Indeed, 71% felt that information reaching them regarding the environment was poor and inadequate. Companies were in general reluctant to say, however, if any further information provision would induce them to change their practices. On the whole, the micro-firms had not considered the information provision question, regarding the issue as irrelevant to their business practices.

The most common environmental initiatives were recycling (50%), energy efficiency (36%) and waste management (43%). Only 7.1% had any strategic plan for the environment in their business practices and 100% of respondents from the tertiary sector

felt that BS 7750 was totally inappropriate to their operations due to time, financial constraints, and because of the structure of the standard.

50% of respondents considered alternative strategies to improve their environmental performance a waste of time. This was due to their perception that their business practices were by their nature environmentally benign. Attitudes towards environmental issues were ambivalent and general awareness and understanding of the holistic inter-relationships of economics and the environment were poor.

8.2.3. Mail Survey 2

Results of the second mail survey showed that there were no significant variations in response by companies in explanation of the lack of strategic environmental policy. Only 4.6% had an environmental policy in the first survey. This increased to 16.3% in the second survey, although the increase was limited in the main to the larger secondary sector companies.

Of the companies who did not have a policy, 37% considered their operational initiatives sufficient. Lack of time, finance and staff to implement any changes were also seen as important reasons for company inertia with respect to environmental considerations. When asked about BS 7750, 68% felt that they would not be able to implement the standard even if they wanted to. The main reasons for this inability were also lack of financial resources, lack of available staff, the nature of the standard itself and unavailable time.

Proposals for support initiatives, including free consultancy, telephone help-lines or the development of a regional environmental management systems designed to help improve

environmental performance attracted little positive response. This reaction is a key indicator of the negative aspect of present attitudes to future environmental issues in the SME sector surveyed.

The empirical research has shown, that there is little or no evidence to suggest that actual practices have any basis to support the view that SMEs are exhibiting or are motivated towards employing theoretical management solutions like BS 7750 or indeed the "advice guides" proposed to help companies with environmental management. SMEs are, in general, not interested in employing strategic management or environmental strategic management and find the necessity to change operational practices unnecessary due to their perceived negligible environmental impact.

The literature discussed under *Alternative Holistic Solutions* in Chapter 3 suggests that sustainable development is not going to be achieved through free trading economics and legislation. Alternative theory dictates the predominance of local economic activity if sustainable development is to be achieved. The next section considers this alternative and the implications for the SME sector.

8.3. Towards a Sustainable Development Strategy

The surveys in chapters four and six revealed a failure to develop a strategic environmental policy throughout the SME sector. The most commonly cited reasons by firms for this response were lack of time shortage of finance and failure to detect a direct connection between the activity of the firm and environmental degradation. The latter was in no small part due to the predominance of micro-firms within the survey. Although only 1.3% of companies registered the belief that the environment was no longer an important issue, complacency ranked high and the belief that operational initiatives

sufficed was common. This was particularly the case within the micro-grouping where operational initiatives were in the main limited to recycling.

A picture emerged of a lack of understanding of the basic facts and a general unfamiliarity with the issues involved. Firms were unclear as to the aims of legislators and environmentalists. The scale of the problem is beyond the capacity of support organisations like the Groundwork Trust's PAYBACK (Chapter 6). Attempts to increase informational flows and support devices to the SME sector in this way have not been highly successful. The Trust's experiment highlights the irrelevance of 'bolt-on' environmentalism. Advice and education on environmentally sound policies remain unattractive and ineffective in a business environment where economic survival is the predominant preoccupation. Hence there is every indication the environmental management voluntary standardisation directive BS 7750 will be minimal in effect in reducing impacts, particularly in the micro-grouping.

The present information suggests that while environmental protection provision and management systems are evolving in the larger manufacturing companies, there are few signs of change in most other companies, particularly in the micro SME grouping. As things stand this is likely to be the case for the foreseeable future. Were the course of events surrounding the emergence and acceptance of the quality standard BS 5750 to occur with respect to BS 7750, the effect this would have on achieving the aims of sustainable development would be minimal. Most of the companies interviewed regarded BS 5750 purely as a commercial cosmetic exercise. Rather than companies having to achieve the quality standard, the standard was made to fit the company. Accreditation was being achieved through the establishment of processes rather than changes in practices which had any substance. This research suggests that where the standard was implemented, quality had not increased sufficiently to make the procedure worthwhile. If

this were to happen with BS 7750 then the reduction in environmental impact would be minimal.

The likelihood is that these environmental management systems could lead to significant reductions in the environmental impact of companies who have clear environmental impacts in the first place. Most other companies, especially micro-firms, however, would find the exercise to be inappropriate and would fail to apply to them. Consequently any significant reduction in overall environmental impact would be unlikely to occur.

As things stand it is unlikely that any of the restraints to environmental self-regulation in the SME sector will cease to be significant. Cost, time and initial lack of commitment will remain as major initial restraints on implementation of effective policies. However, it is equally unlikely that regulatory changes will result in substantial policy changes under the present free trading system. Further, evidence suggests that attempts to impose new environmental legislation on an international or national level are likely to be opposed by GATT as 'barriers' to trade and contrary to the GATT agreements. For example, in 1985 Indonesia banned the export, but not the felling, of logs and rattan from their rain forests. They proposed to process the material themselves, arguing that this would provide an incentive for protection of a natural resource on both environmental and economic grounds. The European Community complained to GATT and won the case on the grounds that such national legislation restricted international competition and free trade (Hines and Lang, p63, 1993).

The 'strengthening' of the GATT agreement through the signing of the Uruguay round on the 15th December 1993 in Geneva further enhanced this position. As national governments lose the power of regulation in this way the potential role of the SME sector in environmental protection will increase. A strong commitment to the environment from

the SME sector could compensate for the absence of national legislation for environmental protection. The SME retains the option to ostracise environmentally damaging practices and to give high priority to the purchase and supply of socially and environmentally friendly goods and services from known sources. The assumption here of the SME having a strong commitment to the environment is of course a large assumption and is unlikely to occur spontaneously. If, therefore, as appears to be the case, environmental self regulation within the existing trading system is impractical and increased environmental regulation is implausible an ecologically sustainable society may be achievable only within a radically changed framework (Hutchinson and Chaston 1994).

A prerequisite for the implementation of environmentally sustainable policies by the majority of SMEs is an educative approach based on concepts of action learning. Once SMEs appreciate that sound environmental management is good business they may be enabled to perceive that it is in their interests to consider all environmental implications of their business practices. Many SMEs employ minimal workforce and are not much larger than larger households. It is clear from the research findings that these micro-firms are particularly slow to accept responsibility for environmental problems since, like the average household individual, they do not view their own individual lifestyle as earth threatening. This individual centred philosophy creates a mood of complacency and inertia. Facilitating a policy shift away from direct environmental education *per se* towards alternative forms of priority action that have secondary environmental education effects in-built is therefore a requirement.

Any sustainable system will be dependent upon community understanding for the need to change. This understanding is emerging through conscious raising projects that have significant participatory elements and becomes evident in the re-generation case studies

detailed in the next section of the research. One of the main problems is that the global trading system as a whole has become too large to regulate. Hence the soundest means to take account of ecological considerations is to decentralise and simplify the decision making process (Dobson, R. 1993). This allows for localised knowledge to enter the decision making process and for social considerations to be taken into account. Education and information, leading to a fuller understanding of the implications of political decision making and the economic ramifications of these new policies are important elements in any system dedicated to achieving sustainable development.

The principles outlined in Agenda 21 provide the basis for the development of regional re-generation strategies. Agenda 21, the global environmental action plan signed in Rio De Janeiro at the 1992 Earth Summit (Keating, 1994), is effectively a guide for business and government policy towards the environment for the next century. Issues covered include poverty, biodiversity, population and sustainability, managing hazardous waste and the financing of sustainable development amongst others. Over two thirds of this action plan requires the commitment and co-operation local government if it is to be implemented and is dependant on local sustainable re-generation. Local government involvement is particularly evident in Chapter 28 of the agenda, known as Local Agenda 21. This deals with localised sustainable development in relation to the following areas: community participation; the greening of the local economy; education and awareness concerns; the transport and planning interface; green purchasing; and sustainability in rural areas. Regional re-generation initiatives could therefore provide one of the most important dissemination outlets for environmental information.

Sustainable economic policies are in the interests not only of the economy as a whole but more specifically of the existing companies within the locality. At present the environmental agenda (including legislative developments) is being determined primarily

by the larger corporate entities (Clunie-Ross and Hildyard, 1992). Hence such legislation as is permitted under GATT tends to support the interests of the larger companies. This will tend to reduce the market shares of SMEs unless sustainable regional re-generation models are used to increase SMEs competitive advantage. Concepts such as co-operation, networking, LETS involvement and credit unions all act to focus upon opportunities for increased trading at a local level. Reduced energy bills through energy efficiency programmes, waste minimisation procedures and other cost saving initiatives can serve to further increase the competitive advantage of SME business practices.

The secondary policy implication of a regional re-generation model is the education of SMEs in concepts of sustainable development, changing attitudes through action learning. This approach, central to bioregionalist philosophy, promotes the re-inhabitation of the region and the learning aspects of sustainable development. Communities learn how to live 'in place' and reverse dependence upon external economic investment that has little or no local accountability to the environment or to the community. The move enhances local SME good and service provision.

The research has shown that there is a need for a radical change in attitudes and practice of SMEs if sustainable development is to be achieved. It has also shown that this is unlikely to occur through the application of the large business model based on environmental management systems. BS 7750 only serves as a comparative referencing system, it does not and cannot solve the holistic problem of sustainable development. There is therefore a requirement to develop appropriate solutions to move towards a sustainable model for SMEs.

All three stages of empirical research show that the larger secondary companies have a more positive attitude towards the development of environmentally friendly initiatives

than their smaller counterparts. It might therefore be argued that the solution is to increase the size of SMEs. However, evidence suggests that growth is not the answer. From Schumacher, (1973) to Johannisson, (1983); Conaty, (1993); Morehouse, (1993) and Lang and Hines, (1993) localised, small-scale operational development has been recognised as the optimal route to sustainable development. In fact the larger a company grows the greater its impact on the environment is likely to be as more resources are used, transport distances increase, more energy is employed, more waste generated and consumption in general is increased. Hence it has considerably more scope to seek to reduce its impact on the environment in relative terms. In real terms, however, it will continue to have a greater impact on the environment than the smaller local enterprises.

Larger companies also have an increased motivation to pick up on environmental concerns by virtue of being large. The greater the environmental impact of an organisation the more likely it will be to realise the necessity to be aware of its impact, for legislative or for marketing reasons. Hence, although smaller companies may have a lower level of awareness and fewer strategic policies, this may not necessarily mean that larger firms are preferable in the pursuit of a sustainable development strategy for SMEs. Further, in many cases geographical, personal and/or economic constraints provide additional checks to growth in the SME sector (Johannisson, 1983).

A further case for growth arises over the question of employment provision. It is frequently argued that large firms bring employment to an area and generate economic activity e.g. the Trident contract at Plymouth Devonport. Small scale businesses are often more labour intensive, however, there may be a stronger argument for localised employment provision. The mail surveys and in-depth interviews in Chapters 5, 6 and 7, reveal SME perception that information and education on the potential strengths of the sector for present and future development are inadequate. There is therefore a need to

satisfy this educative void. Alternative localised development strategies based along sustainable lines could provide the necessary information and education through participation, this is an area requiring further consideration.

If, therefore, growth is not the solution, effective legislation is unlikely due to GATT and self-regulation implausible or inappropriate to the SME sector, there is a need for an alternative model to achieve sustainable development within the SME sector. BS 7750 was not designed to achieve sustainable development. It was designed merely to improve the management of the environment as a strategic issue and is clearly appropriate for the large manufacturing company allowing for more 'efficient' management of the environment. This management does not mean that the environment is going to be sustained however. If the SME sector is unlikely to implement the standard and future provisions of information are greeted with ambivalence, the change of attitude called for by so many writers to achieve sustainable development [Bookchin, (1980); Morehouse, (ed, 1989); Jones, (1993); Lang and Hines, (1993); Plant P. and Plant J. (1993) *et al*] is unlikely to occur.

Conaty suggests that there needs to be a re-evaluation of priorities for sustainable development to be achieved (Conaty, 1993b). He considers the present system where capital is the determining factor in the productive process, taking precedence over land and labour, as misguided. His vision includes the re-evaluation of financial philosophy so that money supports the needs of people and the earth, and the earth and people cease to support the financial system. He sees the financial system as a tool rather than the master.

The issue is not so much how well the system and business can manage the environment. This is the very philosophy which has created the present predicament. The research

posed the question of whether sustainable development within the SME sector can be achieved. To satisfy this aim the development of a sustainable system of production and distribution offers a sounder basis for sustainable development than recycling programmes. The present system may be able to provide applicable management systems (or not as the case may be). What is questioned is their ability to induce a sustainable society.

This research has suggested, so far, that there is a requirement for education to achieve sustainable development. Sustainable development is dependant on the expansion of an environmentally aware SME sector conscious of the benefits both economical and environmental, of local trading patterns. Sustainable development implies economic equilibrium and a stable locally oriented economy, which is likely to be beneficial to the SME. The form of action learning educational provision based on participation, which will enhance the development of sustainable philosophies and policies requires research and further analysis.

This section has delineated alternative approaches to sustainable development. It is necessary, therefore, to determine whether such alternative approaches are feasible. The next section presents case study material of actual practice within the area of localised development practice.

8.4. Socially and Environmentally Accountable Development Strategies - A Series of Case Studies

The case study material details a new generation of projects designed to revitalise economic activity on a regional basis. As the evidence in this chapter indicates, the projects are neither competitive nor mutually exclusive. On the contrary they offer

indications for a holistic and collective approach to regional revival which has implications both for the viability of the SME sector in the locality and for the creation of a sustainable environment.

The case studies derive from a series of semi-structured in-depth interviews and additional material from the relevant organisations involved. All are local examples of initiatives in different regions across the globe in response to changing economic and environmental pressures. The LETSsystems in Devon and Cornwall and Plymouth's Credit Union in Stonehouse are local adaptations based on models developed from the experiences of similar groups. The Keveral Farm Permaculture Design Community in Cornwall is a residential and farming community that is combining long standing local experience with permacultural design features that originated with Bill Mollison's book published in Australia in the 1978 (Mollison and Holmgren, 1978). The Urban Community Regeneration Scheme, Wolseley Community Site Project, Plymouth, Devon, and the Regeneration Unit of Cornwall County Council are seeking to implement Agenda 21 (part of the Earth Summit, 1992 signed in Rio De Janeiro) through collaboration between the local authority, the business community and various other voluntary organisations. Resource Town 2000, Torrington, Cornwall is a further example of formal co-operation between the local authority, local business community and voluntary organisations.

8.4.1. Local Exchange Trading Systems (LETS) - Totnes, Devon

Background Information

A comparatively recent phenomenon the first LETSystem, devised by Michael Linton, commenced trading in Courtenay, Canada in 1983, (Dauncey, 1988, p53). LETS is a barter system in which the double coincidence of wants is eliminated.

Generally this term refers to Local Exchange Trading Systems, it does however have a number of other alternative descriptions. For example, it has been described as a Local Enterprise Training System which provides low cost, low risk ways of establishing local needs, employing local people. It has been defined as a Local Energy Transfer System, a Local Education Transformation System and a Local Employment Trading System, which would create new work opportunities within a region. For the purpose of this case study, however, the term will relate to the more traditional definition of a Local Exchange Trading System.

The essential characteristics of the LETSystem are as follows:-

1. The agency maintains a system of accounts in a quasi-currency, the unit being related to the prevalent legal tender.
2. All accounts start at zero, no money is deposited or issued.
3. The agency acts only on the authority of an account holder in making a credit transfer from that account to another.
4. There is no obligation to trade.
5. An account holder may know the balance and turnover of another account holder.
6. No interest is charged or paid on balances.

7. Administrative costs are recovered, in internal currency, from accounts on a cost of service basis.

(LETS Services, 1989)

The Interview

A LETSsystem is a self regulating economic network which allows its account holders to issue and manage their own money supply within a bounded system. This case study concentrates on the LETS scheme in Totnes, Devon and considers the implications of direct SME involvement in the scheme. The case study material is derived from primary source LETS publicity material and a semi-structured interview with LETS organisers. and LETS publicity material.

A LETSsystem is founded on the basis of members' *commitments* to each other and to the community. It is not a barter economy (within the traditional definition of the term). When one person provides a good or service to another the consumer owes the community (rather than the individual who did the work) payment/commitment. This aspect of the LETS concept is seen as a vital aspect of the scheme as it highlights the relationship between the individual and society which traditional money exchange can obscure. For example a consumer who buys vegetables from the supermarket has no knowledge of the processes involved to produce the sustenance they buy. The educational aspect of the consumer being in touch with the producer who lives within the locality is therefore an important feature of the LETSsystem. As with a credit union a LETSsystem requires considerable trust if it is to function successfully. This suggests an optimum size which is small, local and accountable. The concept of MULTILETS software, computer software that links LETSsystems together in space to provide regions with goods they cannot produce, is a recent development within the UK.

Effectively LETSystems give people and businesses the opportunity to acquire or sell goods and services without traditional cash exchange. This is of particular interest to the SME sector as it offers opportunities for increased market share competition through new market opportunities. For example, a family unable to afford to buy a new dining table in sterling, may opt to pay their commitment back to the community through the LETSystem. The concept has a number of liberating principles. It allows for the development of dormant skills which the formal economy has made redundant. It allows individuals to attempt new skill development initiatives; Anything from teaching jazz piano to producing local duvet covers or simply mowing lawns can be transformed through a LETSystem into a productive activity.

The implications, therefore, for local economic welfare in general, and the SME sector in particular, appear significant. In Totnes the general consensus is that the LETSystem has provided the community with a significant economic boost. Although formalised economic research has yet to be undertaken in the UK the general feeling is very positive, particularly among small businesses in the area. A number of SMEs are already trading through the LETSystem. These include an accountancy firm, crafts retailers, a child care provision company, a Chinese herbal medicine firm, a traditional carpenter and an organic market garden box scheme (see below). All of these companies accept a combination of sterling and *Acorns* (the Totnes green pound: every Acorn is worth one pound) as payment for goods and services.

Local employment providing for local needs as far as possible is considered beneficial to the community for a number of reasons. The direct producer/consumer link reduces consumer costs, mainly as a result of the lower transportation costs on products; there is more community involvement; the system has generated a local bond beneficial to community spirit; local production enhances sustainable lifestyles; and generally less

packaging is used within the LETSystem than in the traditional market as consumers were more ethically aware. LETS is a locally based economy that encourages wealth to stay within and be reinvested in a region. It is seen as beneficial to the economic and social welfare of the community of Totnes and has, according to LETS statistics, significantly improved certain business turnover.

As with the other case studies analysed in this research the secondary effect of sustainable lifestyle education diffusion also applies. The proximity of the producer and consumer makes for mutual accountability. This is particularly relevant in the case of agricultural businesses. The farmer is more accountable for his/her behaviour regarding environmental practices and the consumer is more aware of the expense and complications of effective environmental practice.

In Totnes there is an organic vegetable box system as a part of the LETSystem. The producer sells organically produced goods through a number of distribution points within the community rather than in the local supermarket. Each individual gets a choice of three different sizes of box £3.50, £5 and £7 containing a selection of seasonal produce as available. Modifications can be made in certain cases to cater for strong preferences, but on the whole consumers get what is on offer. This adds a novel aspect to food shopping within Totnes in that the consumer receives an unexpected selection of vegetables.

Although the economic implications have not been measured in formal terms, the picture is emerging of a system offering opportunities for new markets to SMEs, new training opportunities that could lead to start up programmes and the development of community links within the area that are beneficial for the diffusion of sustainable development ideology.

8.4.2. Devon Co-operative Development Agency (CDA) - Credit Union Development Project (CUDP)

Background Information

About one trillion pounds a day is traded on the London money markets, yet only about 5% of this turnover has anything to do with world trade (Robertson, 1990). 20 years ago this figure was closer to 30% (Conaty, 1993 p118). Credit Unions are in essence financial co-operatives run by their members which specialise in consumer lending. Expansion in the UK has been slow even subsequent to the 1979 Credit Union Act. In the USA the expansion has been more marked and lead in part to the American Community Reinvestment Act of 1977. This law stipulates that financial institutions should serve the needs of all of the community and not just the already affluent and requires regular performance appraisal in relation to the policy requirements (Conaty, 1993 p121). Credit Unions offer access to low interest loans, and attainable saving, enhancing (through the training necessary to run a Credit Union) the confidence and skills of the membership. Motivated by the high charges of loan sharks and sharp business practice which may demand exorbitant interest rates [Dauncey, (1988 p175) quotes interest rates of 1163% p.a. in Birmingham, England and 25% per day in Calcutta]. As a means to escape debt, credit unions have multiplied significantly on a world scale since the 1980's. In British Columbia by 1988, \$6 billion were on deposit with credit unions - "a figure large enough to allow the province to become a real pioneer in the field of sustainable community economic banking, if local CU members woke up to the possibilities and started using their democratic rights to bring in the new community-based lending policies" (ibid, pp177-8). In the UK, however, legal restrictions limit the scope for creative investment decisions the percentage of people belonging to CUs

remains substantially below the figures for Canada and New Zealand (Dauncey, 1988, p175).

Credit Unions are not charities, although they are motivated by an underlying charitable, self help philosophy. They offer local people the chance to determine their own savings procedures and to be aware of the implications to the locality of their investment decisions. They empower communities to determine the structure of local employment. This ideological approach to the meeting of local needs locally is inherently sustainable, and provides an important medium for the diffusion of education regarding sustainable business practices. UK Credit unions are monitored by the Registrar of Friendly societies. They pay up to 8% dividend on savings, free Life savings and Loan Protection. One can save up to £5000 with them and borrow up to £10000.

Credit Unions are seen as cheap alternatives to other sources of loans and they encourage prudent money management. To comply with the law, (and also to operate effectively) the people who form the membership of a Credit Union must have something in common. They must have a 'common bond'. This common bond can take the form of all the members living in the same area. These are *Community Credit Unions* sometimes referred to as *Residential Unions*. A CU may be formed from the members organisation such as a Business Club. These are known as *Associational Credit Unions* and are occasionally referred to as *Occupational Credit Unions*.

Community Credit Unions are increasingly being employed as part of anti-poverty strategies in many parts of the country and are growing in the UK at the rate of one a week. They are not, however, a quick fix solution to poverty, unemployment or debt. On the contrary, the CDA perceives credit unions as a highly constructive response to poverty, debt, unemployment and to the principles of sustainable development on a long

term basis, providing direct access to cheaper credit and encouraging money management and enterprise skills within the community as a whole.

Essentially Credit Unions give loans on the basis of savings records within the Credit Union. Because borrowing is based on savings and trust there is no security required to borrow. CUs are spreading rapidly in the Britain. In 1988 Britain had only 83 CUs with 25,000 members and £5.8m in assets (Dauncey, 1988, p176). There are at present an estimated 450 Credit Unions in the UK with about 80,000 members and £16m in assets. World wide there are an estimated 110 million Credit Unions with 206,607 million members (Milne, 1994 pxi).

The 1989 Brundtland report cited the elimination of poverty and deprivation as the initial policy requirement for sustainable development (World Commission on Environment and Development, 1987). Her proposal was for world leaders to accept the need for a "new economics" which is both people and earth centred. This new economics requires a system that has alternative ethical considerations attached to the financial requirements of society making credit unions a central aspect of sustainable development. It has been suggested that overindebtedness is as much a pollutant as acid rain and toxic waste (Conaty, 1993 p125). The reasoning is that banks fund the projects and commercial enterprises that lead to the environmental degradation in the first place. Regulation and information regarding banking decision making may therefore be a future requirement of sustainable development. If this is the case, the local credit unions offer a structure that can be easily comprehended as well as being more accountable to the local community than a large financial operation.

The Interviews

This case study material is derived from interviews with the Devon Co-operative Development Agency (CDA) and their sister organisation the Credit Union Development Project (CUPA). The CUPA has been established to promote, develop and sustain the expansion of credit unions (CU) in Devon and Cornwall. The material relates in particular to an initiative to establish and promote a South Devon Business Club Credit Union.

The Co-operative Development Agency

The CDA offers the following benefits in support of small businesses facilitating sustainable development through local community action:-

1. Increased members' net disposable income by reducing rates of interest otherwise incurred on loans.
2. Increased investment opportunities for small businesses in co-operation through the recirculation of the Credit Unions funds, via community trusts.
3. Increased organisational, administrative and communication skills of individuals and groups, enhancing a culture of self management and increasing their competitiveness (both as individuals and as traders).
4. Increased 'economic literacy' - eg. money management; debt control; management accounting skills.
5. Increase self confidence of individuals and reduce the blight perceived stigmatisation of debt by building structures of mutual support.
6. Reduction of the psychological and social burden of debt upon individuals.
7. Integration of the work of a wide range of agencies in the fields of economic

development, employment, enterprise training and services to small businesses.

CUs complement the work of other local agencies and provide vital support for SMEs. They assist in the development of local employment structures and support the principles of Agenda 21 within the area of the Devon CDA.

The South Devon Business Club is an initiative that is attempting to establish an occupational or *Associational Credit Union* with the common bond of local business involvement. Credit unions, like many regional, community initiatives for sustainable development, require trust as a central ingredient for success. Canadian research has suggested that debts are more likely to be honoured within the confines of a credit union because of the close bond between the borrower and the lender. This trust aspect is central to the community ethos of the credit union and sustainable development (Milne, 1994). The CDA believe that because it is the members who run the union they will be more knowledgeable and sympathetic to the needs of the borrowers. It is stressed, however, that percentage borrowing allowance depends on percentage savings accrued and over time history of repayment. This is seen as a safeguard against debt repayment failure.

The intention behind the South Devon Business Club is that micro-SMEs will be encouraged to start up and that existing SMEs will be encouraged to participate to alleviate the high levels of interest repayments that are seen as such a significant factor by the CDA in the attainment of micro-business sustainability.

The success of the South Devon Business Club is liable to depend on the strengths of relationships within the club. However the principle of community managed capital provision is central to any model of regional self-reliance. Decisions on lending and

investment can be made by the CU with the welfare of the communities' employment structures in mind rather than the profits for a centralised banking system located outside of the region as being central variable in the decision making investment and lending process.

8.4.3. Keveral Farm Permacultural Design Community, Cornwall

Background Information

An alternative community has existed on the Keveral Farm site for 22 years. Over that period the character of the project has varied according to its membership and the economic climate. Currently the dominant philosophy among the 11 full time and 9 part time members is based upon permacultural design techniques. Practices couple this philosophy with co-operation with local businesses through a LETSystem. Community self-reliance within the confines of the existing land area is regarded as impractical even in the long term. Regional self-reliance, in which a variety of alternative projects interact with more conventionally based local enterprises is considered a more feasible alternative, creating a vision of an Eco-hamlet. This would form a similar vision to Ken Jones' cornucopian ecotopia (Jones, 1993).

The Interview

The material from this case study derives from a semi-structured interview with members of the Keveral Farm Community. The interview was designed to explore the following subject areas:-

- a) The extent of self-reliance of the community.

- b) The nature and extent of links with local businesses and the potential for SME involvement.
- c) The implications of the project lifestyle in furthering the evolution of a sustainable economy.
- d) Land tenure and accessibility.

The 30 acre site is leased on six-monthly tenure from a sympathetic local landowner. Hence membership of the community is not dependant upon availability of finance to purchase a share in the land. This is seen as an advantage and, were the site to come on to the market and to be purchased by the community, the policy of open access to membership would continue.

The site comprises woodland, orchards and market gardening areas with stables, animal housing, polytunnels and a series of outbuildings. The latter are used in particular for educational courses designed to increase the diffusion of information about the philosophical and practical elements of the Permacultural Design used on the community land.

Plans are in progress to build a new conservatory in conjunction with the LETSystem to increase energy collection and conservation. The conservatory will extend the growing season for soft fruits and vegetables. Further, the design and construction will involve local firms and will therefore act as an educational exercise in regional empowerment and sustainable development for the firms involved. The perennial garden also has permacultural design features including a pond so placed as to reflect the light on to the wall-clinging plants.

The Community

The existing community is as yet little more than an extended household in size. It is envisaged that the residential section (the household co-operative) could grow to the size of a hamlet, offering scope for a broad selection of lifestyles while retaining the informality of personal contacts.

The community owns and runs two businesses. The housing co-operative deals with the housing and financial logistics within the community and the farming co-operative provides the subsistence support structures. Capital is generated by the sub-letting of premises to a local blacksmith. These ventures and involvement with the newly established LETSystem bring the community into contact with the conventional business scene. The links serve to enhance communications between the community and other local enterprises.

The community operates on a combination of pragmatism and idealism. Cars are permitted on the site and, initially, at least, it is recognised that the businesses cannot entirely be self-financing. Social security benefits serve to subsidise the lifestyles, enabling work on the land to be undertaken free of charge. Labour rates are discounted from cash flow projections. In the sense that labour rates are traditionally incorporated into the output of a business in this case, however, they are not included as a direct entry to the books.

The personal empowerment of individuals is central to the community philosophy. Contemporary society is perceived by community members as disempowering and in conflict with principles of self-reliance and ecological sustainability. Work for the farming co-operative is seen as an alternative to involuntary unemployment or

compulsory workfare schemes. Informal permacultural philosophy and alternative lifestyles is consolidated by the development of the programme of residential and non-residential courses, including a summer camp for permacultural and bioregional issues. Courses, lead by a number of prominent green writers, have included bioregional practicalities and permacultural workshops. This aspect of educational diffusion is seen as a central aspect of the community's role within the locality.

Propagation of the feasibility and accessibility of alternative lifestyles and the necessity to abandon high consumption and environmentally destructive process of production and consumption underlies all community activity. The community aims to demonstrate that Britain can once again become self-reliant in food supplies, even with the present population/land ratio.

Business Interests

The community pools its resources to provide housing for its residential and business activities. The farm co-operative sells seasonal market garden produce to the surrounding community including a local monkey sanctuary.

In sharp contrast with the conventional businesses studied in chapters four, five and six, the ecological impact of productive activity is constantly monitored on a day-to-day basis by the community. All aspects of business practice are evaluated from the checking of the polices of suppliers to the minimisation of waste and the re-use of materials.

However, in terms of conventional economics and business practice, the community business practices appear to have little relation to the traditional requirements of commercial participation. The quest for quality of life, minimal ecological impact,

community welfare, educational authenticity and self provisioning bears little relationship to the philosophical laws of the self financing, financial profitability and economic efficiency as defined by conventional business practice. Where the more conventional SME would in general evaluate its activities by the simple yardstick of financial profit, the Keveral community operates upon fundamentally different principles. Here a distinction is made between *full* employment and *fulfilling* employment and between didactic educational methods and alternative educational provision that considers examples of best practice that lead to self-awareness and self determination.

8.4.4. Urban Community Re-generation Scheme, Wolseley Community Site Project (WCSP), Plymouth, Devon

The Background

The Earth Summit in Rio De Janeiro, 1992, included the signing of a global environmental and development action plan called Agenda 21. Chapter 28 of Agenda 21 is an explanation of the requirements of local government towards the concepts within the plan and is called Local Agenda 21. Approximately two thirds of Agenda 21 cannot be properly delivered without local government involvement and co-operation, each local authority has been encouraged to incorporate Local Agenda 21 into its strategies by encouraging local business, community and voluntary participation.

Seven topical areas were highlighted by the UK local authority associations to assist authorities with the implementation of Local Agenda 21;

- a) Community participation.
- b) North/South linking for sustainable development.

- c) Greening of the local economy.
- d) Education and awareness raising.
- e) The transport/planning interface.
- f) Green purchasing and compulsory competitive tendering.
- g) Sustainability in rural areas.

The Interview

The community project (WCSP) arose in part from the commitment of Plymouth City Council to meet the requirements of Agenda 21. Information in this section is based on a semi-structured in-depth interview with a City Councillor involved in the project.

The main objectives of the case study were:-

1. To decipher the City Council's commitment to Agenda 21 within an urban locality.
2. To consider how SMEs would benefit from the project.
3. How far the project would be community based.

The WCSP was set up to regenerate the local urban economy along sustainable development lines. WCSP aims to satisfy the initial requirements of a, c, d, e and f above. It is an attempt to establish a self-reliant, self-financing community centre training local people for local jobs. Within the parameters of this remit the Centre plans to consider various aspects of sustainable development business practices. The project will therefore raise the consciousness of local people, in the process of training them to establish their own SMEs.

WCSP will pay for itself through the rent charged to the co-operative enterprises which it generates. These enterprises will be owned by the local community as co-operation is seen to be a central element to the success of the project. The plan is initially to rent five sites mainly to retail co-operative enterprises. It is felt that the retail outlets would succeed as the site is located in a peripheral region of the city where retail provision is not particularly developed. It is also envisaged that the businesses will offer the work to local people who live in the community of Keyham in Plymouth.

Environmental consultants are being employed at the building and design phase of the site. For example the consultants have suggested that any trees with preservation orders on within the site should be conserved and building undertaken around them where ever possible. When completed a community steering group is envisaged to run the site. This community involvement will allow local environmental considerations to be accorded a higher level of importance than if the management and decision makers were not from the locality. The buildings will be developed with environmental specifications in mind with energy efficiency of the buildings being a priority issue at the design stage.

The Community Economic Development Trust (CEDT) which will run the WCSP will include a Forum of local members who will be trained in site management and educated in the principles of sustainable community development. It is envisaged that financial self-sufficiency (ie. existence without local government financial support) could be achieved within a 5 year period.

Through a project of this type, members of a community can be involved in the economic regeneration of their own local area. Further, it provides a valuable opportunity to disseminate concepts of sustainable development through examples of working practice. Theoretical explanation and philosophical arguments are slow means to convince the

majority of people of the merits of and the necessity for a change of lifestyle. Once a community sees first hand the impact it can have on its own economic destiny and the benefits that accrue from sensible environmental management the merits of an enhanced lifestyle become apparent.

Projects like WCPS therefore have a dualistic purpose. They enhance a community's ability to reduce dependence upon large scale economic structures. They simultaneously reduce the environmental impact of business practices and act as an educative awareness/conscious raising exercise. Nothing succeeds like success. Once projects of this type become a familiar part of the business scene the barriers to participation and imitation of those models will largely be overcome.

8.4.5. Torrington Resource Town 2000, Cornwall

The Background

Torrington has a very high level of unemployment. In particular the closure of the Creamery in 1993, the cornerstone of employment provision, led to a significant reduction of employment in the town. A group of local people decided to take action to find a way forward for the town and on October 25th 1993 a first meeting was held of the Torrington Resource Town 2000 Steering Group. This comprised; the Major of Torrington; Devon County Council's Economic Development Officer and Environmental Officer; Creation Restoration Ltd; Sustainable Futures; the Community Council of Devon; Torridge District Council and a representative of the Tarka Project, an environmental initiative near Torrington.

The Interview

The Devon County Council Environment Officer was interviewed and case study material was obtained from this interview to analyse the implications of the initiative to SMEs.

Finance to "pump prime" the project was forthcoming from the County Council's Economy and Europe budget and the Rural Development Commission. A £4000 budget was secured (£1,000 from the County Council's Economy and Europe budget, £1,000 from the Rural Development Commission and £1,000 worth of time each from Sustainable Futures and Creation Restoration Ltd) to fund a three month period in which a number of practical proposals will be developed with the joint aim of promoting community participation and contributing to sustainable development.

Policy Proposals

The initial aim of the project was to create 150 new jobs in the town of Torrington and the immediate area by the year 2000, using the principles of sustainable development in order to achieve these jobs. The Steering group sought to concentrate on creating local jobs that could be managed in a more ecologically friendly way for local people. It was felt that this economic philosophy would re-empower the locality to supply its own needs and look after the requirements of the area effectively. Attempts to attract larger scale national or foreign subsidiaries into the area were dismissed, since they could decide to leave at any time regardless of the needs of the Torrington area. To this end a number of objectives were established by the winter of 1993 by the Steering Group.

The initial requirement was to promote a self-sufficient local economy that would create secure and rewarding local employment. It was envisaged that this philosophy would

encourage local production to meet local consumption wherever possible and therefore empower the Torrington community to make more local decisions regarding their economic and environmental future. The Steering group felt in particular that environmental effects of local commerce could be reduced through the reduction of energy and resource usage wherever possible and by having more information available to companies about potential waste and pollution generation.

Central to the local people meeting local needs philosophy was the need to build on and develop local skills and resources. This would enhance community involvement in the project and anchor responsibility for development issues to the community.

Finally the Steering Group felt that the experience of the Torrington project could act as an educative process not only to the community with regard to sustainable development but also to other towns through the development of a model based on the experience in Torrington.

Strategy was concentrated on four main areas: tourism; access and transport; environmental improvement; and business development (all under the auspice of Agenda 21). To this end a number of projects were identified in the initial stages for funding and consideration. The following section considers these projects. They were sectioned by the Steering Group into three categories, large, medium and small scale projects.

Large Scale Project Proposals

1. The refurbishment of the Pannier Market.
2. A Community Enterprise Centre.
3. The use of the Howe church site as an integrated tourism/heritage facility.

4. Great Potheridge Farm (Bicton College of Agriculture) as a rural centre.
5. More emphasis on information and interpretation of the town's historical, architectural and other features.
6. Greater links with other bodies, e.g. The North Devon Transport Forum, to improve access to the town especially through public transport and use of the Tarka Train.
7. A 'town scheme' to enhance the town's image coupled with a living over the shop survey.
8. A much greater emphasis on business development particularly with the emerging green business potential, utilising the number of empty industrial units in the area.

Medium-Sized Project Proposals

1. Investigation and partial movement towards local producer/consumer links.
2. Research into a Community Development Trust.
3. Extension of the Local Exchange Trading System (LETS) which already has 30 members.
4. Investigation of Credit Union facilities.
5. Holding an exhibition to promote more community involvement
6. Strengthening links with other interested parties e.g. Universities.
7. Increasing the linkages into Hatherleigh and Okehampton which are also implementing Community Development.
8. More research for the development links with companies for joint green development proposals.
9. Continuing progress towards an Energy Advice Centre.
10. A pilot community information point which would use advanced computer technology and video conferencing.
11. More funding to enable the green audit to proceed based on the start already made by

the group.

12. A skills development programme in conjunction with county Hall officers,

Sustainable Futures (a consultancy firm) and other partners.

13. Linking with the Seaford Centre for a 'local distinctiveness' campaign.

14. Proposals for tourism development are likely to form a major element in a strategy for Torrington.

Small-Size Project Proposals

Small scale ideas are ongoing and increasing in number as the project gains a higher profile. It is envisaged that these schemes will be central to the success of the project because they usually derive directly from community concerns and involvement. The Steering Group rates these proposals highly not only for their intrinsic value but more specifically for their education impact. Proposals include:-

1. Leaflet production for the Town Council's Craft Fair.
2. Payments to Sustainable Futures to attend sustainable economic development seminars.
3. Co-operation with Great Portheridge to promote the Open Day.
4. Provision of postage for a survey for information on Community Trusts in the rest of the UK.

Initial feasibility of the above schemes was undertaken throughout 1993 by the commercial consultancies and the Steering Group. As a result, work has commenced on: the development of an energy advice centre; the development of the LETS system; the development of the business unit for community enterprise which is aimed towards empowering the local workforce to provide local needs; and a number of other smaller schemes.

The Steering Group has been encouraged by the results so far achieved and has consequently designed a development strategy based on the four main areas of concern highlighted at the proposal stage of the project, namely tourism, access and transport, environmental improvement and business development. The following projects were designed in the spring of 1994 to meet each area of concern:

a) Tourism Development

Tourism is a central source of employment for Torrington. There was a general consensus within the Steering Group that it should be encouraged in a sensitive and appropriate manner based on principles of green tourism. Therefore the following projects were highlighted as potential investment areas.

1. Improving the walking and cycling routes out of town.
2. Creation of more town/local trails.
3. Provision of pioneer local bus services between centres, to the coast and towards Okehampton.
4. Development of Torrington as a walking centre through promotion of accommodation in association with local and long distance paths on Dartmoor and on to North Devon via the Tarka Trail. Cycling links are seen as an integral part of this project.
5. Availability of youth hostel type family accommodation.
6. Market the town as a centre for sustainable green tourism: exploiting in particular the railway.
7. Joint promotion and marketing with local attractions with Hatherleigh and Bideford and other local centres.
8. Improvement of communications regarding accommodation and standards of provision.

b) Access and Transport

Torrington provides an ideal model for the encouragement and implementation of sustainable transport modes. A survey is planned to identify potential within this area for the town and surrounding areas. It is hoped to link towns with common interests through the project proposals. Potential schemes are therefore as follows:

1. To develop a sustainable transport policy for the region in which public transport is accorded a high priority.
2. To build on existing traffic management measures in the town, in particular traffic calming initiatives.
3. To improve accessibility for disabled people. Carry out a local survey under the remit of a Transport Survey undertaken by or with people with disabilities.

Many local authorities are undertaking similar exercises. What is noteworthy is the holistic nature of the Torrington Resource Town 2000 where every aspect of community life has been analysed with respect to the environment. Therefore, although not all of the above are revolutionary, it should be recognised that they are a part of a larger vision.

c) Environmental Improvement

Whilst there has been a measure of environmental enhancement the Steering Group felt that there was a requirement for an overview of the town and surrounding regions. For this purpose an 'Enhancement Group' has been established to provide an overview of the town and surrounding area. If this group is to make any significant contribution, however, it is recognised that further funding is crucial. The following schemes are proposals delineated by the Enhancement Group.

1. A 'Town Scheme' to disseminate information and education.
2. Refurbishment of the design of the central areas and improvements to the townscape.
3. Further provision of public open spaces as places for play and recreation and public events.
4. An area wide local distinctiveness campaign.

d) Business Development

The main thrust of the business development element of the Steering Group Strategy focuses on helping new and existing indigenous small, local businesses survive. Companies that place environmental considerations high on their agenda are particularly supported. It is also agreed that there is scope to attract new businesses from outside the area on this basis. The craft sector is seen as having considerable potential.

Help is envisaged for two main areas: ecological auditing and education into more sustainable practices. It is recognised that the primary focus is on the generation of new and financially sustainable employment structures. To this end the Business Unit for Community Enterprise is a focus project. The principles of sustainable development are to be established within the centre by increasing local incentives to provide for local needs locally.

To be effective, the development plans require local involvement at all stages. Wherever possible, therefore, local skills and expertise are being employed for the development and implementation of the proposals by drawing on local consultants, building workers, unemployed trainees and development workers. Local people will be given priority in access to appropriate training to acquire practical skills in, for example, fund-raising and

building management, which will then be applied to the projects outlined. Potential projects and schemes highlighted as relevant for particular business investment are as follows:-

1. To establish a local vacant business property register.
2. To develop ideas for small workshop units and a craft display area in the town centre.
3. To draw up a register of local crafts people.
4. To encourage a wide range of quality/customer care courses.
5. To continue support for the craft fair and negotiate a permanent venue.
6. To move towards a sustainable development culture to encourage the emerging industries to consider the area as a good business base for investment.

The Steering Group considers education to be a primary consideration. Education and information diffusion will be central to community understanding of the principles of sustainable development and therefore central to the continued success of the Resource Town. To this end the group accords high priority to the provision of a museum or local resource centre, exhibitions and guide maps. A local Community Information Point (using advanced telematics) is also required.

Once the above strategies, and proposals had been delineated the Steering Group propose to facilitate community participation in the schemes. The strategy was to enhance local project groups, to form interagency partnerships and to develop the policy proposals formulated. Community project groups' participation in the formulation of the European 5b funding bid formed a vital element in this strategy.

Public meetings, social events and a mini-exhibition were planned as a means to encourage participation. To date these have succeeded in enhancing the image of

Torrington Resource Town 2000. The lack of the Training and Enterprise Council (TEC) and Rural Development Commission involvement on a day-to-day basis has been pinpointed as an obstacle which requires review. More partners for co-operation are being sought to consolidate the project.

The project is still in its early stages but has achieved substantial local involvement. This initial 'goodwill' interest could deteriorate in the absence of early visible and tangible results. A town centre shop to act as an information point for the community, displaying details of progress, was being given a high priority.

8.4.6. Cornwall County Council (CCC) Planning and Economic Development Committee - Economic Re-generation Unit, County Hall

The Background

Following European recognition of the need to boost the economic prosperity of peripheral areas in the mid 1980's, Cornwall gained 5b status, generating the potential for considerable economic re-generation funding. The CCC Re-generation Unit was established to attract this funding and to manage the changes. A total of £15-20m per year is potentially available over the next 5-6 years, conditional upon matching national financial funding being attained. Finance is also available from the European Single Re-generation Budget, amounting to as much as £1.5m over 3 years.

The Re-generation Unit is designed to help local people meet their local needs. In practice this has been achieved by attracting substantial EU capital to pump prime local economies and to educate local communities about the practicalities of re-generation and sustainable development.

Environmental and economic considerations were at the outlet viewed as theoretically interdependent with economic considerations being accorded priority in practical policy formulation. Predictably, the general philosophy of the Unit held that a healthy local economy was likely to be more environmentally sustainable. What emerged, however, was the realisation that sustainable development should accorded a high priority. This was due in part to the requirements of the European 5b funding packages that require a drafted policy for sustainable development. Sustainable development was also accorded a high priority in the re-generation process following the CCC's commitment to Agenda 21. Although they have not as yet drafted a policy statement to satisfy Chapter 28 (the local government requirements) of Agenda 21, they recognise the need for a proactive stance on the issue. Environmental considerations have traditionally been central to Cornwall's economic policy because of the economic reliance on the farming and tourism both of which are heavily dependant on high land quality.

Effectively the CCC view sustainable development as localised economic re-generation in which significant environmental caveats are applied to all proposed initiatives. Their aims are therefore compatible both with traditional local political philosophies and future possible legal requirements under Agenda 21.

Objectives of the Case Study

1. To clarify the aims of the Re-generation Unit.
2. To analyse existing re-generation projects in Cornwall with particular regard to sustainable development.
3. To consider the future impact of the re-generation schemes with particular regard to the SME sector and sustainable development.

The Interview

The case study material is derived primarily from an interview with the Director of Cornwall County Council's (CCC) Re-generation Unit. Additional material, including aims of specific re-generation projects, was obtained from the unit in report format.

Specific Re-generation Projects

The first project was established in Looe in 1987. Looe has served as a pilot scheme on the basis of which the Regeneration Unit has devised a strategy for development flexibly applied to new projects. The initial step has been to generate interest within the locality for the project. Over time, however, this requirement has largely become unnecessary as the success of one project has led to demands from other communities within the county for similar re-generation programmes.

Established interest groups are drawn together to create a Local Member Steering Group for the project. It is understood that community participation at the initial stage is central to the success of the project as the feeling of community empowerment is seen as one of the greatest mobilising forces behind the success of projects. The Local Member Steering Group generally consists of the local town council, the CCC, an external consultancy, local interest groups and other influential local people.

Stage two of the procedure is to undertake a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis on the area. In effect the SWOT analysis is a bioregional education process that diffuses information to the community about their bioregion. In the process, the community as a whole is informed about the project and areas of priority action are highlighted.

As an initial requirement for the re-generation process an external consultancy was paid for by the CCC. Most projects have employed the charitable organisation Civic Trust to undertake the research. Civic Trust is a Charitable trust which operates as a consultancy with a re-generation Unit. Civic Trust rates are competitive and they offer good value, as they do not need to make 20/30% mark up. They also have country wide expertise in regional re-generation. Established a number of years ago to look at the quality of urban life, Civic Trust expanded into wider socio-economic issues. This included the development of local Action Plans which were practical in their approach rather than local authority plans which are often more policy oriented. Once the Civic Trust and County Council (in conjunction with the local authority) has established the options to be considered public meetings are held regularly to maintain the profile and involvement in the process as the Civic Trust draws up an Action Plan and presents the results to the community. The process has typically taken 18 months.

Fifteen Local Member Steering Groups have been established in Cornwall. Located at Looe, Padstow, Camelford, Weighbridge, Bude, St Austell, Callington, Bodmin, Redruth, Newquay, Hayle, St Ives, Penzance, Helston and Bodmin, some are at the pre-draft stage and others more fully established. The Re-generation Unit views the success of Looe as a catalyst for the expansion of the projects.

Minimal direct marketing of the concept has been required. Within the projects themselves, however, marketing is accorded a high priority. The CCC in particular see Cornwall as a quality marketing image to portray. Environmental issues can be marketed easily within this framework on two levels. Firstly environmental concerns are compatible with a healthy tourist environment and are therefore central to the image of the Cornish Tourist industry. Secondly, sourcing locally is seen as good environmentally as unnecessary transport and associated costs are removed.

At present food is transported out of Cornwall to be packaged and then returned to the supermarket shelves with a 80% mark up, according to the re-generation unit. This finance is removed from the local economy, and costs to the local community are 80% more than necessary to provide efficient production and distribution. From this perspective the CCC Re-generation Unit conceives environmental concerns as interdependent with economic re-generation.

With marketing support from the CCC to 'buy local' Cornish SMEs can be encouraged to expand, confident that they have a local market. The support of local SMEs is seen as fundamental to the success of the re-generation projects and to the policy commitment to sustainable development. Catering and retail outlets have traditionally promoted the Cornishness of their food as a marketing strategy. Hence local food producers gain directly from the new marketing strategy and local services generally gain as people associate Cornwall with quality and are therefore attracted to the area. The knock on effects of increased awareness of local issues and environmental concerns are therefore viewed as considerable. Relevant aspects of some of the Action Plans are highlighted below.

Looe

Since 1987 £5m has been invested in the first re-generation plan which was located in Looe. Wherever possible local contractors and businesses have been employed to satisfy the aims and priorities of the Action Plan. Some of the initiatives that have been implemented through the Action Plan include:-

1. East Quay wall/market and workspace project. This three phase programme integrated the requirements of the Harbour Commissioners and lead to further investment on a

traffic management system for the town, due to the changes at the quay. The increase in space allowed the fishermen to ice pack, market and box the fish on site and therefore keep transportation costs down.

2. A new woodwork and metal workshop.
3. A traffic management system which incorporated disabled parking space and tree planting in the town centre. The trees in the car park were planted to mask the impact of the cars. Costs were met by the Harbour Commissioners through reduction in car parking revenue, which was more than balanced out from the increase in revenue the fishermen gained from the new quay/market space.
4. A Discovery Centre. This centre acts as an educative focus for tourists about environmental concerns of the surrounding countryside. It also informs locals and visitors about the regeneration plan.
5. A fishing museum.
6. A town conservation scheme.
7. A Housing Association Scheme. This has been developed from a church site and is designed specifically for homeless and unemployed young people.

Altogether 30-40 initiatives have so far been implemented. Having gone through the process the Local Member Steering Group feel that the plan has been successful. It is however felt that there are no short term answers and that the success of sustainable development will only be able to be measured after a number of years.

Hayle

Hayle is the latest programme to be established and the following information relates to the pre-draft draft that is required before the initial Action Plan. It was decided in Hayle:-

that action was required mainly because of the dereliction and neglect of the port. A full strategic economic analysis was therefore required.

The Steering Group for Hayle consisted of the following members:

1. Hayle Town Trust.
2. Hayle Chamber of Commerce.
3. Hayle Town Council.
4. Cornwall County Council.
5. Tehidy Park Officer.
6. Groundwork Trust.
7. Penwith Deputy Planner.
8. CEDO and Penwith Economic Development Officers.
9. Harbour Owner's Representative and Harbour Master.
10. Landscape Architects.
11. Local Secondary School.
12. Highways Department.
13. Gwithian Towans Advisory Group.
14. Cornwall Rescue Archaeology Unit.
15. NSPCC.

The group also included a number of other interested parties in a part-time advisory capacity including English Heritage, English Nature, youth clubs, the police, the Countryside Commission, the DTI, local GPs and the Rural Development Commission.

The objectives delineated by the Local Member Steering Group were as follows:-

1. To restore and enhance the environmental and historical qualities of the town.
2. To promote action in relation to the economic fabric, infrastructure and potential of the town.
3. To address the social needs of the resident population.

The role of the local SME was recognised as central to any re-generation, in particular with respect to farming and tourism being accorded a high priority. It was decided that any future initiatives to encourage re-generation should give priority to environmentally friendly businesses. Areas of environmental concern ranged from minor schemes of decoration like signposting to reclamation of contaminated land. There was also a decision to establish a Town Scheme based on co-operation between English Heritage, the District and Town Council. This would follow an historic audit of the town. It was felt that the Action Plan should consider the pedestrian and vehicular movement patterns within the locality, eventually leading to an integrated transport control scheme to combine traffic reduction measures with improved public transport and cycling facilities. The provision of affordable housing was viewed as a priority. A skills training programme run through the Devon and Cornwall TEC was endorsed. The primary aim of the skills programme was to train local people for local jobs to enable SMEs to overcome the problem of the wasted resource of human skills and talents which flows from unemployment.

Re-generation Schemes and the SME

Clearly re-generation schemes can have a significant effect within a region's development programmes. One scheme often leads to further re-generation and increased project

awareness in a neighbouring area. The process of learning to see the positive qualities and the opportunities available within its locality, enables local communities to realise the potential for re-generation. The railway line between Liskeard and Looe is a prime example. It has broken even this year due to a proactive marketing strategy and now looks set to expand at a time when the national network is considering reduction in the number of branch lines. In 1992 there was an 11% increase of passengers on the Liskeard-Looe line with a further 7% the year after. This type of initiative is not only beneficial to the environment as it reduces car traffic: it also benefits local SMEs that are located in the railway towns. At a time when by-passes and congestion in on-street parking is reducing accessibility to local businesses in many areas this is a significant consideration.

With the local bias towards sustainable SME economies, re-generation schemes provide an excellent focus for the diffusion of environmental information to the community. The philosophical aims of sustainable development maybe satisfied in two distinct ways. Firstly, local SMEs are directly encouraged, enabling local people to meet local needs. Secondly the process itself acts as an educative awareness raising exercise, so important in changing individual attitudes towards ecological issues. Local community involvement can be used to further increase the environmental quality of life of an area. For example, in Looe local brownies tend a garden that surrounds a memorial in the town centre. Where previously the memorial was a litter attraction the town is now proud of the area and looks after its welfare enhancing the general ambience.

A major limitation to the re-generation process is shortage of time and resources available to the County Council, and the need to rely on external funding to pump-prime the changes. Ideally this pump-priming could come from within the locality enhancing both motivation, success and efficiency of the projects. This self-sufficiency requires local

investment that could be managed through the credit unions discussed earlier in this chapter. Community involvement has been highlighted as a central ingredient for the attainment of the aims of local re-generation projects. If the investment came from within the area the initiatives would automatically have community support and consequently have a greater chance of success.

The question was raised of the underlying policy implications of local people meeting local needs with respect to the tourist industry. Tourism requires external interest and capital to survive and there is a direct link between numbers of tourists and environmental damage. The dilemma is illuminated by the example of Newquay's bid to stage the world surfing finals. Sewage produced by the tourist attendance at the event could significantly undermine the event.

In Padstow tourism is critical, and the dichotomy of interests is recognised: on the one hand they want as many tourists as possible to boost local SMEs while on the other they need to conserve the environment for the tourist to enjoy. To some extent the changing structure of the tourist industry in Cornwall, with fewer people coming for shorter periods, has made marketing and maximisation of profits the short term priority. 10 years ago the average length of stay was c.8-9 days, now it is about 5.7. Cornwall has become a second holiday, particularly activity holidays. Hence there has been a shift from quantity to quality which is welcomed by environmental groups. More effective marketing of tourism within Cornwall has therefore become essential. This is an area which may well receive priority attention as environmental pressure groups seek to discourage the practice of holidaying in third world countries and conservation areas. Cornwall may yet regain its place as the provider of the first holiday if current trends of environmental obliteration continue abroad, (Pleumaron, 1994).

The CCC Re-generation Unit is a practical vehicle for changing peoples circumstances whilst educating communities in the practicalities of effective environmental management. It also provides local authorities with the means to meet the requirements of Agenda 21 and facilitates access to regeneration funding.

8.5. Conclusion

The case study material demonstrates the interdependence and knock on effects of any new initiative within a local area. The opening of a Super-Store or Hypermarket in a locality can disrupt trading patterns, causing small local shops to close, generating an increase in private car journeys and removing finance and other policy decisions from the locality to the Headquarters of national corporations. The studies in this chapter demonstrate the potential for reversal of this trend, a reversal which is essential if a sustainable local economy, in both environmental and economic terms, is to be achieved. A common element in the success of these schemes is their relevance to local needs and their educative role. Local management leads to maximum use of knowledge and local skills, facilitating the most efficient use of resources. This could be beneficial both to the SME, in terms of market share, and to the environment.

The model for a locally based environmentally and economically sustainable economy is presented in the following chapter. The model flows from the emerging concepts of best practice as outlined in the case studies. Central to the achievement of sustainable development is an emerging sense of self-awareness (whether of the individual or the firm/organisation) coupled with a heightened awareness of the locality and its needs. A vital element in the process of mutual re-education which occurs as new co-operative business practices are evaluated and implemented, and new approaches to trade, exchange and finance are explored. The case studies break new ground, providing original

documentation of a changing pattern of re-generative economic activity which has been slow to surface in the formal literature to date. A core element in the case studies is the co-operation between different forms of enterprise, both inter-sector and with other bodies, eg local government and voluntary organisations and the community as a whole.

CHAPTER 9 -

BIOREGIONAL RE-GENERATION STRATEGIES -

A MODEL FOR SME SUSTAINABILITY

9.1 Model Ideology and Assumptions

The case study material has shown that there are alternative initiatives that can induce more effective information diffusion to SMEs leading to the adoption of environmentally sustainable regional strategies. Although as yet limited in numbers, these initiatives are conducive to change in perceptions and practices amongst the participants. This section collates these ideologies and formulates a generalised model from the results. The model is split into two parts Figure 9.1 represents the dynamic elements of the model and Figure 9.2 the spatial aspect. The result is a conceptualised ideological representation of a sustainable local economy.

The model fulfils the requirements to satisfy both the economic and environmental aspects of sustainable development in that local trading increases and consolidates the SMEs market share, concurrently allowing ecologically sound business practices to evolve.

*Models are necessary...to constitute a bridge
between the observational and theoretical levels;
and are concerned with simplification, reduction,
concretization, experimentation, action, extension,
globalization, theory formation, and explanation.*

(Apostel, 1961, p3)

One of the main reasons for the development of this particular model is to satisfy what Chorley and Haggett call the "psychological" functional requirement (Chorley and Haggett, 1969 p24). This allows an otherwise complex group of phenomenon to be visualised and comprehended in more simple terms. This cognitive function allows

complex phenomenon to be understood in diagrammatic format and therefore adds to the explanation and understanding of the subject area.

The model both assumes and generates change in the awareness of needs and wants of local communities through the decentralisation of economic and political decision making. It requires participation in the local economy itself. Orthodox economic theory argues that production is demand lead. In reality, this is not necessarily the case:

Prioritisation of needs over wants could only be achieved if consumption was demand and not supply lead. This, of course, is what classical economic theory claims happens, but in practice consumption is aggressively supply-led where people...are bombarded with pressures to consume.

(Mellor, 1994, p4)

The model requires an enlightened understanding which would be satisfied through the participation of SMEs within the central circle, *Localised Finance and Trading*. Therefore operation of the model requires the full participation of SMEs. Existing SMEs and start-ups would not, however, be primarily motivated by considerations of ecological responsibility *per se*. A strong local economy based on small scale production is centred on the SME sector which increases its market share as larger corporate entities rendered progressively redundant through the barrier of New Protectionism.

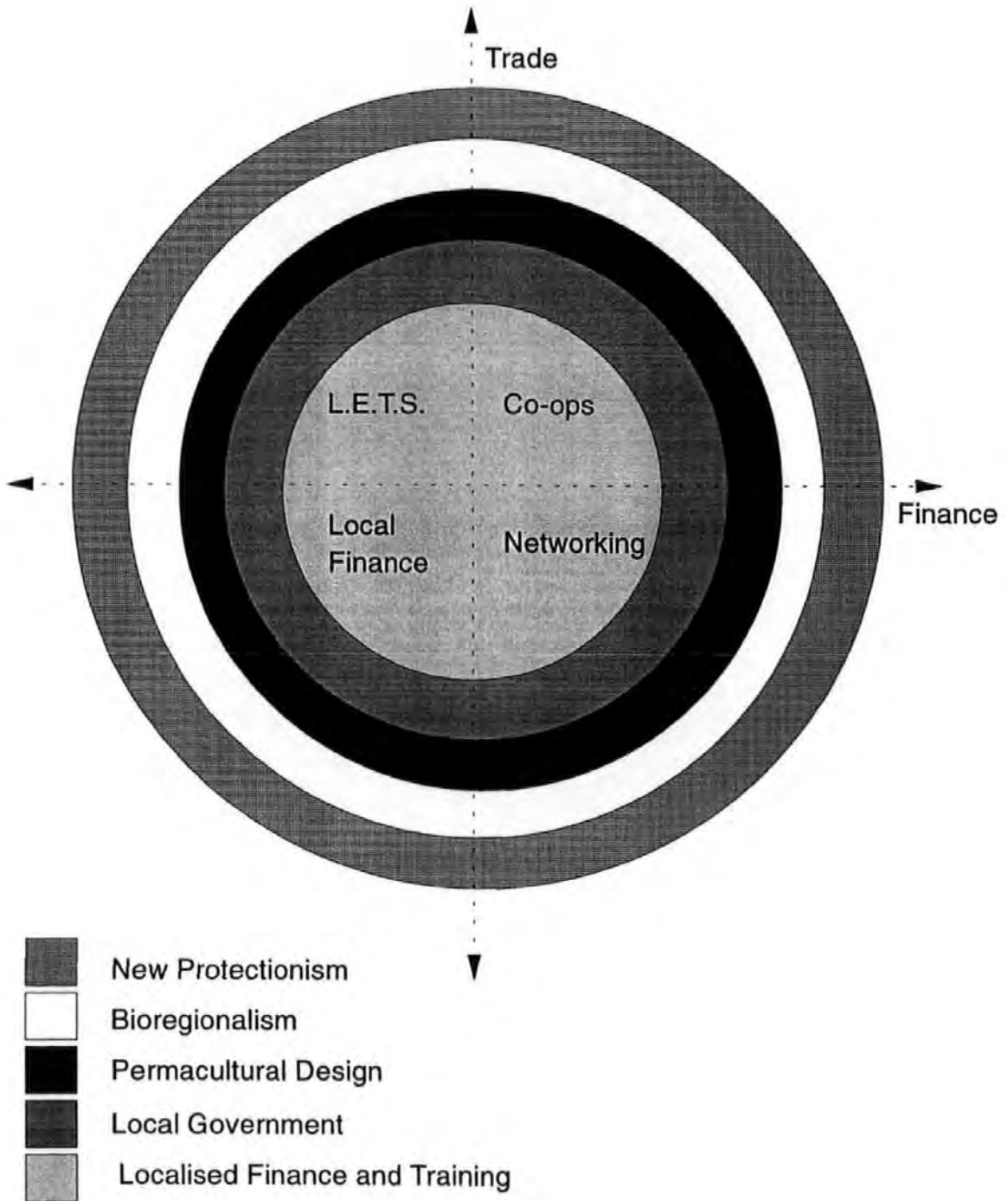
In theory SMEs have the potential to be more environmentally conscious in business than large businesses because of their capacity and motivation to respond to environmental concerns at the local level. SMEs have the potential advantage over national chains and

MNCs to develop sustainable business strategies and increase their market share considerably because of the flexibility and nature of their practices (Hutchinson A., 1994).

Education through participation is central to the model. A further assumption being that demand for locally produced goods substantially increases with awareness of the necessity to consume local goods. This enhances the local SMEs ability to provide the goods and services demanded. Ideally, in the long term, the orientation of production would be shifted towards what Keekok Lee has called Ecologically Sensitive Values (ESVs). These goods and services do not involve *per se*, more than a modest consumption (Lee, 1989, p197). All activities involve consumption of some ecologically scarce resources. Lee suggests that the system should attempt to replace competition for possession and consumption of material things for ESVs (ibid, p211). For example, if one person increases their knowledge of a language this does not stop another person improving their own standard, and enhancing the quality of life for both at the expense of relatively little ecological resource depletion. Through educational awareness exercises SMEs have the potential to relate to the locality they trade in, to be environmentally sensitive to the requirements of the locality and to be flexible enough to alter their practices and subsequently gain from the consequences.

Figure 9.1

BIOREGIONAL RE-GENERATION **A Model for SME Sustainability**



The model (Figure 9.1) assembles the positive elements observed in the research as a whole and combines them with theory to produce a framework for development of sustainable business practices within SMEs. The five parameters of the model are described and analysed in turn.

New Protectionism

The New Protectionist circle provides the economic and political constraint of the model. It delineates the economic and political changes required for the model to work. This circle defines a new economic emphasis for the region. It stands for reduced external trade and the protection and promotion of local interests. Based on work by Lang and Hines (see Chapter 2 p64) this outer circle acts to counter the chimera of free trade through a re-evaluation of economic priorities. New Protectionism posits that trade is local first, regional second, national third and international as a final resort. Economic policy should be regional rather than international, emphasising co-operation rather than competition, a viable option for SMEs through networking according to Johannisson, (1983 *et al*) with local producers meeting local needs wherever possible. An immediate environmental benefit of this would be a drastic reduction in greenhouse gases from reduced transport usage. This is an urgent requirement. Already in Europe the average weekly shopping trolley contains goods that have travelled 4,000 miles before they arrive at the place of consumption. Yet total lorry traffic is set to double between 1989 and 2010. Food which could be grown locally is being transported increasing distances, with marked environmental consequences (Griffiths, 1993).

The emphasis here is community based. International trade liberalisation has placed little importance on community welfare and economic security. With changing patterns of

production and investment it makes economic sense for communities to be self-reliant, enabling consumers to afford the goods that they are producing.

This community orientation tends towards a reduction in resource depletion and encourages activities with low environmental impacts (ESVs). It also includes a level of work sharing. As Lang and Hines suggest:

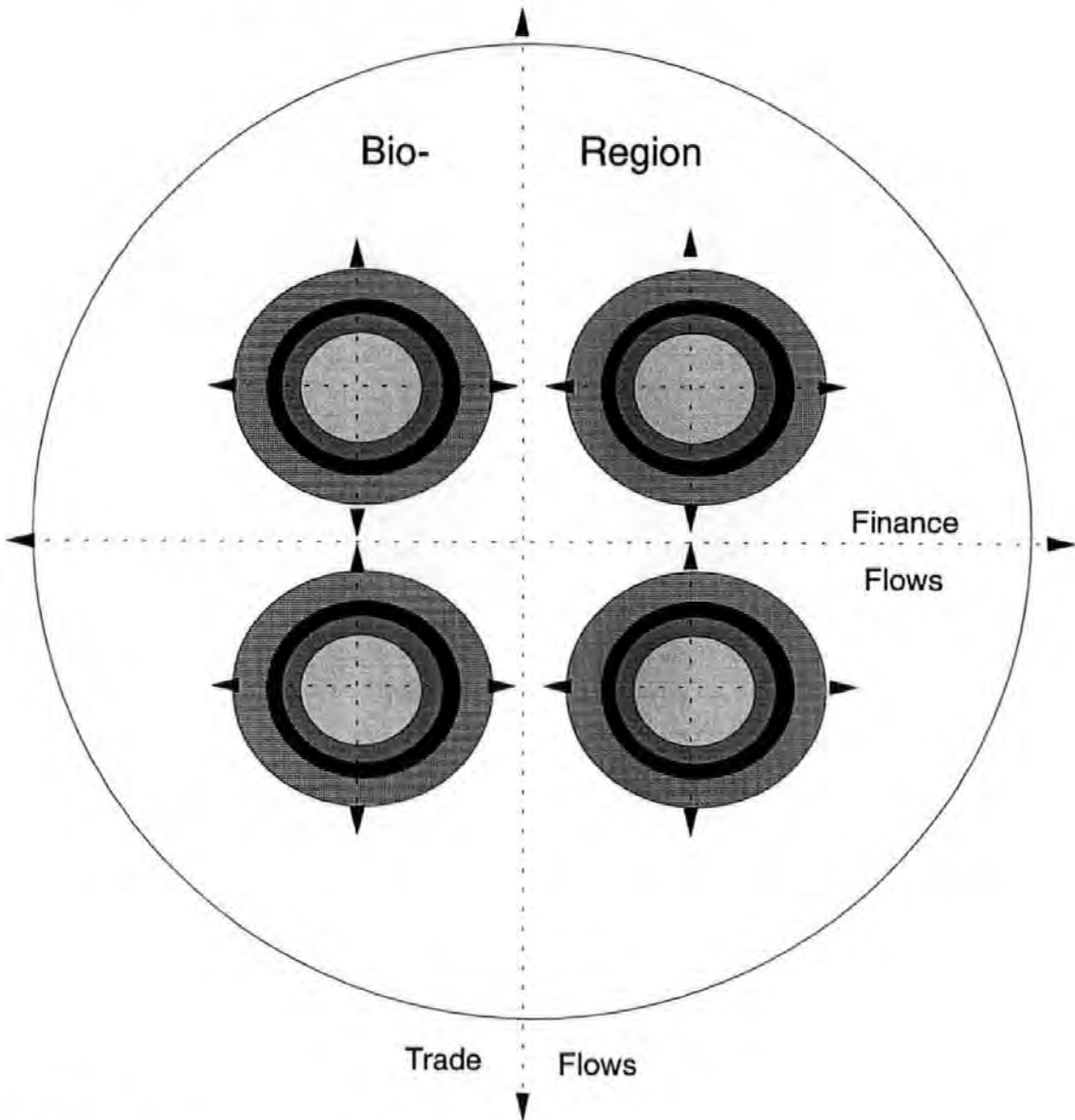
*If technology continues to displace labour,
while, at the same time, population figures
continue to rise, then sharing the benefits
and burdens of technology more equitably is
essential.*

(Lang and Hines, 1993 p99)

It is primarily in the interest of the SME to focus on local trading opportunities. This form of protectionism allows smaller corporate entities to survive the competition of larger companies. Co-operation and networking serve to increase the competitive advantage of the SME within this structure.

Figure 9.2

**BIOREGIONAL RE-GENERATION
MODEL - THE SPATIAL DIMENSION**



-  New Protectionism
-  Bioregionalism
-  Permacultural Design
-  Local Government
-  Localised Trading and Finance

Bioregionalism

The bioregional circle reflects the spatial parameter of the model. It focuses attention on the need to reconsider trade flows in space for the benefit of the local community and provides the philosophical substance behind the concept of localised trading. Here the local community relates to other communities within a regional framework. Figure 9.2 is an extension of Figure 9.1. Each circle in figure 9.2 represents the circle in Figure 9.1, apart from the bioregional circle. Figure 9.2 exists to show that the bioregional parameter of space is not limited to a specific region in the traditional sense. For example the bioregion could be seen as the area between two water sheds however within this region there may be a number of separate, local economies that trade between themselves. Therefore for the purpose of explanation, Figure 9.2 shows that the bioregional parameter in Figure 9.1 is not limited in space.

There are a number of possibilities where local economies overlap within a bioregion and where trade and finance flows in and out of the bioregion. These economic flows are not limited to traditional trade flows in the sense of Sterling movements, the model suggests the possibility (through the MULTILETS concept) of an alternative form of trade flow between regions as well.

Figure 9.2 shows the inter-regional and intra-regional connections of the model. Each concentric circle correlates to a region that is linked to others by trade and finance flows (displayed by the arrows). This cognitively displays that economic and social inter-relationships between regions still occurs within the constraints of the model. However, the interactions are less prominent than within the present system where larger companies dominate trade and finance decisions. The finance and trade flows may also take the form of inter-regional MULTILETS systems and/or traditional trade and currency flows.

Within this "protective/supportive" circle is the overriding philosophy/ideology of the model. Bioregionalism relates to reinhabitation of the locality, learning to live again within our communities and the development of self-reliant lifestyles. The Torrington case study is an example of a bioregional vision where awareness of environmental concerns are being interwoven with economic regeneration. The focus of this regeneration is small scale and local, based on the bioregional philosophy of sustainable development.

Bioregionalism provides the key element in the framework for the model within which all alternatives can be considered. Its function is dualistic in that it forms the philosophical basis for the model but also graphically displays the spatial element of the concept. Bioregionalism facilitates a re-evaluation of all economic, political and sociological components of our lifestyles, a prerequisite of sustainable development.

Permacultural Design

Where the bioregional circle serves as the spatial parameter for the model the permacultural circle draws together elements of philosophy, practice and idealism to provide the practical parameter. Change is unlikely to occur without this practical re-interpretation of the accepted norm.

This circle emphasises the need for an holistic localised, approach to regional development strategies. Permacultural design (see Chapter 3) considers all aspects of life and aims to achieve sustainable lifestyles. The SME forms a central part of this design system insofar as it stands for localised small scale provision of local needs.

Permaculture (permanent agriculture or permanent culture) is a successful approach to designing sustainable environments. It is based on the philosophy of co-operating with nature and caring for the earth and its people.

(Permaculture, 1993, p2)

It is essentially a design concept used to create sustainable human habitats anywhere, in cities or towns, or rural areas. When put into practice it empowers the individual to become more self-reliant and conscious of the interdependencies of ecology. It is an holistic system that encompasses economics, societal life and the practicalities of ecological sustainability.

Permaculture provides the practical application (as well as philosophical; each circle is not exclusive in theoretical application) for a bioregionalism vision. It is a low cost, low energy, low consumptive system in which people are enabled to co-operate and to concern themselves with re-inhabiting their region. It requires localised trading predominance and places the attainment of sustainable SME practice at the forefront of the strategy. It seeks to re-educate people in their local, cultural and agricultural heritage. This re-education is integral to the bioregional concept and is part of the re-inhabitation process.

Localised SME trading is a central practical and philosophical requirement of the permacultural system which provides the focus for environmental management training. This aspect of information diffusion is particularly relevant to a system that has close co-operational and networking structures. The Keveral Farm Project demonstrated that

business links provide a focus for the dissemination of permacultural techniques that are applicable to SME practices. Energy conservation and systematic ecologically sensitive architectural design practices emerged from the case study material as particularly relevant.

Insofar as trade and finance are exported and imported (see Figure 9.2) the model is not a regional autarky. There is, however, a strong bias towards local trade. Part of the concept of New Protectionism is that localised production would be supported and enhanced by the raised consciousness of the community. As far as possible, imports are discouraged and money kept within the locality empowering local businesses to meet local needs (see LETS discussion).

Local Government

The Local Government circle relates to the political constraint of the model and reflects the legal requirements of the UK Government to implement Agenda 21. Response to these requirements may be through a city Environment Forum (as in the case of Plymouth) where round table discussion leads to proactive response. Government support for the kind of sustainable regional development strategies analysed in the case study material is essential primarily for the initial "pump prime" funding required to establish local community involvement.

Local government support is central to the long term success of sustainable regional development strategies, whether on a regional, city or even parish level. The research findings suggest local government support towards the philosophies of sustainable development is essential. Indeed, both of the urban regeneration programmes in Plymouth and Cornwall owe their existence to initial local government support.

Commitment to Local Agenda 21 is pivotal to the attainment of regional sustainable development. As far as the evidence in Devon and Cornwall is concerned, this commitment seems to be having positive results. However continued local government support for these initiatives is required to encourage other projects and to act as a focus for research and development funding from Europe.

An example of how government support can significantly boost regional re-generation strategies can be seen in Australia where in 1993 the government invested (through local government) \$3m to establish LETSsystems. They paid for the marketing and software necessary to establish the system. They also encouraged local churches and other organisations to participate through a strong marketing strategy. Locally unemployed people are sponsored through LETS involvement as local business people buy their LETS commitment from them in return for Australian dollars. It also means that if a MNC wanted to participate, the currency earned and spent would stay within the locality, benefiting the local economy (Knox, 1993 pp 11-12).

Localised Finance and Trading

The Localised Finance and Trading circle relates to the local economic constraints of the model in which the SME sector is central. Although there are inter-regional and international trading links (the finance and trade arrows), these are seen as declining in significance to localised, small scale trading. Localised trading is dependant upon the establishment of LETS, producer, consumer and worker co-operatives, local banks, credit unions and support organisational networking. These practical variables can be extended as experience requires simply by creating another segment or inner circle to accommodate the future requirements. This section considers the inner core of the model by briefly looking at each aspect in turn.

L.E.T.S.

These are non-money exchange mechanisms that operate purely within the locality. LETSystems make use of under-employed and otherwise wasted human resources of the registered and non-registered unemployed (i.e. voluntary workers, artists, housewives and young people on training schemes). They provide an ethical framework for trade that concentrates on needs rather than wants that have been artificially installed in the mind of the consumer through aggressive marketing strategies.

LETSystems also allow SMEs to increase their share of the local markets as the recognition that buying locally strengthens local employment filters through to the consumer. All LETS systems are designed to bolster local employment and are therefore directly linked to the welfare of the SME, through the provision of skills training.

Philosophically the LETS concept considers that localities are best placed to deliver local needs with the least environmental damage. In some cases, however there may be requirements for inter-regional and international trade the MULTILETSsystem and traditional currency flows would allow this to occur. The development of the MULTILETS aspect of the model through the inter-regional trading links supports the New Protectionist philosophy that regions should trade locally first, regionally second, nationally third and internationally as a final resort. The concept of comparative cost advantage and least cost provision undermining regional trading structures ceases to apply when the true cost of products are accounted for. When environmental costs, in particular through transportation and ethical/social costs through the regional unemployment that follows on from the globalisation of trade are taken into account, regional self-reliance becomes economically viable. The LETS concept challenges the traditional, classical economic concept that it is cheaper to produce within a Fordist

paradigm of production which depends entirely upon the variables included within the definition of *cost*. Orthodox economic theory and reality are not necessarily compatible, (Anderson, 1991).

Local Finance

The idea behind the Credit Union is to convert national money for local use. First, by removing the burden of debt and by freeing people to make debt-free choices in participating in the economy. Second it is a mechanism for local investment. Present legal constraints within the UK limit CU investment, offering an example of the central government control over local finance.

The LETSystem can co-exist with the pound. It is important for long term bioregional aims to have as many financial decisions made at the local level as possible. Due to strains within the relationships of owner/managers and bank managers, SMEs have found conventional financial support provision inadequate for their investment requirements (Chaston, 1993). One alternative is the credit union provision of capital. Credit Union investment in local businesses could mean that critical financial decisions are made locally by people with a thorough knowledge of local requirements. It might be argued that this could lead to bias within lending procedures, resulting in poor investment decisions. This is unlikely, however, for two reasons. First, the capital is made available only to those who have a savings account with the union: second, the decision makers are the savers themselves, only viable lending ensues.

Local banking and credit unions (small scale ownership and management of finance) are central to the bioregional vision of the model. They empower the locality to make its own decisions for the good of the region rather than on the basis of the monetary profits

of distant shareholders. Local banking includes all of the region as the stockholder. Since everybody lives in the environment, everybody has a right to a prosperous, clean region.

Co-operatives

Co-operatives place the control of local resources with the local community. Co-operative ventures were central to most of the case study material as they place alternative emphasis on local management of work and production than more traditional enterprises. The concept of the co-operative provides a structured framework for the grouping of individuals and their education in the benefits of collective production and trade. In association with a well-developed regional networking system linking educationalists, and disseminators of practical information and training, the co-operative system allows SMEs to co-exist in a less competitive, more sustainable way. This forms the basis for a stable regional society in which the SME is the central focus of banking investment along permacultural lines. These SME co-operatives link in with the LETSsystem, increasing as far as possible, the local community involvement.

Co-operative SMEs have neither opportunity nor motivation to take advantage of cheaper wage rates overseas because the workers are the owners. Concurrently, co-operatives can guarantee prices for local producers providing a regular market for the SME. This initiative has been successfully implemented by the Seikatsu Club Consumer Co-operative in Japan (Mellor, 1994, p4). The co-operative emphasises the production of goods and services by local people for local people using a locally determined decision making process and local resources. The effect on the environment and social structures is subsequently more visible. As Woodcock comments:

*The positive effects on profits and jobs of
employee share-ownership plans are
now more widely appreciated by business*

(Woodcock, 1994 p10)

Here Woodcock is commenting on the "ESOP Effect". These are Employee Share-Ownership Plans. The first ESOP was established in 1986 and the numbers have increased steadily since. Employee participation is now very much on the management agenda making co-operation a central element to a sustainable re-generation model.

Networking

The concept of networking allows the SME sector to devise common solutions to common problems through co-operation. This research has suggested that networking provides a diffusive pathway within which the ultimate aims of sustainable development could be realised. Many of the ecological solutions required to achieve sustainable development are common to the SME sector: i.e. increased awareness of ecological impact and the requirement to move away from the global economy towards a more locally based economic trading system. The concept of networking to diffuse these ideas is central, to increase SMEs awareness of the opportunities for the local economic transition and to allow for the pooling of experience within this transitional time.

The ultimate end of effective networking (to increase access to end markets) is also satisfied through a developed local network which is biased towards the philosophy of localised trade and finance. The networking concept provides the main direct educative diffusion point of the model. Although all of the other participatory elements of the model are educative in secondary capacity, the networking concept allows for the direct

diffusion of the core concepts. This aspect is central for a changing awareness within the region and the SMEs within the trading block.

The networking facet of the model also allows for the continued diffusion of best practice elements of the existing economic system. Companies with expertise in implementing BS 7750 and general environmental management skills would be able to educate others within the trade associational networking structures. Environmental Forums would also be central to this process. The experience of the Plymouth Environmental Forum has shown that round table discussion can induce attitudinal change and facilitate management informational diffusion of best practice.

The model constructed is a conceptualisation based upon observation but has been extended through theoretical analysis of certain possible outcomes. It is not, therefore, a future representation of cornucopian ecotopia *per se*, rather it forms an amalgamation of theoretical observation constructed from a number of related examples.

The model has five parameters each attached to a circle (Figure 9.1). The external parameter is economic and political. The circle New Protectionism is a new economic analysis reflecting the significance of regional political constraints over encroaching MNC power and influence in local decision-making. The second parameter is spatial in the form of a bioregional circle. This denotes the area or region into which the model fits. Thirdly, the circle relating to permacultural design invokes a practical constraint insofar as the model is limited to the requirements of permacultural philosophy and practice. Fourthly, the local government circle provides the political constraint at local level. Finally, the inner circle represents the community parameter. Without the community will and motivation to change the model would fail. SME involvement within this circle is central to the model's existence. The cognitive and spatial dimension of the model is

displayed in Figure 9.2. This figure shows how the model is dynamic in space whilst spatially limited in its philosophy.

CHAPTER 10

CONCLUSIONS AND RECOMMENDATIONS

10.1.Conclusions

As Chapters 2 and 3 suggest, there is mounting evidence of concern at the environmental degradation resulting from business operations. Further, the documentation indicates an emerging consciousness of a need to enhance awareness of, and support for, measures to empower companies to reduce their detrimental environmental impacts. The research aimed to determine the level of awareness and perception of environmental issues within the SME sector and to assess prevailing attitudes of owner/managers to the importance they attach to managing this aspect of their business operations. The first mail survey empirically tested a sample of 600 companies and found that attitudes and perceptions were more positive towards day-to-day environmental issues that effected company operations, amongst the larger, exporting companies from the secondary sector. Examples of these issues were energy usage, water pollution, and employee health and safety. The smaller, non-exporting companies (in particular the tertiary sector companies) perceived the more macro-scale environmental issues like global warming and acid rain to be of importance. However, the larger and the more environmentally deleterious the company, the more likely it was to understand the necessity of formalising environmental management practice. The first mail survey showed that although companies expressed the view that environmental issues in general were important to their business, the actual practice of these companies (in particular the micro-sized firms) provides little evidence of serious commitment. The smaller, tertiary sector companies in particular, do not perceive their practices as environmentally damaging in the first place. Hence strategic and indeed operational environmental management practices are limited.

Mail survey 2 extended documentation of SME environmental perception and awareness. Results show that the majority of companies consider strategic environmental management irrelevant to their business operations. This perception is confirmed by the

fact that only 16% of companies proactively plan to deal with the environment as a strategic issue. The in-depth interviews undertaken in phase 2 (Table 4.1.) of the research suggested that companies were ambivalent towards future initiatives or support programmes. This was confirmed in the second mail survey. Interviewees considered EMS and existing support structures inadequate and were aggrieved at legislative developments which had arisen without prior consultation with their trade organisations. Smaller firms also perceived management systems as primarily cosmetic exercises, applicable only to the larger manufacturing companies. There was, therefore, a dichotomy of response: on the one hand companies felt that environmental issues were important to their business practices, yet on the other they were cynical about the existing solutions and negative in their proactive response to the management challenge. In comparison the larger, secondary sector companies felt positive about the opportunities and confident that they could 'manage' the issue within their present structures.

The second research aim was to gain an understanding of the scale and nature of response to environmental issues across a broad section of SMEs. The first mail survey clarified the perceptions of most SMEs. Although the majority of companies felt that environmental issues were important only 5% had any strategic plan or policy for the environment (this increased to 16% a year later in 1993). Nearly half had a recycling programme and a quarter had waste minimisation and energy efficiency programmes. Encouraging as this may seem, the majority of these programmes were in the larger secondary sector companies. An additional question emerged regarding the outcome of the practices. Will consideration of environmental concerns on an *ad hoc* critical incidence situation management level, as in the introduction of recycling schemes, induce sustainability? This question is covered under the final research aim.

The in-depth interviews confirmed the results of the first mail survey regarding low levels of strategic management and raised questions about the validity of the management systems solutions and business advice guides offered to companies as tools to minimise environmental impacts. The response was negative and included calls for more accurate information and analysis to be diffused more effectively through trade associations. The second mail survey confirmed the perceived inadequacy of BS 7750. Companies lack the time, finance and staff amongst other things to implement the standard. In general companies also feel that the standard is inappropriate to their business operations. This evidence suggests there is a requirement for an alternative model specific to the SME sector. Because of the generic and diverse nature of the SME sector any such model would have to be holistic in nature and focus upon achieving sustainable development.

Managing the environment in the traditional sense of reducing the 'cost' to the firm is unlikely to induce sustainable development within the SME sector. In view of the requirement to understand the environment and to empower companies to change, the necessity for an enlightened understanding of the financial, economic and environmental benefits of sustainable development becomes evident. However, finding a management system that is applicable to all SMEs appears impractical. What seems to be required is an induction towards a greater understanding of the benefits of sustainable development and indications as to how it might be achieved. These questions of interpretative analysis regarding the need for sustainable development and the subsequent effective environmental management that would ensue are covered by Chapter 8. This chapter satisfies the requirements of the third research aim which was to utilise the knowledge about awareness, attitude and organisational response to assess the relevance of the environmental management systems so far developed and to link this to achieving sustainable development.

Having established the need to focus on sustainable development to achieve effective environmental management in the SME sector, the fourth aim was to draw upon the expertise of owner/managers and appropriate institutions to validate and if appropriate further refine new/and or revised systems. The knowledge gained from the research process and empirical analysis indicated that the emphasis be shifted away from owner managers (due to their lack of initiatives) towards specific environmental projects, including a consideration of the interface between SMEs and the goal of the particular projects or initiatives. The empirical results and the literature established the requirements of the case studies that were undertaken. These considered examples of best practice and analysed the part SMEs have to play in the attainment of sustainable development.

The dominant theme to emerge from this qualitative research was the requirement for a re-generation initiative that focuses on sustainable development in a practical way. This suggests that the aim of achieving sustainable development is through active community participation in initiatives. Sustainable development may be advanced through participation in a LETS system or Credit Unions, for example. Concurrently, the SMEs and community gain education and information regarding the qualities and benefits of sustainable lifestyles through these same initiatives. The focus is on localised trading where local firms meet local needs. The re-focusing of priorities in this way is fundamental to sustainable development and requires the active participation of the SME sector. Not only does it benefit the environment through, for example, a reduced value of transportation: it is also of direct benefit to the SMEs themselves through increased localised market share. A number of re-generation initiatives in the sample area provide evidence of this potential.

The fifth research aim, to assess the possibilities for sustainable development within the SME sector, was satisfied by the development of the conceptualised model and subsequent analysis in chapter 9 on the re-generation process. One reservation regarding the philosophy of the concept of local re-generative sustainable development is the insularity of approach. If the motivation for change is 'self' orientated, the society that could evolve may not accord with the vision of most bioregional writers. Indeed, some forms of bioregionalism could be criticised as being too biocentric, dismissing human requirements as secondary to those of the planets. Equally the concept could be used to argue for a narrow nationalism or regionalism and protectionism to satisfy the requirements of what Harding called his 'Lifeboat Ethic' where the lifeboat cannot take another passenger without drowning everybody (Hardin, 1974). Exclusionary notions of a fascist nature have undoubtedly played some part in the development of bioregional thought and this requires further research. Research could reveal the motivations to become a 'greener' society, wherein the definition of 'green' and notions of co-operation within an international, global framework, would be pivotal.

It could, perhaps, be assumed that the larger the company the more able it would be to deal with environmental considerations, making it more willing to employ stringent self-regulatory mechanisms like BS 7750. Indeed the empirical research could be argued to support this hypothesis. More detailed consideration shows, however, that growth is not necessarily the solution as it is unlikely to significantly reduce environmental degradation. For example growth may imply an increase in the use of resources and subsequent increase in impact on the environment. Equally the literature suggests that attainment of sustainable development within the SME sector through increased regulation is unlikely to be effective. Macro mechanisms like GATT would oppose any large scale imposition as contrary to free trade (Lang and Hines, 1993).

Hence, the model evolves from the empirical research which provides a greater understanding of SME motivations and perceptions. The qualitative research in the case studies provided many of the ideas behind the model and the literature. It is argued that this is the most appropriate route for development since there is no evidence that existing initiatives will achieve the requirements necessary to achieve sustainable development.

Overall, the research concludes that SME participation is central if sustainable development is to be achieved. The participation element requires a local bias based on sound economic principles. Concurrently, the literature suggests that decentralisation of economic decision making is an essential requirement of sustainable development (Daly and Cobb, 1989; Dobson, R. 1993; Lang and Hines, 1993; Morehouse, 1993). The SME is a core element in this process, having closer links with the local community, greater accountability for its environmental actions and a better understanding of the needs of the local economy.

A need for greater diffusion of information and education regarding the opportunities and logic of sound localised sustainable economic practice emerged from the study. Any sustainable system requires community understanding of the processes. This does not mean, however, that change has to be delayed until local communities understand the need for change. This would surely lead to inertia. The research and in particular the model argue that this educative change is best managed through participation. The central aspect of the model delineates the local economy. This economy is one that operates in a similar way to our existing economy except that barriers to trade encourage localised production to satisfy local needs. Therefore existing good management practice is retained, with priorities, moved from globalisation towards localisation and local accountability.

The case study material highlighted common themes for success. The more relevant initiatives are to the local surroundings and the more applicable they are to the community the more likely they will attract local support and be successful. One central element is the emergence from the case study material of an increase in individual self-awareness of participants towards sustainable development ideals. The development of localised economic trading, co-operation, networking and local participation facilitates this process. It is therefore valuable to promote education through re-generation schemes.

Further, a central aspect of the case study material was the requirement for co-operation between different forms of enterprise, local government and the community as a whole. Predominance of local re-generation clearly unites localities with a common cause. This common cause or bond may not initially be concerned with the promotion of sustainable development over time. However, a sustainable economy and local orientation of economic activity could become central for local economic activity. For example the employment to be generated from localised self-reliant economies would outweigh the loss of multinational investment in the region. The literature has shown the validity of localised co-operation and networking in competition with larger companies (Jarillo, 1987; Jakobsen and Mertinussen, 1991). The requirement to compete would itself be reduced by local generated economic activity.

The model links economic and environmental sustainability by altering communities' expectations and requirements. Present day consumer oriented society assumes that maximum satisfaction means maximum consumption. In practice this may not be the case. Alternative aspects of societal life, community welfare and economic sustainability are in reality included in our evaluation of quality of life. The model offers the scope to reflect these alternative aspects in a general sense, for example through encouragement of the

presently wasted resource of unemployed human labour and preservation of the environment.

The model for re-generative sustainable activity is conceptualised in nature, forming an amalgamation of theoretical observation and practical example. It has five constraints: economic, political, spatial, local political and community. All these aspects are interlinked and logical. They only require a movement away from the idealised position of neo-classical economics with its assumption that there are no limits to growth. This research challenges the legitimacy of this position arguing that it is in the interest of the majority and the environment to participate in local re-generation projects. The model developed provides a foundation from which to understand local re-generation and could be further developed in the light of future experience.

10.2. Recommendations and Limitations

The evolution of management theory is central to the application of these research findings in particular the bioregional re-generation model. Although management theory has taken several steps towards sustainable development in the form of co-operative and regional networking research (Johanisson, 1983; Jarillo, 1987; Welford and Gouldson, 1993) all aspects of management theory require ecological consideration if sustainable development is to be achieved.

Thurley and Wirdenius [(1989) in Table 3.3.] suggest four main types of management theory, all of which will require differing degrees of revision. However, it is the strategic management section in particular that requires urgent further research within the SME sector. Clearly the environment is by its very nature a strategic issue. Sustainable development is unlikely to be achieved without proactive accounting for the environment.

However, the research suggests that the increased awareness and education associated with the application of the model could induce the changes required in the SME sector to increase the level of strategic environmental management. Therefore participation and education may precede structural change of management practice. Rather than expecting SMEs to implement strategic programmes for an issue they do not understand, education and awareness raising initiatives like for example the induction of SMEs to LETS systems, or Credit Unions, could facilitate the management attitude required to increase the levels of strategic management within the SME sector. Management theory is constantly evolving to take account of changing global environments. Sustainable development is clearly a central issue facing global industry today, therefore theory needs to reflect this reality. If SME management literature in particular, does not reflect these changing global requirements the whole sustainable development movement could go the way of the early twentieth century co-operative movement, with potentially catastrophic consequences for global survival. The early co-operative movement failed to establish a firm foundation in UK management practice because of the climate of capitalist expansion at the time but also because management theory did not evolve to support the requirements of the movement. Contemporary, management thought will need to evolve with the sustainable development movement to make any application of the bioregional model suggested here feasible. Beatrice Potter suggested that the early co-operatives failed because "they were islands of socialism floating in a sea of capitalism" (in Coates, ed. 1976). The model proposed here would equally fail if it were an island of bioregionalism floating in a sea of global industrialism. The very nature of the model requires self-reliant localised economic trading to be predominant over large scale global trading patterns. If these large scale changes in trading patterns are to evolve, management theory will require revision. For example consideration of entrepreneurship theory which focuses on communities would be necessary. Further research is also required on how localities can build up their capacity to manage their own locality.

Concurrently, theoretical observation based on competition requires revision if sustainable development is to be achieved. Competition requires winners and losers and sustainable development is necessarily more egalitarian in nature. A limitation of the model is, therefore, the parallel evolution of management theory to support the requirements of the sustainable development movement.

Due to financial and time constraints the research was spatially limited. The empirical research findings should, therefore, be tested over a larger geographical area to ascertain the validity of the results for the UK as a whole. The model also requires further research to determine the validity of the five in-built constraints. Based on literature, empirically tested analysis and qualitative case study material, the model requires practical application. It is recommended that the model is developed through the development of Geographic Information System (GIS) modelling procedures. GIS are computer software that allows a series of maps to be vertically integrated and analysed together providing the ideal system with which to consider a bioregional mapping process on. The maps themselves could provide (as databases) the initial base from which analysis of localised re-generation strategies and action plans for management change process could be developed.

The central element of future research, is therefore, to develop spatially disparate bioregional re-generation models on a GIS system. The models could be made available to local governments to facilitate a greater understanding of their bioregions and to aid the management of change towards a more sustainable society and local economy. Each map layer would have a detailed analysis of the component parts. For example, one layer could constitute existing regional sustainable strategies, another local transportation data, a further layer the topography of the region together with any relevant information and communication links within the areas. These layers are arbitrary and flexible, however,

and indicate research areas necessary to facilitate the development of a generalised model that could be applicable to a number of disparate areas. A conceptualised model built through research observation could be generalised in nature whilst retaining a degree of flexibility to fit a number of disparate geographical locations.

The development of a Bioregional Re-generation GIS Model would also facilitate further analysis of the interface between local re-generation initiatives, similar to those studied within the case study material, and SMEs. Research is required to consider this interface in more detail and gain a deeper understanding of the part SMEs have to play within a sustainable localised economy. Less generic, more sector specific models could also be developed to aid this process. The research highlighted the need for more accurate information to target the SME sector. This could be achieved through the development of sector specific models based on examples of best practice. It is also conceivable that these models could form a further layer to the Bioregional Re-generation GIS Model, adding depth to the database and providing an informational framework to enable local authorities to implement the requirements of Agenda 21.

This research has clarified SMEs attitudes and practice in relation to their environmental performance and has considered the factors giving rise to policy implementation. It has explored a range of innovative initiatives which offer scope for sustainable development to be achieved within the SME sector. Due to the spatial constraints further research is required to test the results and the model. Further, it is proposed that once the model has been tested and refined it could be practically applied through the development of a GIS application.

In the course of the research a picture emerged of the inadequacy of current management theories as explanations of the problems facing the SME sector, both in general and with

specific reference to the question of environmental degradation. Recognising the limitations of the research in terms of time and finance, an alternative based on primary source observation and the literature is offered. The research presents a foundation on which research into the UK SME sector and its relevance to sustainable development, could be built.

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APPENDIX 1

FREQUENCIES /VARIABLES ALL /STATISTICS ALL.

Q1 BUSINESS TYPE

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
A SINGLE SITE BUSINE	1	161	66.8	67.6	67.6
A HEADQUARTERS UNIT	2	33	13.7	13.9	81.5
A SUBSIDIARY/BRANCH	3	38	15.8	16.0	97.5
A SUBSIDIARY/BRANCH	4	6	2.5	2.5	100.0
.	.	3	1.2	MISSING	
TOTAL		241	100.0	100.0	

Mean	1.534	Std Err	.055	Median	1.000
Mode	1.000	Std Dev	.850	Variance	.722
Kurtosis	.380	S E Kurt	.314	Skewness	1.308
S E Skew	.158	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	365.000		

Valid Cases 238 Missing Cases 3

Q2 EMPLOYEES

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
0-10	1	133	55.2	55.6	55.6
11-25	2	48	19.9	20.1	75.7
26-100	3	42	17.4	17.6	93.3
101-200	4	8	3.3	3.3	96.7
200+	5	8	3.3	3.3	100.0
.	.	2	.8	MISSING	
TOTAL		241	100.0	100.0	

Mean	1.787	Std Err	.069	Median	1.000
Mode	1.000	Std Dev	1.061	Variance	1.127
Kurtosis	.992	S E Kurt	.314	Skewness	1.286
S E Skew	.157	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	427.000		

Valid Cases 239 Missing Cases 2

Q3 BUSINESS SECTOR

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
AGRI-FORESTRY-FISHIN	1	8	3.3	3.3	3.3
ENERGY-WATER SUPPLIE	2	2	.8	.8	4.2

MINERAL EXTRACTION-C	3	3	1.2	1.3	5.4
ENGINEERING-VEHICLE	4	22	9.1	9.2	14.6
OTHER MANUFACTURING	5	55	22.8	23.0	37.7
CONSTRUCTION	6	16	6.6	6.7	44.4
DISTRIBUTION-RETAIL	7	13	5.4	5.4	49.8
TRANSPORTATION-TELEC	8	5	2.1	2.1	51.9
FINANCIAL SERVICES	9	14	5.8	5.9	57.7
OTHER SERVICES	10	101	41.9	42.3	100.0
.	.	2	.8	MISSING	

TOTAL	241	100.0	100.0		

Q3 BUSINESS SECTOR

Mean	7.310	Std Err	.176	Median	8.000
Mode	10.000	Std Dev	2.725	Variance	7.425
Kurtosis	-1.087	S E Kurt	.314	Skewness	-.424
S E Skew	.157	Range	9.000	Minimum	1.000
Maximum	10.000	Sum	1747.000		

Valid Cases 239 Missing Cases 2

Q4A MARKET - SW

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
SOUTH WEST ENGLAND	1	192	79.7	100.0	100.0
.	.	49	20.3	MISSING	

TOTAL	241	100.0	100.0		

Q4B MARKETS - ENGLAND

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
ENGLAND	1	156	64.7	100.0	100.0
.	.	85	35.3	MISSING	

TOTAL	241	100.0	100.0		

Q4C MARKETS - EFTA

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
EFTA	1	42	17.4	100.0	100.0
.	.	199	82.6	MISSING	

TOTAL	241	100.0	100.0		

Q4D MARKETS - EAST EUROPE

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
EASTERN EUROPE	1	21	8.7	100.0	100.0
	.	220	91.3	MISSING	
		-----	-----		
TOTAL		241	100.0	100.0	

Q4E MARKETS - U.S.A.

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
U.S.A.	1	45	18.7	100.0	100.0
	.	196	81.3	MISSING	
		-----	-----		
TOTAL		241	100.0	100.0	

Q4F MARKETS - THIRD WORLD

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
THIRD WORLD	1	21	8.7	100.0	100.0
	.	220	91.3	MISSING	
		-----	-----		
TOTAL		241	100.0	100.0	

Q4G MARKETS - JAPAN

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
JAPAN	1	22	9.1	100.0	100.0
	.	219	90.9	MISSING	
		-----	-----		
TOTAL		241	100.0	100.0	

Q4H MARKETS - AUSTRALIA

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
AUSTRALIA	1	31	12.9	100.0	100.0
	.	210	87.1	MISSING	
		-----	-----		
TOTAL		241	100.0	100.0	

Q4I MARKETS - SOUTH AFRICA

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent

SOUTH AFRICA	1	23	9.5	100.0	100.0
	.	218	90.5	MISSING	

TOTAL		241	100.0	100.0	

Q4J MARKETS - ELSEWHERE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
ELSEWHERE	1	26	10.8	100.0	100.0
	.	215	89.2	MISSING	

TOTAL		241	100.0	100.0	

Q4K MARKETS - BELGIUM

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
BELGIUM	1	37	15.4	100.0	100.0
	.	204	84.6	MISSING	

TOTAL		241	100.0	100.0	

Q4L MARKETS - DENMARK

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
DENMARK	1	33	13.7	100.0	100.0
	.	208	86.3	MISSING	

TOTAL		241	100.0	100.0	

Q4M MARKETS - GERMANY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
GERMANY	1	51	21.2	100.0	100.0
	.	190	78.8	MISSING	

TOTAL		241	100.0	100.0	

Q4N MARKETS - GREECE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
GREECE	1	23	9.5	100.0	100.0
	.	218	90.5	MISSING	

TOTAL		241	100.0	100.0	

Q40 MARKETS - FRANCE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
FRANCE	1	63	26.1	100.0	100.0
	.	178	73.9	MISSING	
	TOTAL	241	100.0	100.0	

Q4P MARKETS - IRELAND

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
IRELAND	1	57	23.7	100.0	100.0
	.	184	76.3	MISSING	
	TOTAL	241	100.0	100.0	

Q4Q MARKETS - ITALY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
ITALY	1	42	17.4	100.0	100.0
	.	199	82.6	MISSING	
	TOTAL	241	100.0	100.0	

Q4R MARKETS - LUXEMBOURG

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
LUXEMBOURG	1	20	8.3	100.0	100.0
	.	221	91.7	MISSING	
	TOTAL	241	100.0	100.0	

Q4S MARKETS - NETHERLANDS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NETHERLANDS	1	43	17.8	100.0	100.0
	.	198	82.2	MISSING	
	TOTAL	241	100.0	100.0	

Q4T MARKETS - PORTUGAL

Valid Cum

Value Label	Value	Frequency	Percent	Percent	Percent
PORTUGAL	1	29	12.0	100.0	100.0
	.	212	88.0	MISSING	
	TOTAL	241	100.0	100.0	

Q4U MARKETS - SPAIN

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
SPAIN	1	43	17.8	100.0	100.0
	.	198	82.2	MISSING	
	TOTAL	241	100.0	100.0	

Q4V MARKETS - U.K.

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
U.K.	1	97	40.2	99.0	99.0
	3	1	.4	1.0	100.0
	.	143	59.3	MISSING	
	TOTAL	241	100.0	100.0	

Q5A IMP ENV ISSUES - COMP

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	7	2.9	2.9	2.9
QUITE UNIMPORTANT	2	12	5.0	5.0	7.9
NEITHER UNIMPORTANT	3	63	26.1	26.4	34.3
QUITE IMPORTANT	4	106	44.0	44.4	78.7
EXTREMELY IMPORTANT	5	51	21.2	21.3	100.0
	.	2	.8	MISSING	
	TOTAL	241	100.0	100.0	

Mean	3.762	Std Err	.061	Median	4.000
Mode	4.000	Std Dev	.942	Variance	.888
Kurtosis	.589	S E Kurt	.314	Skewness	-.721
S E Skew	.157	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	899.000		

Valid Cases 239 Missing Cases 2

Q5B IMP ENV ISS - IND

Valid Cum

Value Label	Value	Frequency	Percent	Percent	Percent
NOT AT ALL IMPORTANT	1	1	.4	.4	.4
QUITE UNIMPORTANT	2	4	1.7	1.7	2.1
NEITHER UNIMPORTANT	3	22	9.1	9.2	11.3
QUITE IMPORTANT	4	125	51.9	52.3	63.6
EXTREMELY IMPORTANT	5	87	36.1	36.4	100.0
	.	2	.8	MISSING	

TOTAL		241	100.0	100.0	
Mean	4.226	Std Err	.046	Median	4.000
Mode	4.000	Std Dev	.715	Variance	.512
Kurtosis	1.696	S E Kurt	.314	Skewness	-.918
S E Skew	.157	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	1010.000		

Valid Cases 239 Missing Cases 2

Q6A ENV ISS - ACID RAIN

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	33	13.7	13.9	13.9
QUITE UNIMPORTANT	2	10	4.1	4.2	18.1
NEITHER UNIMPORTANT	3	106	44.0	44.7	62.9
QUITE IMPORTANT	4	52	21.6	21.9	84.8
EXTREMELY IMPORTANT	5	36	14.9	15.2	100.0
	.	4	1.7	MISSING	

TOTAL		241	100.0	100.0	
Mean	3.203	Std Err	.077	Median	3.000
Mode	3.000	Std Dev	1.179	Variance	1.391
Kurtosis	-.355	S E Kurt	.315	Skewness	-.353
S E Skew	.158	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	759.000		

Valid Cases 237 Missing Cases 4

Q6B ENV ISS - CFC'S

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	26	10.8	11.0	11.0
QUITE UNIMPORTANT	2	12	5.0	5.1	16.1
NEITHER UNIMPORTANT	3	90	37.3	38.1	54.2
QUITE IMPORTANT	4	58	24.1	24.6	78.8
EXTREMELY IMPORTANT	5	50	20.7	21.2	100.0
	.	5	2.1	MISSING	

		TOTAL	241	100.0	100.0
Mean	3.398	Std Err	.078	Median	3.000
Mode	3.000	Std Dev	1.197	Variance	1.432
Kurtosis	-.389	S E Kurt	.316	Skewness	-.448
S E Skew	.158	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	802.000		

Valid Cases 236 Missing Cases 5

Q6C ENV ISS - GLOBAL WARMING

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	28	11.6	11.9	11.9
QUITE UNIMPORTANT	2	7	2.9	3.0	14.9
NEITHER UNIMPORTANT	3	96	39.8	40.9	55.7
QUITE IMPORTANT	4	54	22.4	23.0	78.7
EXTREMELY IMPORTANT	5	50	20.7	21.3	100.0
	.	6	2.5	MISSING	
	TOTAL	241	100.0	100.0	

Mean	3.387	Std Err	.078	Median	3.000
Mode	3.000	Std Dev	1.201	Variance	1.443
Kurtosis	-.338	S E Kurt	.316	Skewness	-.455
S E Skew	.159	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	796.000		

Valid Cases 235 Missing Cases 6

Q6D ENV ISS - WATER POLLUTION

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	20	8.3	8.4	8.4
QUITE UNIMPORTANT	2	7	2.9	2.9	11.3
NEITHER UNIMPORTANT	3	64	26.6	26.9	38.2
QUITE IMPORTANT	4	60	24.9	25.2	63.4
EXTREMELY IMPORTANT	5	87	36.1	36.6	100.0
	.	3	1.2	MISSING	
	TOTAL	241	100.0	100.0	

Mean	3.786	Std Err	.079	Median	4.000
Mode	5.000	Std Dev	1.212	Variance	1.469
Kurtosis	-.050	S E Kurt	.314	Skewness	-.629
S E Skew	.158	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	901.000		

Valid Cases 238 Missing Cases 3

Q6E ENV ISS - ENERGY USAGE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	12	5.0	5.0	5.0
QUITE UNIMPORTANT	2	4	1.7	1.7	6.7
NEITHER UNIMPORTANT	3	38	15.8	15.9	22.6
QUITE IMPORTANT	4	101	41.9	42.3	64.9
EXTREMELY IMPORTANT	5	84	34.9	35.1	100.0
	.	2	.8	MISSING	
TOTAL		241	100.0	100.0	
Mean	4.008	Std Err	.066	Median	4.000
Mode	4.000	Std Dev	1.017	Variance	1.034
Kurtosis	1.675	S E Kurt	.314	Skewness	-1.275
S E Skew	.157	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	958.000		

Valid Cases 239 Missing Cases 2

Q6F ENV ISS - EFFLUENT WASTE DISPOSAL

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	22	9.1	9.2	9.2
QUITE UNIMPORTANT	2	8	3.3	3.4	12.6
NEITHER UNIMPORTANT	3	67	27.8	28.2	40.8
QUITE IMPORTANT	4	62	25.7	26.1	66.8
EXTREMELY IMPORTANT	5	79	32.6	33.2	100.0
	.	3	1.2	MISSING	
TOTAL		241	100.0	100.0	
Mean	3.706	Std Err	.079	Median	4.000
Mode	5.000	Std Dev	1.225	Variance	1.500
Kurtosis	-.179	S E Kurt	.314	Skewness	-.756
S E Skew	.158	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	882.000		

Valid Cases 218 Missing Cases 3

Q6G ENV ISS - DEFORESTATION

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
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NOT AT ALL IMPORTANT	1	31	12.9	13.1	13.1
QUITE UNIMPORTANT	2	6	2.5	2.5	15.7
NEITHER UNIMPORTANT	3	93	38.6	39.4	55.1
QUITE IMPORTANT	4	53	22.0	22.5	77.5
EXTREMELY IMPORTANT	5	53	22.0	22.5	100.0
.	.	5	2.1	MISSING	

TOTAL	241	100.0	100.0
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Mean	3.386	Std Err	.081	Median	3.000
Mode	3.000	Std Dev	1.238	Variance	1.532
Kurtosis	-.441	S E Kurt	.316	Skewness	-.468
S E Skew	.158	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	799.000		

Valid Cases 236 Missing Cases 5

Q68 ENV ISS - NOISE POLLUTION

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	13	5.4	5.5	5.5
QUITE UNIMPORTANT	2	5	2.1	2.1	7.6
NEITHER UNIMPORTANT	3	72	29.9	30.3	37.8
QUITE IMPORTANT	4	87	36.1	36.6	74.4
EXTREMELY IMPORTANT	5	61	25.3	25.6	100.0
.	.	3	1.2	MISSING	
TOTAL		241	100.0	100.0	

Mean	3.748	Std Err	.067	Median	4.000
Mode	4.000	Std Dev	1.037	Variance	1.075
Kurtosis	.556	S E Kurt	.314	Skewness	-.784
S E Skew	.158	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	892.000		

Valid Cases 236 Missing Cases 3

Q61 ENV ISS - VEHICLE EMISSIONS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	24	10.0	10.1	10.1
QUITE UNIMPORTANT	2	6	2.5	2.5	12.7
NEITHER UNIMPORTANT	3	79	32.8	33.3	46.0
QUITE IMPORTANT	4	78	32.4	32.9	78.9
EXTREMELY IMPORTANT	5	50	20.7	21.1	100.0
.	.	4	1.7	MISSING	

TOTAL 241 100.0 100.0

Mean	3.523	Std Err	.075	Median	4.000
Mode	3.000	Std Dev	1.156	Variance	1.335
Kurtosis	.016	S E Kurt	.315	Skewness	-.688
S E Skew	.158	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	835.000		

Valid Cases 237 Missing Cases 4

Q6J ENV ISS - SOLID WASTE DISPOSAL

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	24	10.0	10.1	10.1
QUITE UNIMPORTANT	2	3	1.2	1.3	11.3
NEITHER UNIMPORTANT	3	67	27.8	28.2	39.5
QUITE IMPORTANT	4	77	32.0	32.4	71.8
EXTREMELY IMPORTANT	5	67	27.8	28.2	100.0
	.	3	1.2	MISSING	
	TOTAL	241	100.0	100.0	

Mean	3.672	Std Err	.077	Median	4.000
Mode	4.000	Std Dev	1.191	Variance	1.420
Kurtosis	.119	S E Kurt	.314	Skewness	-.837
S E Skew	.158	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	874.000		

Valid Cases 238 Missing Cases 3

Q6K ENV ISS - RESOURCE DEPLETION

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	21	8.7	8.9	8.9
QUITE UNIMPORTANT	2	10	4.1	4.2	13.1
NEITHER UNIMPORTANT	3	79	32.8	33.5	46.6
QUITE IMPORTANT	4	70	29.0	29.7	76.3
EXTREMELY IMPORTANT	5	56	23.2	23.7	100.0
	.	5	2.1	MISSING	
	TOTAL	241	100.0	100.0	

Mean	3.551	Std Err	.076	Median	4.000
Mode	3.000	Std Dev	1.160	Variance	1.346
Kurtosis	-.139	S E Kurt	.316	Skewness	-.611
S E Skew	.158	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	838.000		

Valid Cases 236 Missing Cases 5

Q6L ENV ISS - EMPLOYEE W/S

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
NOT AT ALL IMPORTANT	1	5	2.1	2.1	2.1
QUITE UNIMPORTANT	2	1	.4	.4	2.5
NEITHER UNIMPORTANT	3	11	4.6	4.6	7.1
QUITE IMPORTANT	4	65	27.0	27.2	34.3
EXTREMELY IMPORTANT	5	157	65.1	65.7	100.0
	.	2	.8	MISSING	
TOTAL		241	100.0	100.0	
Mean	4.540	Std Err	.051	Median	5.000
Mode	5.000	Std Dev	.787	Variance	.619
Kurtosis	7.087	S E Kurt	.314	Skewness	-2.376
S E Skew	.157	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	1085.000		

Valid Cases 239 Missing Cases 2

Q6M ENV ISS - FINANCIAL SUPPORT ENV GROUPS

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
NOT AT ALL IMPORTANT	1	29	12.0	12.2	12.2
QUITE UNIMPORTANT	2	20	8.3	8.4	20.7
NEITHER UNIMPORTANT	3	113	46.9	47.7	68.4
QUITE IMPORTANT	4	52	21.6	21.9	90.3
EXTREMELY IMPORTANT	5	23	9.5	9.7	100.0
	.	4	1.7	MISSING	
TOTAL		241	100.0	100.0	
Mean	3.084	Std Err	.071	Median	3.000
Mode	3.000	Std Dev	1.086	Variance	1.179
Kurtosis	-.159	S E Kurt	.315	Skewness	-.289
S E Skew	.158	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	731.000		

Valid Cases 237 Missing Cases 4

Q7A ANKRE - EC ECO-LABELLING

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent

YES	1	50	20.7	20.9	20.9
DO NOT KNOW	2	112	46.5	46.9	67.8
NO	3	77	32.0	32.2	100.0
.	.	2	.8	MISSING	

TOTAL	241	100.0	100.0
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Mean	2.113	Std Err	.047	Median	2.000
Mode	2.000	Std Dev	.722	Variance	.521
Kurtosis	-1.062	S E Kurt	.314	Skewness	-.173
S E Skew	.157	Range	2.000	Minimum	1.000
Maximum	3.000	Sum	505.000		

Valid Cases 239 Missing Cases 2

Q7B AWARE - EC ECO-AUDIT

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	38	15.8	15.9	15.9
DO NOT KNOW	2	124	51.5	51.9	67.8
NO	3	77	32.0	32.2	100.0
.	.	2	.8	MISSING	
TOTAL		241	100.0	100.0	

Mean	2.163	Std Err	.044	Median	2.000
Mode	2.000	Std Dev	.676	Variance	.456
Kurtosis	-.817	S E Kurt	.314	Skewness	-.209
S E Skew	.157	Range	2.000	Minimum	1.000
Maximum	3.000	Sum	517.000		

Valid Cases 239 Missing Cases 2

Q7C AWARE - FORTHCOMING EC DIRECTIVES

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	30	12.4	12.6	12.6
DO NOT KNOW	2	127	52.7	54.3	67.1
NO	3	77	32.0	32.9	100.0
.	.	7	2.9	MISSING	
TOTAL		241	100.0	100.0	

Mean	2.201	Std Err	.042	Median	2.000
Mode	2.000	Std Dev	.647	Variance	.419
Kurtosis	-.678	S E Kurt	.317	Skewness	-.219
S E Skew	.159	Range	2.000	Minimum	1.000
Maximum	3.000	Sum	515.000		

Valid Cases 234 Missing Cases 7

Q7D AMARE - BS 5750

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	175	72.6	74.2	74.2
DO NOT KNOW	2	32	13.3	13.6	87.7
NO	3	29	12.0	12.3	100.0
	.	5	2.1	MISSING	
TOTAL		241	100.0	100.0	
Mean	1.381	Std Err	.045	Median	1.000
Mode	1.000	Std Dev	.696	Variance	.484
Kurtosis	.832	S E Kurt	.316	Skewness	1.542
S E Skew	.158	Range	2.000	Minimum	1.000
Maximum	3.000	Sum	326.000		

Valid Cases 236 Missing Cases 5

Q7E AMARE - BS 7750

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	63	26.1	27.4	27.4
DO NOT KNOW	2	101	41.9	43.9	71.3
NO	3	66	27.4	28.7	100.0
	.	11	4.6	MISSING	
TOTAL		241	100.0	100.0	
Mean	2.013	Std Err	.049	Median	2.000
Mode	2.000	Std Dev	.750	Variance	.563
Kurtosis	-1.217	S E Kurt	.320	Skewness	-.021
S E Skew	.160	Range	2.000	Minimum	1.000
Maximum	3.000	Sum	463.000		

Valid Cases 230 Missing Cases 11

Q7F AMARE - EPA

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	87	36.1	37.2	37.2
DO NOT KNOW	2	89	36.9	38.0	75.2
NO	3	58	24.1	24.8	100.0

	7	2.9	MISSING
TOTAL	241	100.0	100.0

Mean	1.876	Std Err	.051	Median	2.000
Mode	2.000	Std Dev	.779	Variance	.607
Kurtosis	-1.319	S E Kurt	.317	Skewness	.220
S E Skew	.159	Range	2.000	Minimum	1.000
Maximum	3.000	Sum	439.000		

Valid Cases 234 Missing Cases 7

Q7G AWARE - WATER ACT

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	73	30.3	31.2	31.2
DO NOT KNOW	2	100	41.5	42.7	73.9
NO	3	61	25.3	26.1	100.0
	.	7	2.9	MISSING	
TOTAL		241	100.0	100.0	

Mean	1.949	Std Err	.049	Median	2.000
Mode	2.000	Std Dev	.757	Variance	.572
Kurtosis	-1.243	S E Kurt	.317	Skewness	.085
S E Skew	.159	Range	2.000	Minimum	1.000
Maximum	3.000	Sum	456.000		

Valid Cases 234 Missing Cases 7

Q7H AWARE - COSHE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	133	55.2	56.6	56.6
DO NOT KNOW	2	64	26.6	27.2	83.8
NO	3	38	15.8	16.2	100.0
	.	6	2.5	MISSING	
TOTAL		241	100.0	100.0	

Mean	1.596	Std Err	.049	Median	1.000
Mode	1.000	Std Dev	.753	Variance	.567
Kurtosis	-.769	S E Kurt	.316	Skewness	.822
S E Skew	.159	Range	2.000	Minimum	1.000
Maximum	3.000	Sum	375.000		

Valid Cases 235 Missing Cases 6

Q8A ENV IMPR - LEGISLATION

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
STRONGLY DISAGREE	1	8	3.3	3.3	3.3
DISAGREE	2	19	7.9	7.9	11.3
AGREE NOR DISAGREE	3	34	14.1	14.2	25.4
AGREE	4	102	42.3	42.5	67.9
STRONGLY AGREE	5	77	32.0	32.1	100.0
.	.	1	.4	MISSING	
TOTAL		241	100.0	100.0	

Mean	3.921	Std Err	.067	Median	4.000
Mode	4.000	Std Dev	1.038	Variance	1.077
Kurtosis	.547	S E Kurt	.313	Skewness	-.995
S E Skew	.157	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	941.000		

Valid Cases 240 Missing Cases 1

Q8B ENV IMPR - COMP SELF REG

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
STRONGLY DISAGREE	1	9	3.7	3.8	3.8
DISAGREE	2	31	12.9	13.2	17.1
AGREE NOR DISAGREE	3	32	13.3	13.7	30.8
AGREE	4	108	44.8	46.2	76.9
STRONGLY AGREE	5	54	22.4	23.1	100.0
.	.	7	2.9	MISSING	
TOTAL		241	100.0	100.0	

Mean	3.714	Std Err	.071	Median	4.000
Mode	4.000	Std Dev	1.080	Variance	1.167
Kurtosis	-.087	S E Kurt	.317	Skewness	-.790
S E Skew	.159	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	869.000		

Valid Cases 234 Missing Cases 7

Q8C ENV IMPR - INDIV DISCIPLINE

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
STRONGLY DISAGREE	1	7	2.9	2.9	2.9
DISAGREE	2	25	10.4	10.5	13.4

AGREE NOR DISAGREE	3	24	10.0	10.0	23.4
AGREE	4	105	43.6	43.9	67.4
STRONGLY AGREE	5	78	32.4	32.6	100.0
.	.	2	.8	MISSING	

TOTAL		241	100.0	100.0	

Mean	3.929	Std Err	.068	Median	4.000
Mode	4.000	Std Dev	1.053	Variance	1.108
Kurtosis	.405	S E Kurt	.314	Skewness	-1.012
S E Skew	.157	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	939.000		

Valid Cases 239 Missing Cases 2

Q8D ENV IMPR - MARKET PRESSURE

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
DISAGREE	2	8	3.3	3.4	3.4
AGREE NOR DISAGREE	3	38	15.8	16.0	19.4
AGREE	4	108	44.8	45.6	65.0
STRONGLY AGREE	5	83	34.4	35.0	100.0
.	.	4	1.7	MISSING	

TOTAL		241	100.0	100.0	

Mean	4.122	Std Err	.052	Median	4.000
Mode	4.000	Std Dev	.796	Variance	.633
Kurtosis	-.092	S E Kurt	.315	Skewness	-.630
S E Skew	.158	Range	3.000	Minimum	2.000
Maximum	5.000	Sum	977.000		

Valid Cases 237 Missing Cases 4

Q8E ENV IMPR - OTHER

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
STRONGLY DISAGREE	1	2	.8	2.3	2.3
DISAGREE	2	4	1.7	4.5	6.8
AGREE NOR DISAGREE	3	61	25.3	69.3	76.1
AGREE	4	7	2.9	8.0	84.1
STRONGLY AGREE	5	14	5.8	15.9	100.0
.	.	153	63.5	MISSING	

TOTAL		241	100.0	100.0	

Mean	3.107	Std Err	.093	Median	3.000
Mode	3.000	Std Dev	.876	Variance	.767

Kurtosis	.779	S E Kurt	.508	Skewness	.614
S E Skew	.257	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	291.000		

Valid Cases 88 Missing Cases 151

Q9A C/PRACTICE - RECYCLING

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
IRRELEVANT	1	38	15.8	15.9	15.9
NOT CONSIDERED	2	44	18.3	18.4	34.3
CONSIDERED	3	57	23.7	23.8	58.2
IMPLEMENTED	4	100	41.5	41.8	100.0
	.	2	.8	MISSING	
	TOTAL	241	100.0	100.0	

Mean	2.916	Std Err	.072	Median	3.000
Mode	4.000	Std Dev	1.112	Variance	1.237
Kurtosis	-1.118	S E Kurt	.314	Skewness	-.536
S E Skew	.157	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	697.000		

Valid Cases 239 Missing Cases 2

Q9B C/PRACTICE - ENERGY EFF PROG

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
IRRELEVANT	1	34	14.1	14.2	14.2
NOT CONSIDERED	2	56	23.2	23.5	37.8
CONSIDERED	3	89	36.9	37.4	75.2
IMPLEMENTED	4	59	24.5	24.8	100.0
	.	3	1.2	MISSING	
	TOTAL	241	100.0	100.0	

Mean	2.727	Std Err	.064	Median	3.000
Mode	3.000	Std Dev	.992	Variance	.984
Kurtosis	-.923	S E Kurt	.314	Skewness	-.318
S E Skew	.158	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	649.000		

Valid Cases 238 Missing Cases 3

Q9C C/PRACTICE - WASTE MANAGEMENT

Valid Cum

Value Label	Value	Frequency	Percent	Percent	Percent
IRRELEVANT	1	63	26.1	26.7	26.7
NOT CONSIDERED	2	57	23.7	24.2	50.8
CONSIDERED	3	57	23.7	24.2	75.0
IMPLEMENTED	4	59	24.5	25.0	100.0
	.	5	2.1	MISSING	

TOTAL		241	100.0	100.0	
Mean	2.475	Std Err	.074	Median	2.000
Mode	1.000	Std Dev	1.135	Variance	1.289
Kurtosis	-1.397	S E Kurt	.316	Skewness	.028
S E Skew	.158	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	584.000		

Valid Cases 236 Missing Cases 5

Q9D C/PRACTICE - SUPPLIERS POLICY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
IRRELEVANT	1	41	17.0	17.1	17.1
NOT CONSIDERED	2	139	57.7	57.9	75.0
CONSIDERED	3	41	17.0	17.1	92.1
IMPLEMENTED	4	19	7.9	7.9	100.0
	.	1	.4	MISSING	

TOTAL		241	100.0	100.0	
Mean	2.158	Std Err	.051	Median	2.000
Mode	2.000	Std Dev	.797	Variance	.636
Kurtosis	.283	S E Kurt	.313	Skewness	.656
S E Skew	.157	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	518.000		

Valid Cases 240 Missing Cases 1

Q9E C/PRACTICE - PACKAGING

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
IRRELEVANT	1	79	32.8	32.9	32.9
NOT CONSIDERED	2	59	24.5	24.6	57.5
CONSIDERED	3	69	28.6	28.8	86.3
IMPLEMENTED	4	33	13.7	13.8	100.0
	.	1	.4	MISSING	

TOTAL		241	100.0	100.0	

Mean	2.213	Std Err	.068	Median	2.000
Mode	1.000	Std Dev	1.057	Variance	1.117
Kurtosis	-1.221	S E Kurt	.313	Skewness	.229
S E Skew	.157	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	536.000		

Valid Cases 240 Missing Cases 1

Q97 C/PRACTICE - ENV AUDIT

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
IRRELEVANT	1	64	26.6	27.2	27.2
NOT CONSIDERED	2	131	54.4	55.7	83.0
CONSIDERED	3	30	12.4	12.8	95.7
IMPLEMENTED	4	10	4.1	4.3	100.0
.	.	6	2.5	MISSING	
TOTAL		241	100.0	100.0	

Mean	1.940	Std Err	.049	Median	2.000
Mode	2.000	Std Dev	.754	Variance	.569
Kurtosis	.587	S E Kurt	.316	Skewness	.701
S E Skew	.159	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	456.000		

Valid Cases 235 Missing Cases 6

Q98 C/PRACTICE - POLLUTION CONTROL POLICY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
IRRELEVANT	1	79	32.8	33.1	33.1
NOT CONSIDERED	2	90	37.3	37.7	70.7
CONSIDERED	3	36	14.9	15.1	85.8
IMPLEMENTED	4	34	14.1	14.2	100.0
.	.	2	.8	MISSING	
TOTAL		241	100.0	100.0	

Mean	2.105	Std Err	.066	Median	2.000
Mode	2.000	Std Dev	1.022	Variance	1.044
Kurtosis	-.745	S E Kurt	.314	Skewness	.599
S E Skew	.157	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	503.000		

Valid Cases 239 Missing Cases 2

Q99 C/PRACTICE - STAFF TRAINING

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
IRRELEVANT	1	67	27.8	28.0	28.0
NOT CONSIDERED	2	124	51.5	51.9	79.9
CONSIDERED	3	37	15.4	15.5	95.4
IMPLEMENTED	4	11	4.6	4.6	100.0
	.	2	.8	MISSING	
TOTAL		241	100.0	100.0	

Mean	1.967	Std Err	.051	Median	2.000
Mode	2.000	Std Dev	.788	Variance	.621
Kurtosis	.191	S E Kurt	.314	Skewness	.631
S E Skew	.157	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	470.000		

Valid Cases 239 Missing Cases 2

Q9I C/PRACTICE - TRANSPORT POLICY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
IRRELEVANT	1	63	26.1	26.6	26.6
NOT CONSIDERED	2	118	49.0	49.8	76.4
CONSIDERED	3	37	15.4	15.6	92.0
IMPLEMENTED	4	19	7.9	8.0	100.0
	.	4	1.7	MISSING	
TOTAL		241	100.0	100.0	

Mean	2.051	Std Err	.056	Median	2.000
Mode	2.000	Std Dev	.862	Variance	.743
Kurtosis	-.039	S E Kurt	.315	Skewness	.663
S E Skew	.158	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	486.800		

Valid Cases 237 Missing Cases 4

Q9J C/PRACTICE - ENS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
IRRELEVANT	1	64	26.6	27.0	27.0
NOT CONSIDERED	2	130	53.9	54.9	81.9
CONSIDERED	3	32	13.3	13.5	95.4
IMPLEMENTED	4	11	4.6	4.6	100.0
	.	4	1.7	MISSING	

TOTAL 241 100.0 100.0

Mean	1.958	Std Err	.050	Median	2.000
Mode	2.000	Std Dev	.769	Variance	.591
Kurtosis	.477	S E Kurt	.315	Skewness	.692
S E Skew	.158	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	464.000		

Valid Cases 237 Missing Cases 4

Q10 HAVE WRITTEN ENV POLICY STATEMENT

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	14	5.8	5.8	5.8
NO	2	226	93.8	94.2	100.0
.	.	1	.4	MISSING	
	TOTAL	241	100.0	100.0	

Mean	1.942	Std Err	.015	Median	2.000
Mode	2.000	Std Dev	.235	Variance	.055
Kurtosis	12.488	S E Kurt	.313	Skewness	-3.793
S E Skew	.157	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	456.000		

Valid Cases 240 Missing Cases 1

Q11 IMPLEMENTED POLICY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	10	4.1	76.9	76.9
NO	2	3	1.2	23.1	100.0
.	.	228	94.6	MISSING	
	TOTAL	241	100.0	100.0	

Mean	1.231	Std Err	.122	Median	1.000
Mode	1.000	Std Dev	.439	Variance	.192
Kurtosis	.095	S E Kurt	1.191	Skewness	1.451
S E Skew	.616	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	16.000		

Valid Cases 13 Missing Cases 228

Q12A NO POL - NOT COST EFFECTIVE

Valid Cum

Value Label	Value	Frequency	Percent	Percent	Percent
STRONGLY DISAGREE	1	4	1.7	2.3	2.3
DISAGREE	2	15	6.2	8.6	11.1
AGREE NOR DISAGREE	3	104	43.2	60.8	71.9
AGREE	4	40	16.6	23.4	95.3
STRONGLY AGREE	5	8	3.3	4.7	100.0
	.	70	29.0	MISSING	
TOTAL		241	100.0	100.0	

Mean	3.193	Std Err	.058	Median	3.000
Mode	3.000	Std Dev	.754	Variance	.568
Kurtosis	1.196	S E Kurt	.369	Skewness	-.002
S E Skew	.186	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	546.000		

Valid Cases 171 Missing Cases 70

Q12B NO POL - LACK EXTERNAL PRESSURE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
STRONGLY DISAGREE	1	8	3.3	4.8	4.8
DISAGREE	2	17	7.1	10.1	14.9
AGREE NOR DISAGREE	3	69	28.6	41.2	56.0
AGREE	4	62	25.7	36.9	92.9
STRONGLY AGREE	5	12	5.0	7.1	100.0
	.	73	30.3	MISSING	
TOTAL		241	100.0	100.0	

Mean	3.315	Std Err	.071	Median	3.000
Mode	3.000	Std Dev	.923	Variance	.852
Kurtosis	.296	S E Kurt	.373	Skewness	-.485
S E Skew	.187	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	557.000		

Valid Cases 168 Missing Cases 73

Q12C NO POL - LACK OF TIME

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
STRONGLY DISAGREE	1	9	3.7	5.1	5.1
DISAGREE	2	20	8.3	11.4	16.6
AGREE NOR DISAGREE	3	63	26.1	36.0	52.6
AGREE	4	49	20.3	28.0	80.6
STRONGLY AGREE	5	34	14.1	19.4	100.0
	.	66	27.4	MISSING	

		TOTAL	241	100.0	100.0
Mean	3.451	Std Err	.082	Median	3.000
Mode	3.000	Std Dev	1.086	Variance	1.180
Kurtosis	-.420	S E Kurt	.365	Skewness	-.296
S E Skew	.184	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	604.000		

Valid Cases 175 Missing Cases 66

Q12D NO POL - INERTIA OF COMPANY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
STRONGLY DISAGREE	1	15	6.2	9.2	9.2
DISAGREE	2	27	11.2	16.6	25.8
AGREE NOR DISAGREE	3	90	37.3	55.2	81.0
AGREE	4	26	10.8	16.0	96.9
STRONGLY AGREE	5	5	2.1	3.1	100.0
	.	78	32.4	MISSING	
	TOTAL	241	100.0	100.0	

Mean	2.871	Std Err	.070	Median	3.000
Mode	3.000	Std Dev	.897	Variance	.804
Kurtosis	.354	S E Kurt	.378	Skewness	-.262
S E Skew	.190	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	468.000		

Valid Cases 163 Missing Cases 78

Q12E NO POL - NOT RELEVANT TO COMPANY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
STRONGLY DISAGREE	1	5	2.1	2.6	2.6
DISAGREE	2	23	9.5	12.1	14.7
AGREE NOR DISAGREE	3	58	24.1	30.5	45.3
AGREE	4	62	25.7	32.6	77.9
STRONGLY AGREE	5	42	17.4	22.1	100.0
	.	51	21.2	MISSING	
	TOTAL	241	100.0	100.0	

Mean	3.595	Std Err	.076	Median	4.000
Mode	4.000	Std Dev	1.043	Variance	1.089
Kurtosis	-.523	S E Kurt	.351	Skewness	-.340
S E Skew	.176	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	683.000		

Valid Cases 190 Missing Cases 51

Q12F NO POL - NOT THOUGHT ABOUT IT

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
STRONGLY DISAGREE	1	16	6.6	9.1	9.1
DISAGREE	2	36	14.9	20.5	29.5
AGREE NOR DISAGREE	3	56	23.2	31.8	61.4
AGREE	4	51	21.2	29.0	90.3
STRONGLY AGREE	5	17	7.1	9.7	100.0
.	.	65	27.0	MISSING	
TOTAL		241	100.0	100.0	

Mean	3.097	Std Err	.084	Median	3.000
Mode	3.000	Std Dev	1.114	Variance	1.242
Kurtosis	-.682	S E Kurt	.364	Skewness	-.168
S E Skew	.183	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	545.000		

Valid Cases 176 Missing Cases 65

Q12G NO POL - ALREADY PART OF STRATEGY

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
STRONGLY DISAGREE	1	11	4.6	6.8	6.8
DISAGREE	2	41	17.0	25.5	32.3
AGREE NOR DISAGREE	3	79	32.8	45.1	81.4
AGREE	4	20	8.3	12.4	93.8
STRONGLY AGREE	5	10	4.1	6.2	100.0
.	.	80	33.2	MISSING	
TOTAL		241	100.0	100.0	

Mean	2.857	Std Err	.074	Median	3.000
Mode	3.000	Std Dev	.941	Variance	.886
Kurtosis	.235	S E Kurt	.380	Skewness	.245
S E Skew	.191	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	460.000		

Valid Cases 161 Missing Cases 80

Q12H NO POL - OTHER

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent

STRONGLY DISAGREE	1	1	.4	2.9	2.9
DISAGREE	2	2	.8	5.9	8.8
AGREE NOR DISAGREE	3	19	7.9	55.9	64.7
AGREE	4	2	.8	5.9	70.6
STRONGLY AGREE	5	10	4.1	29.4	100.0
		207	85.9	MISSING	

TOTAL	241	100.0	100.0
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Mean	3.529	Std Err	.185	Median	3.000
Mode	3.000	Std Dev	1.080	Variance	1.166
Kurtosis	-.612	S E Kurt	.788	Skewness	.150
S E Skew	.403	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	120.000		

Valid Cases 34 Missing Cases 207

Q13A CATS - LEGISLATION

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	4	1.7	1.7	1.7
QUITE UNIMPORTANT	2	7	2.9	3.0	4.7
NEITHER UNIMPORTANT	3	21	8.7	9.0	13.7
QUITE IMPORTANT	4	102	42.3	43.6	57.3
EXTREMELY IMPORTANT	5	100	41.5	42.7	100.0
	.	7	2.9	MISSING	
TOTAL		241	100.0	100.0	

Mean	4.226	Std Err	.056	Median	4.000
Mode	4.000	Std Dev	.862	Variance	.742
Kurtosis	2.466	S E Kurt	.317	Skewness	-1.389
S E Skew	.159	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	989.000		

Valid Cases 234 Missing Cases 7

Q13B CATS - CUSTOMER PRESSURE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	2	.8	.9	.9
QUITE UNIMPORTANT	2	3	1.2	1.3	2.1
NEITHER UNIMPORTANT	3	20	8.3	8.5	10.7
QUITE IMPORTANT	4	105	43.6	44.9	55.6
EXTREMELY IMPORTANT	5	104	43.2	44.4	100.0
	.	7	2.9	MISSING	

TOTAL 241 100.0 100.0

Mean	4.308	Std Err	.049	Median	4.000
Mode	4.000	Std Dev	.752	Variance	.566
Kurtosis	2.570	S E Kurt	.317	Skewness	-1.246
S E Skew	.159	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	1008.000		

Valid Cases 234 Missing Cases 7

Q13C CATS - MARKETING IMAGE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
QUITE UNIMPORTANT	2	5	2.1	2.2	2.2
NEITHER UNIMPORTANT	3	30	12.4	12.9	15.1
QUITE IMPORTANT	4	128	53.1	55.2	70.3
EXTREMELY IMPORTANT	5	69	28.6	29.7	100.0
.	.	9	3.7	MISSING	
	TOTAL	241	100.0	100.0	

Mean	4.125	Std Err	.046	Median	4.000
Mode	4.000	Std Dev	.707	Variance	.499
Kurtosis	.353	S E Kurt	.318	Skewness	-.553
S E Skew	.160	Range	3.000	Minimum	2.000
Maximum	5.000	Sum	957.000		

Valid Cases 232 Missing Cases 9

Q13D CATS - INVESTOR PRESSURE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	28	11.6	12.3	12.3
QUITE UNIMPORTANT	2	20	8.3	8.8	21.1
NEITHER UNIMPORTANT	3	70	29.0	30.7	51.8
QUITE IMPORTANT	4	81	33.6	35.5	87.3
EXTREMELY IMPORTANT	5	29	12.0	12.7	100.0
.	.	13	5.4	MISSING	
	TOTAL	241	100.0	100.0	

Mean	3.276	Std Err	.078	Median	3.000
Mode	4.000	Std Dev	1.172	Variance	1.373
Kurtosis	-.439	S E Kurt	.321	Skewness	-.536
S E Skew	.161	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	747.000		

Valid Cases 228 Missing Cases 13

Q13E CATS - INSURANCE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	10	4.1	4.3	4.3
QUITE UNIMPORTANT	2	7	2.9	3.0	7.3
NEITHER UNIMPORTANT	3	55	22.8	23.7	31.0
QUITE IMPORTANT	4	107	44.4	46.1	77.2
EXTREMELY IMPORTANT	5	53	22.0	22.8	100.0
	.	9	3.7	MISSING	
TOTAL		241	100.0	100.0	

Mean	3.802	Std Err	.064	Median	4.000
Mode	4.000	Std Dev	.969	Variance	.939
Kurtosis	1.104	S E Kurt	.318	Skewness	-.946
S E Skew	.160	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	882.000		

Valid Cases 232 Missing Cases 9

Q13F CATS - COMPANY POLICY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	4	1.7	1.7	1.7
QUITE UNIMPORTANT	2	5	2.1	2.2	3.9
NEITHER UNIMPORTANT	3	59	24.5	25.7	29.6
QUITE IMPORTANT	4	121	50.2	52.6	82.2
EXTREMELY IMPORTANT	5	41	17.0	17.8	100.0
	.	11	4.6	MISSING	
TOTAL		241	100.0	100.0	

Mean	3.826	Std Err	.053	Median	4.000
Mode	4.000	Std Dev	.807	Variance	.651
Kurtosis	1.365	S E Kurt	.320	Skewness	-.730
S E Skew	.160	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	880.000		

Valid Cases 230 Missing Cases 11

Q13G CATS - EMPLOYEES CONCERN

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
QUITE UNIMPORTANT	2	6	2.5	2.6	2.6

NEITHER UNIMPORTANT	3	45	18.7	19.3	21.5
QUITE IMPORTANT	4	132	54.8	56.7	78.5
EXTREMELY IMPORTANT	5	50	20.7	21.5	100.0
.	.	8	3.3	MISSING	

TOTAL		241	100.0	100.0	

Mean	3.970	Std Err	.047	Median	4.000
Mode	4.000	Std Dev	.716	Variance	.512
Kurtosis	.107	S E Kurt	.318	Skewness	-.383
S E Skew	.159	Range	3.000	Minimum	2.000
Maximum	5.000	Sum	925.000		

Valid Cases 233 Missing Cases 8

Q13B CATS - PERSONAL CONVICTION

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	3	1.2	1.3	1.3
QUITE UNIMPORTANT	2	3	1.2	1.3	2.6
NEITHER UNIMPORTANT	3	33	13.7	14.2	16.7
QUITE IMPORTANT	4	120	49.8	51.5	68.2
EXTREMELY IMPORTANT	5	74	30.7	31.8	100.0
.	.	8	3.3	MISSING	

TOTAL		241	100.0	100.0	

Mean	4.112	Std Err	.051	Median	4.000
Mode	4.000	Std Dev	.785	Variance	.617
Kurtosis	2.046	S E Kurt	.318	Skewness	-1.007
S E Skew	.159	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	958.000		

Valid Cases 233 Missing Cases 8

Q13I CATS - EC ECO-LABELLING

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	27	11.2	12.2	12.2
QUITE UNIMPORTANT	2	12	5.0	5.4	17.6
NEITHER UNIMPORTANT	3	120	49.8	54.3	71.9
QUITE IMPORTANT	4	49	20.3	22.2	94.1
EXTREMELY IMPORTANT	5	13	5.4	5.9	100.0
.	.	20	8.3	MISSING	

TOTAL		241	100.0	100.0	

Mean	3.041	Std Err	.067	Median	3.000
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Mode	3.000	Std Dev	1.001	Variance	1.003
Kurtosis	.281	S E Kurt	.326	Skewness	-.466
S E Skew	.164	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	672.000		

Valid Cases 221 Missing Cases 20

Q13J CATS - BUYER PRESSURE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	9	3.7	3.9	3.9
QUITE UNIMPORTANT	2	7	2.9	3.0	6.9
NEITHER UNIMPORTANT	3	47	19.5	20.2	27.0
QUITE IMPORTANT	4	106	44.0	45.5	72.5
EXTREMELY IMPORTANT	5	64	26.6	27.5	100.0
	.	8	3.3	MISSING	
	TOTAL	241	100.0	100.0	

Mean	3.897	Std Err	.063	Median	4.000
Mode	4.000	Std Dev	.968	Variance	.938
Kurtosis	1.236	S E Kurt	.318	Skewness	-1.027
S E Skew	.159	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	908.000		

Valid Cases 233 Missing Cases 8

Q13K CATS - SUPPLIERS PRESSURE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	25	10.4	10.8	10.8
QUITE UNIMPORTANT	2	23	9.5	10.0	20.8
NEITHER UNIMPORTANT	3	78	32.4	33.8	54.5
QUITE IMPORTANT	4	82	34.0	35.5	90.0
EXTREMELY IMPORTANT	5	23	9.5	10.0	100.0
	.	10	4.1	MISSING	
	TOTAL	241	100.0	100.0	

Mean	3.238	Std Err	.073	Median	3.000
Mode	4.000	Std Dev	1.111	Variance	1.234
Kurtosis	-.313	S E Kurt	.319	Skewness	-.521
S E Skew	.160	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	748.000		

Valid Cases 231 Missing Cases 10

Q13L CATS - COMPETITOR BEHAVIOUR

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	10	4.1	4.3	4.3
QUITE UNIMPORTANT	2	7	2.9	3.0	7.3
NEITHER UNIMPORTANT	3	46	19.1	19.7	27.0
QUITE IMPORTANT	4	113	46.9	48.5	75.5
EXTREMELY IMPORTANT	5	57	23.7	24.5	100.0
	.	8	3.3	MISSING	

TOTAL		241	100.0	100.0	

Mean	3.858	Std Err	.063	Median	4.000
Mode	4.000	Std Dev	.966	Variance	.932
Kurtosis	1.401	S E Kurt	.318	Skewness	-1.074
S E Skew	.159	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	899.000		

Valid Cases 233 Missing Cases 8

Q13M CATS - MEDIA VIEWS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	14	5.8	6.0	6.0
QUITE UNIMPORTANT	2	15	6.2	6.4	12.4
NEITHER UNIMPORTANT	3	89	36.9	38.0	50.4
QUITE IMPORTANT	4	89	36.9	38.0	88.5
EXTREMELY IMPORTANT	5	27	11.2	11.5	100.0
	.	7	2.9	MISSING	

TOTAL		241	100.0	100.0	

Mean	3.427	Std Err	.064	Median	3.000
Mode	3.000	Std Dev	.983	Variance	.967
Kurtosis	.381	S E Kurt	.317	Skewness	-.588
S E Skew	.159	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	802.000		

Valid Cases 234 Missing Cases 7

Q13N CATS - GOVERNMENT GRANTS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	9	3.7	3.9	3.9
QUITE UNIMPORTANT	2	9	3.7	3.9	7.7
NEITHER UNIMPORTANT	3	43	17.8	18.5	26.2

QUITE IMPORTANT	4	95	39.4	40.8	67.0
EXTREMELY IMPORTANT	5	77	32.0	33.0	100.0
.	.	8	3.3	MISSING	

TOTAL		241	100.0	100.0	

Mean	3.953	Std Err	.066	Median	4.000
Mode	4.000	Std Dev	1.010	Variance	1.019
Kurtosis	.976	S E Kurt	.318	Skewness	-1.046
S E Skew	.159	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	921.000		

Valid Cases 233 Missing Cases 8

Q130 CATS - NEW MARKET OPPORTUNITIES

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
NOT AT ALL IMPORTANT	1	8	3.3	3.5	3.5
QUITE UNIMPORTANT	2	2	.8	.9	4.3
NEITHER UNIMPORTANT	3	35	14.5	15.2	19.6
QUITE IMPORTANT	4	110	45.6	47.8	67.4
EXTREMELY IMPORTANT	5	75	31.1	32.6	100.0
.	.	11	4.6	MISSING	

TOTAL		241	100.0	100.0	

Mean	4.052	Std Err	.060	Median	4.000
Mode	4.000	Std Dev	.909	Variance	.827
Kurtosis	2.422	S E Kurt	.320	Skewness	-1.299
S E Skew	.160	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	932.000		

Valid Cases 230 Missing Cases 11

Q13P CATS - OTHER

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
NOT AT ALL IMPORTANT	1	2	.8	6.9	6.9
QUITE UNIMPORTANT	2	1	.4	3.4	10.3
NEITHER UNIMPORTANT	3	18	7.5	62.1	72.4
QUITE IMPORTANT	4	1	.4	3.4	75.9
EXTREMELY IMPORTANT	5	7	2.9	24.1	100.0
.	.	212	88.0	MISSING	

TOTAL		241	100.0	100.0	

Mean	3.345	Std Err	.206	Median	3.000
Mode	3.000	Std Dev	1.111	Variance	1.234

Kurtosis	.042	S E Kurt	.845	Skewness	.086
S E Skew	.434	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	97.000		

Valid Cases 29 Missing Cases 212

Q14 exports/imports

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
exporter	1	95	39.4	39.7	39.7
non-exporter	2	144	59.8	60.3	100.0
	.	2	.8	MISSING	
TOTAL		241	100.0	100.0	

Mean	1.603	Std Err	.032	Median	2.000
Mode	2.000	Std Dev	.490	Variance	.240
Kurtosis	-1.838	S E Kurt	.314	Skewness	-.422
S E Skew	.157	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	383.000		

Valid Cases 239 Missing Cases 2

FACTOR /VARIABLES Q6A TO Q6M.

--- FACTOR ANALYSIS ---

Analysis Number 1 Listwise deletion of cases with missing values

Extraction 1 for Analysis 1, Principal-Components Analysis (PC)

Initial Statistics:

Variable	Communality	* Factor	Eigenvalue	Pct of Var	Cum Pct
Q6A	1.00000	* 1	7.24266	55.7	55.7
Q6B	1.00000	* 2	1.05129	8.1	63.8
Q6C	1.00000	* 3	.99348	7.6	71.4
Q6D	1.00000	* 4	.68422	5.3	76.7
Q6E	1.00000	* 5	.58508	4.5	81.2
Q6F	1.00000	* 6	.54492	4.2	85.4
Q6G	1.00000	* 7	.44709	3.4	88.8
Q6H	1.00000	* 8	.42758	3.3	92.1
Q6I	1.00000	* 9	.26800	2.1	94.2
Q6J	1.00000	* 10	.24012	1.8	96.0
Q6K	1.00000	* 11	.19713	1.5	97.5
Q6L	1.00000	* 12	.18985	1.5	99.0
Q6M	1.00000	* 13	.12859	1.0	100.0

PC Extracted 2 factors.

Factor Matrix:

	FACTOR 1	FACTOR 2
Q6A	.83662	.27880
Q6B	.79106	.35129
Q6C	.81819	.30548
Q6D	.80990	-.17894
Q6E	.71820	-.35025
Q6F	.78442	-.18203
Q6G	.84431	.11765
Q6H	.71140	-.39438
Q6I	.80117	-.14971
Q6J	.75758	-.29675
Q6K	.76565	.00752
Q6L	.20010	.41625
Q6M	.63202	.34036

Final Statistics:

Variable	Communality	* Factor	Eigenvalue	Pct of Var	Cum Pct
		*			
Q6A	.77766	* 1	7.24266	55.7	55.7
Q6B	.74918	* 2	1.05129	8.1	63.8
Q6C	.76276	*			
Q6D	.68795	*			
Q6E	.63849	*			
Q6F	.64845	*			
Q6G	.72671	*			
Q6H	.66162	*			
Q6I	.66429	*			
Q6J	.66198	*			
Q6K	.58628	*			
Q6L	.21330	*			
Q6M	.51529	*			

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normalization.

Varimax converged in 3 iterations.

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2
Q6A	.51401	.71655
Q6B	.43460	.74853
Q6C	.48344	.72735
Q6D	.76088	.33016
Q6E	.78711	.13764
Q6F	.74206	.31272
Q6G	.61478	.59055
Q6H	.80749	.09791
Q6I	.73667	.34871

Q6J	.78762	.20406
Q6K	.61567	.45522
Q6L	-.08211	.45449
Q6M	.31220	.64639

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2
FACTOR 1	.80988	.58660
FACTOR 2	-.58660	.80988

FACTOR /VARIABLES Q8A TO Q8d.

Analysis Number 1 Listwise deletion of cases with missing values

Extraction 1 for Analysis 1, Principal-Components Analysis (PC)

Initial Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
		*				
Q8A	1.00000	*	1	1.77835	44.5	44.5
Q8B	1.00000	*	2	1.18035	29.5	74.0
Q8C	1.00000	*	3	.73171	18.3	92.3
Q8D	1.00000	*	4	.30959	7.7	100.0

PC Extracted 2 factors.

Factor Matrix:

	FACTOR 1	FACTOR 2
Q8A	-.29759	.75554
Q8B	.89105	-.02357
Q8C	.90812	.04187
Q8D	.26671	.77923

Final Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
		*				
Q8A	.65940	*	1	1.77835	44.5	44.5
Q8B	.79453	*	2	1.18035	29.5	74.0
Q8C	.82644	*				
Q8D	.67833	*				

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normalization.

Varimax converged in 3 iterations.

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2
Q9A	-.28798	.75926
Q9B	.89068	-.03488
Q9C	.90858	.03034
Q9D	.27657	.77578

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2
FACTOR 1	.99992	-.01269
FACTOR 2	.01269	.99992

FACTOR /VARIABLES Q9A TO Q9J.

Analysis Number 1 Listwise deletion of cases with missing values

Extraction 1 for Analysis 1, Principal-Components Analysis (PC)

Initial Statistics:

Variable	Communality	* Factor	Eigenvalue	Pct of Var	Cum Pct
		*			
Q9A	1.00000	* 1	4.12639	41.3	41.3
Q9B	1.00000	* 2	1.29279	12.9	54.2
Q9C	1.00000	* 3	.87682	8.8	63.0
Q9D	1.00000	* 4	.77417	7.7	70.7
Q9E	1.00000	* 5	.64803	6.5	77.2
Q9F	1.00000	* 6	.55976	5.6	82.8
Q9G	1.00000	* 7	.54568	5.5	88.2
Q9H	1.00000	* 8	.48006	4.8	93.0
Q9I	1.00000	* 9	.39792	4.0	97.0
Q9J	1.00000	* 10	.29839	3.0	100.0

PC Extracted 2 factors.

Factor Matrix:

	FACTOR 1	FACTOR 2
Q9A	.41658	.71015
Q9B	.52051	.50015
Q9C	.70834	.15583
Q9D	.56428	.33747
Q9E	.56234	.13485
Q9F	.70415	-.22858
Q9G	.71327	-.19982
Q9H	.66572	-.41026
Q9I	.68486	-.16415
Q9J	.79294	-.30746

Final Statistics:

Variable	Communality	* Factor	Eigenvalue	Pct of Var	Cum Pct
		*			
Q9A	.67785	* 1	4.12639	41.3	41.3
Q9B	.52108	* 2	1.29279	12.9	54.2
Q9C	.52603	*			
Q9D	.43230	*			
Q9E	.33441	*			
Q9F	.54807	*			
Q9G	.54868	*			
Q9H	.61150	*			
Q9I	.49598	*			
Q9J	.72328	*			

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normalization.

Varimax converged in 3 iterations.

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2
Q9A	-.03818	.82243
Q9B	.16347	.70311
Q9C	.50871	.51696
Q9D	.28889	.59063
Q9E	.39778	.41975
Q9F	.71486	.19247
Q9G	.70682	.22156
Q9H	.78175	.01924
Q9I	.66355	.23595
Q9J	.83230	.17479

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2
FACTOR 1	.83816	.54543
FACTOR 2	-.54543	.83816

FACTOR /VARIABLES Q12A TO Q12G.

Analysis Number 1 Listwise deletion of cases with missing values

Extraction 1 for Analysis 1, Principal-Components Analysis (PC)

Initial Statistics:

Variable	Communality	* Factor	Eigenvalue	Pct of Var	Cum Pct
		*			
Q12A	1.00000	* 1	2.30748	33.0	33.0
Q12B	1.00000	* 2	1.48523	21.2	54.2

Q12C	1.00000 *	3	.80039	11.4	65.6
Q12D	1.00000 *	4	.70440	10.1	75.7
Q12E	1.00000 *	5	.64509	9.2	84.9
Q12F	1.00000 *	6	.60709	8.7	93.6
Q12G	1.00000 *	7	.45031	6.4	100.0

PC Extracted 2 Factors.

Factor Matrix:

	FACTOR 1	FACTOR 2
Q12A	.64626	.40035
Q12B	.59683	-.42247
Q12C	.60706	-.45426
Q12D	.65996	-.29190
Q12E	.13860	.82685
Q12F	.59414	.26272
Q12G	-.59780	-.31971

Final Statistics:

Variable	Communality *	Factor	Eigenvalue	Pct of Var	Cum Pct
Q12A	.57792 *	1	2.30748	33.0	33.0
Q12B	.33468 *	2	1.48523	21.2	54.2
Q12C	.57487 *				
Q12D	.52075 *				
Q12E	.70289 *				
Q12F	.42202 *				
Q12G	.45958 *				

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normalization.

Varimax converged in 3 iterations.

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2
Q12A	.18462	.73745
Q12B	.72247	.11281
Q12C	.75195	.09713
Q12D	.67677	.25045
Q12E	-.47869	.68968
Q12F	.24313	.60242
Q12G	-.20604	-.64585

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2
FACTOR 1	.71731	.69676
FACTOR 2	-.69676	.71731

 FACTOR /VARIABLES Q13A TO Q13O.

Analysis Number 1 Listwise deletion of cases with missing values

Extraction 1 for Analysis 1, Principal-Components Analysis (PC)

Initial Statistics:

Variable	Communality	* Factor	Eigenvalue	Pct of Var	Cum Pct
		*			
Q13A	1.00000	* 1	5.22517	34.8	34.8
Q13B	1.00000	* 2	1.73812	11.6	46.4
Q13C	1.00000	* 3	1.24127	8.3	54.7
Q13D	1.00000	* 4	1.11424	7.4	62.1
Q13E	1.00000	* 5	.89388	6.0	68.1
Q13F	1.00000	* 6	.74493	5.0	73.1
Q13G	1.00000	* 7	.64907	4.3	77.4
Q13H	1.00000	* 8	.60411	4.0	81.4
Q13I	1.00000	* 9	.54536	3.6	85.0
Q13J	1.00000	* 10	.51461	3.4	88.5
Q13K	1.00000	* 11	.46031	3.1	91.5
Q13L	1.00000	* 12	.40159	2.7	94.2
Q13M	1.00000	* 13	.32496	2.2	96.4
Q13N	1.00000	* 14	.27699	1.8	98.2
Q13O	1.00000	* 15	.26538	1.8	100.0

PC Extracted 4 factors.

Factor Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
Q13A	.33899	-.08940	.76673	-.10446
Q13B	.50744	-.37554	.27667	.47259
Q13C	.58591	-.19597	.08230	.47153
Q13D	.64934	-.15681	-.06069	-.39151
Q13E	.64141	-.03379	-.14546	-.20625
Q13F	.47721	.54997	-.00969	-.21760
Q13G	.41680	.71591	.04147	.22689
Q13H	.41685	.68606	.04537	.39387
Q13I	.62596	.16703	.11641	-.30318
Q13J	.73148	-.28935	-.32244	.08386
Q13K	.59985	.11166	-.40183	-.11670
Q13L	.72777	-.23205	-.30066	.17367
Q13M	.66480	.06023	.18041	-.13919
Q13N	.50859	-.10569	.37089	-.21173
Q13O	.76435	-.21578	-.04331	.03035

Final Statistics:

Variable	Communality	* Factor	Eigenvalue	Pct of Var	Cum Pct
		*			

Q13A	.72169 *	1	5.22517	34.8	34.8
Q13B	.69841 *	2	1.73812	11.6	46.4
Q13C	.61081 *	3	1.24127	8.3	54.7
Q13D	.60320 *	4	1.11424	7.4	62.1
Q13E	.47624 *				
Q13F	.57764 *				
Q13G	.73945 *				
Q13H	.80163 *				
Q13I	.52519 *				
Q13J	.72978 *				
Q13K	.54738 *				
Q13L	.70406 *				
Q13M	.49752 *				
Q13N	.45223 *				
Q13O	.63359 *				

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normalization.

Varimax converged in 6 iterations.

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
Q13A	-.08003	.03764	.19125	.82297
Q13B	.08949	-.01823	.78388	.27495
Q13C	.22244	.16172	.72059	.12622
Q13D	.69776	-.02804	.03926	.33766
Q13E	.64072	.12781	.11991	.18712
Q13F	.37686	.59582	-.19178	.20938
Q13G	.09793	.84971	.06613	.05904
Q13H	.03011	.86980	.21011	.00377
Q13I	.51062	.28536	-.01810	.42744
Q13J	.70980	.00429	.47492	-.01986
Q13K	.68248	.25870	.08199	-.08913
Q13L	.65080	.08024	.52208	-.01889
Q13M	.45278	.25147	.17975	.44380
Q13N	.29305	.03619	.14476	.58659
Q13O	.60572	.07740	.44776	.24538

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.74270	.34509	.44236	.36554
FACTOR 2	-.13370	.89517	-.42022	-.06491
FACTOR 3	-.50534	.03895	.11173	.85477
FACTOR 4	-.41850	.27941	.78438	-.36268

IMPORTANCE OF ENVIRONMENTAL ISSUES

A) BY SECTOR

MANOVA q5a to q5b by q3 (1,10) /print cellinfo.

226 cases accepted.

0 cases rejected because of out-of-range factor values.

20 cases rejected because of missing data.

10 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q5A		IMP ENV ISSUES - COMP		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	3.750	.707	8
Q3	ENERGY-W	4.500	.707	2
Q3	MINERAL	4.333	.577	3
Q3	ENGINEER	3.727	.935	22
Q3	OTHER MA	3.896	.973	48
Q3	CONSTRUC	3.733	.884	15
Q3	DISTRIBU	3.333	1.073	12
Q3	TRANSPOR	2.800	.447	5
Q3	FINANCIA	3.643	.745	14
Q3	OTHER SE	3.794	.978	37
For entire sample		3.761	.945	226

Variable .. Q5B		IMP ENV ISS - IND		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	4.125	.354	8
Q3	ENERGY-W	3.500	.707	2
Q3	MINERAL	3.000	2.000	3
Q3	ENGINEER	4.227	.613	22
Q3	OTHER MA	4.313	.589	48
Q3	CONSTRUC	4.333	.488	15
Q3	DISTRIBU	3.583	.900	12
Q3	TRANSPOR	4.400	.548	5
Q3	FINANCIA	4.214	.579	14
Q3	OTHER SE	4.278	.703	37
For entire sample		4.217	.719	226

EFFECT .. Q3

Multivariate Tests of Significance (S = 2, M = 3, N = 106 1/2)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillais	.20313	2.71310	18.00	432.00	.000
Hotelling	.23592	2.80482	18.00	428.00	.000
Wilks	.80364	2.75917	18.00	430.00	.000
Roy	.16113				

Univariate F-tests with (9,216) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q5A	10.09710	191.00004	1.12192	.88426	1.26877	.255
Q5B	11.53329	104.84262	1.28148	.48538	2.64013	.006

IMPORTANCE OF PARTICULAR ENVIRONMENTAL ISSUES

A) BY SECTOR

MANOVA q6a to q6m by q3 (1,10) /print cellinfo.

218 cases accepted.

0 cases rejected because of out-of-range factor values.

28 cases rejected because of missing data.

10 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q6A		ENV ISS - ACID RAIN			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	AGRI-FOR	3.750	.707	8	
Q3	ENERGY-W	3.000	.000	2	
Q3	MINERAL	3.000	2.828	2	
Q3	ENGINEER	2.864	.990	22	
Q3	OTHER MA	3.312	1.257	48	
Q3	CONSTRUC	3.667	1.113	15	
Q3	DISTRIBU	3.000	.775	11	
Q3	TRANSPOR	3.000	1.414	5	
Q3	FINANCIA	2.917	.669	12	
Q3	OTHER SE	3.194	1.271	93	
For entire sample		3.206	1.179	218	

Variable .. Q6B		ENV ISS - CPC'S			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	AGRI-FOR	3.625	.744	8	
Q3	ENERGY-W	3.000	.000	2	
Q3	MINERAL	3.000	2.828	2	
Q3	ENGINEER	3.227	1.110	22	
Q3	OTHER MA	3.521	1.203	48	
Q3	CONSTRUC	3.533	1.187	15	
Q3	DISTRIBU	3.091	.831	11	
Q3	TRANSPOR	3.000	1.414	5	
Q3	FINANCIA	3.083	.900	12	
Q3	OTHER SE	3.452	1.281	93	
For entire sample		3.399	1.188	218	

Variable .. Q6C		ENV ISS - GLOBAL WARMING			
FACTOR	CODE	Mean	Std. Dev.	N	

Q3	AGRI-FOR	3.875	.835	8
Q3	ENERGY-W	3.500	.707	2
Q3	MINERAL	3.000	1.414	2
Q3	ENGINEER	3.182	1.006	22
Q3	OTHER MA	3.563	1.219	48
Q3	CONSTRUC	3.600	1.404	15
Q3	DISTRIBU	3.182	.751	11
Q3	TRANSPOR	3.000	1.414	5
Q3	FINANCIA	3.083	.793	12
Q3	OTHER SE	3.323	1.304	93
For entire sample		3.372	1.197	218

Variable .. Q6D		ENV ISS - WATER POLLUTION		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	4.375	.744	8
Q3	ENERGY-W	5.000	.000	2
Q3	MINERAL	4.500	.707	2
Q3	ENGINEER	3.818	1.006	22
Q3	OTHER MA	3.958	1.166	48
Q3	CONSTRUC	4.400	.910	15
Q3	DISTRIBU	3.909	.944	11
Q3	TRANSPOR	3.400	1.673	5
Q3	FINANCIA	3.000	.739	12
Q3	OTHER SE	3.645	1.282	93
For entire sample		3.803	1.181	218

Variable .. Q6E		ENV ISS - ENERGY USAGE		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	3.500	.535	8
Q3	ENERGY-W	5.000	.000	2
Q3	MINERAL	5.000	.000	2
Q3	ENGINEER	4.182	.733	22
Q3	OTHER MA	4.063	.398	48
Q3	CONSTRUC	4.200	.862	15
Q3	DISTRIBU	4.364	.674	11
Q3	TRANSPOR	3.800	.837	5
Q3	FINANCIA	4.000	.603	12
Q3	OTHER SE	3.914	1.148	93
For entire sample		4.023	.990	218

Variable .. Q6F		ENV ISS - EFFLUENT WASTE DISPOSAL		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	3.875	1.126	8
Q3	ENERGY-W	5.000	.000	2
Q3	MINERAL	4.000	1.414	2
Q3	ENGINEER	3.818	1.097	22
Q3	OTHER MA	3.813	1.161	48
Q3	CONSTRUC	4.133	1.060	15
Q3	DISTRIBU	3.727	.647	11
Q3	TRANSPOR	2.600	.894	5

Q3	FINANCIA	3.250	.965	12
Q3	OTHER SE	3.677	1.267	93
For entire sample		3.729	1.178	218

Variable .. Q6G		ENV ISS - DEFORESTATION		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	3.250	.886	8
Q3	ENERGY-W	3.000	.000	2
Q3	MINERAL	3.000	2.828	2
Q3	ENGINEER	3.273	1.202	22
Q3	OTHER MA	3.500	1.272	48
Q3	CONSTRUC	3.733	1.163	15
Q3	DISTRIBU	3.727	.786	11
Q3	TRANSPOR	2.600	.894	5
Q3	FINANCIA	3.167	.937	12
Q3	OTHER SE	3.441	1.306	93
For entire sample		3.422	1.220	218

Variable .. Q6H		ENV ISS - NOISE POLLUTION		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	3.250	.886	8
Q3	ENERGY-W	3.500	2.121	2
Q3	MINERAL	5.000	.000	2
Q3	ENGINEER	3.818	.588	22
Q3	OTHER MA	3.646	1.000	48
Q3	CONSTRUC	4.267	.704	15
Q3	DISTRIBU	3.636	.809	11
Q3	TRANSPOR	3.600	.548	5
Q3	FINANCIA	3.583	.793	12
Q3	OTHER SE	3.699	1.223	93
For entire sample		3.720	1.038	218

Variable .. Q6I		ENV ISS - VEHICLE EMISSIONS		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	3.625	.744	8
Q3	ENERGY-W	3.500	2.121	2
Q3	MINERAL	4.500	.707	2
Q3	ENGINEER	3.318	1.041	22
Q3	OTHER MA	3.354	1.246	48
Q3	CONSTRUC	3.733	1.100	15
Q3	DISTRIBU	3.636	.674	11
Q3	TRANSPOR	3.000	1.225	5
Q3	FINANCIA	3.500	.905	12
Q3	OTHER SE	3.634	1.232	93
For entire sample		3.532	1.153	218

Variable .. Q6J		ENV ISS - SOLID WASTE DISPOSAL		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	3.625	.744	8
Q3	ENERGY-W	4.000	1.414	2

Q3	MINERAL	3.500	.707	2
Q3	ENGINEER	3.591	1.182	22
Q3	OTHER MA	3.813	1.161	48
Q3	CONSTRUC	4.200	.414	15
Q3	DISTRIBU	3.909	.539	11
Q3	TRANSPOR	2.200	1.095	5
Q3	FINANCIA	3.250	.452	12
Q3	OTHER SE	3.602	1.336	93
For entire sample		3.656	1.166	218

Variable .. Q6K		ENV ISS - RESOURCE DEPLETION		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	3.375	.744	8
Q3	ENERGY-W	3.500	2.121	2
Q3	MINERAL	5.000	.000	2
Q3	ENGINEER	3.409	1.182	22
Q3	OTHER MA	3.812	1.045	48
Q3	CONSTRUC	3.800	1.146	15
Q3	DISTRIBU	3.364	.809	11
Q3	TRANSPOR	3.000	1.225	5
Q3	FINANCIA	3.250	.452	12
Q3	OTHER SE	3.516	1.274	93
For entire sample		3.564	1.143	218

Variable .. Q6L		ENV ISS - EMPLOYEE H/S		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	4.750	.707	8
Q3	ENERGY-W	5.000	.000	2
Q3	MINERAL	5.000	.000	2
Q3	ENGINEER	4.545	.596	22
Q3	OTHER MA	4.646	.699	48
Q3	CONSTRUC	4.333	1.113	15
Q3	DISTRIBU	4.818	.405	11
Q3	TRANSPOR	4.400	.548	5
Q3	FINANCIA	4.750	.452	12
Q3	OTHER SE	4.398	.922	93
For entire sample		4.528	.804	218

Variable .. Q6M		ENV ISS - FINANCIAL SUPPORT ENV GROUPS		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	2.875	.641	8
Q3	ENERGY-W	3.000	.000	2
Q3	MINERAL	4.000	1.414	2
Q3	ENGINEER	2.682	1.211	22
Q3	OTHER MA	3.188	1.104	48
Q3	CONSTRUC	3.067	1.100	15
Q3	DISTRIBU	3.273	.647	11
Q3	TRANSPOR	3.000	.707	5
Q3	FINANCIA	3.000	.739	12
Q3	OTHER SE	3.194	1.145	93
For entire sample		3.115	1.074	218

EFFECT .. Q3

Multivariate Tests of Significance (S = 9, M = 1 1/2, N = 97)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillai's	.70573	1.33725	117.00	1836.00	.011
Hotelling's	.80607	1.33810	117.00	1748.00	.011
Wilks	.47060	1.34080	117.00	1478.36	.011
Roys	.18753				

Univariate F-tests with (9,208) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q6A	10.54147	291.16954	1.17127	1.39985	.83671	.583
Q6B	5.97066	300.30915	.66341	1.44379	.45949	.900
Q6C	7.96783	302.93584	.88531	1.45642	.60787	.790
Q6D	23.95454	278.56381	2.66162	1.33925	1.98739	.042
Q6E	9.74281	203.14251	1.08253	.97665	1.10842	.358
Q6F	15.88415	285.14796	1.76491	1.37090	1.28740	.245
Q6G	8.40413	314.77019	.93379	1.51332	.61705	.782
Q6H	10.51395	223.41724	1.16822	1.07412	1.08760	.373
Q6I	7.59966	280.67557	.84441	1.34940	.62576	.774
Q6J	19.55291	275.64434	2.17255	1.32521	1.63939	.106
Q6K	12.17397	271.42694	1.35266	1.30494	1.03657	.412
Q6L	5.70188	134.63298	.63354	.64727	.97879	.459
Q6M	7.54152	242.59151	.83795	1.16631	.71846	.692

IMPORTANCE OF ENVIRONMENTAL ISSUES

BY REDUCED SECTOR

MANOVA q5a to q5b by q3 (1,3) /print cellinfo.

227 cases accepted.

10 cases rejected because of out-of-range factor values.

4 cases rejected because of missing data.

3 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q5A		IMP ENV ISSUES - COMP			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	3.851	.927	94	
Q3	service	3.725	.961	120	
Q3	retail	3.385	1.044	13	
For entire sample		3.758	.954	227	

Cell Means and Standard Deviations (CONT.)

Variable .. Q5B		IMP ENV ISS - IND			
FACTOR	CODE	Mean	Std. Dev.	N	

Q3	manufact	4.266	.721	94
Q3	service	4.283	.688	120
Q3	retail	3.615	.870	13
For entire sample		4.238	.726	227

EFFECT .. Q3

Multivariate Tests of Significance (S = 2, M = -1/2, N = 110 1/2)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillai's	.05214	2.99793	4.00	448.00	.018
Hotelling's	.05436	3.01703	4.00	444.00	.018
Wilks	.94816	3.00758	4.00	446.00	.018
Roys	.04560				

Univariate F-tests with (2,224) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q5A	2.75719	202.91682	1.37860	.90588	1.52183	.221
Q5B	5.35953	113.79465	2.67977	.50801	5.27501	.006

IMPORTANCE OF PARTICULAR ENVIRONMENTAL ISSUESBY REDUCED SECTOR

MANOVA q6a to q6m by q3 (1,3) /print cellinfo.

219 cases accepted.

10 cases rejected because of out-of-range factor values.

12 cases rejected because of missing data.

3 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q6A		ENV ISS - ACID RAIN			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	3.258	1.188	93	
Q3	service	3.167	1.211	114	
Q3	retail	2.833	.937	12	
For entire sample		3.187	1.187	219	

Cell Means and Standard Deviations (CONT.)

Variable .. Q6B		ENV ISS - CFC'S			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	3.473	1.185	93	
Q3	service	3.395	1.238	114	
Q3	retail	2.917	.996	12	
For entire sample		3.402	1.205	219	

Variable .. Q6C		ENV ISS - GLOBAL WARMING			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	3.505	1.194	93	
Q3	service	3.289	1.246	114	
Q3	retail	3.000	.953	12	
For entire sample		3.365	1.213	219	

Cell Means and Standard Deviations (CONT.)

Variable .. Q6D		ENV ISS - WATER POLLUTION			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	3.946	1.146	93	
Q3	service	3.579	1.254	114	
Q3	retail	3.667	1.231	12	
For entire sample		3.740	1.216	219	

Variable .. Q6E ENV ISS - ENERGY USAGE

FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	4.129	.923	93	
Q3	service	3.921	1.074	114	
Q3	retail	4.083	1.165	12	
For entire sample		4.018	1.018	219	

Cell Means and Standard Deviations (CONT.)

Variable .. Q6F		ENV ISS - EFFLUENT WASTE DISPOSAL			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	3.817	1.179	93	
Q3	service	3.588	1.247	114	
Q3	retail	3.500	1.000	12	
For entire sample		3.680	1.207	219	

Variable .. Q6G ENV ISS - DEFORESTATION

FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	3.409	1.270	93	
Q3	service	3.377	1.244	114	
Q3	retail	3.500	1.087	12	
For entire sample		3.397	1.242	219	

Cell Means and Standard Deviations (CONT.)

Variable .. Q6H		ENV ISS - NOISE POLLUTION			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	3.839	.876	93	
Q3	service	3.693	1.153	114	
Q3	retail	3.417	1.084	12	
For entire sample		3.740	1.041	219	

Variable .. Q6I ENV ISS - VEHICLE EMISSIONS

FACTOR	CODE	Mean	Std. Dev.	N	
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Q3	manufact	3.419	1.164	93
Q3	service	3.588	1.181	114
Q3	retail	3.417	.996	12
For entire sample		3.507	1.163	219

Cell Means and Standard Deviations (CONT.)

Variable .. Q6J ENV ISS - SOLID WASTE DISPOSAL

FACTOR	CODE	Mean	Std. Dev.	N
Q3	manufact	3.817	1.103	93
Q3	service	3.500	1.278	114
Q3	retail	3.667	.985	12
For entire sample		3.644	1.197	219

Variable .. Q6K ENV ISS - RESOURCE DEPLETION

FACTOR	CODE	Mean	Std. Dev.	N
Q3	manufact	3.699	1.111	93
Q3	service	3.456	1.206	114
Q3	retail	3.167	1.030	12
For entire sample		3.543	1.162	219

Cell Means and Standard Deviations (CONT.)

Variable .. Q6L ENV ISS - EMPLOYEE H/S

FACTOR	CODE	Mean	Std. Dev.	N
Q3	manufact	4.591	.741	93
Q3	service	4.439	.873	114
Q3	retail	4.750	.452	12
For entire sample		4.521	.803	219

Variable .. Q6M ENV ISS - FINANCIAL SUPPORT ENV GROUPE

FACTOR	CODE	Mean	Std. Dev.	N
Q3	manufact	3.032	1.127	93
Q3	service	3.150	1.102	114
Q3	retail	3.083	.900	12
For entire sample		3.100	1.100	219

Cell Means and Standard Deviations (CONT.)

EFFECT .. Q3

Multivariate Tests of Significance (S = 2, M = 5, N = 101)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillai's	.20698	1.82032	26.00	410.00	.009
Hotelling's	.23388	1.82607	26.00	406.00	.009
Wilks	.80265	1.82325	26.00	408.00	.009
Roys	.13641				

EFFECT .. Q3 (CONT.)

Univariate F-tests with (2,216) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
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Q6A	2.01775	305.30645	1.00887	1.41346	.71376	.491
Q6B	3.30296	313.33630	1.65148	1.45063	1.13846	.322
Q6C	4.08158	316.69468	2.04079	1.46618	1.39151	.251
Q6D	6.97706	315.18732	3.48853	1.45920	2.39071	.094
Q6E	2.26919	223.65775	1.13459	1.03545	1.09575	.336
Q6F	3.11029	314.51528	1.55515	1.45609	1.06803	.345
Q6G	.18454	336.25382	.09227	1.55673	.05927	.942
Q6H	2.41269	233.75170	1.20634	1.08218	1.11473	.330
Q6I	1.55509	293.18463	.77755	1.35734	.57285	.565
Q6J	5.16004	307.05914	2.58002	1.42157	1.81491	.165
Q6K	4.82064	289.51726	2.41032	1.34036	1.79827	.168
Q6L	1.86424	138.79329	.93212	.64256	1.45063	.237
Q6M	.81217	262.97779	.40608	1.21749	.33354	.717

IMPORTANCE OF ENVIRONMENTAL ISSUES

C) EXPORTERS AND NONE EXPORTERS

MANOVA q5a to q5b by q14 (1,2) /print cellinfo.

239 cases accepted.

0 cases rejected because of out-of-range factor values.

3 cases rejected because of missing data.

2 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q5A		IMP ENV ISSUES - COMP			
FACTOR	CODE	Mean	Std. Dev.	N	
Q14	exporter	3.832	.986	95	
Q14	none exp	3.715	.913	144	
For entire sample		3.762	.942	239	

Cell Means and Standard Deviations (CONT.)

Variable .. Q5B		IMP ENV ISS - IND			
FACTOR	CODE	Mean	Std. Dev.	N	
Q14	exporter	4.368	.637	95	
Q14	none exp	4.112	.750	144	
For entire sample		4.226	.715	239	

EFFECT .. Q14

Multivariate Tests of Significance (S = 1, M = 0, N = 117)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillais	.02701	3.27622	2.00	236.00	.039
Hotelling	.02776	3.27622	2.00	236.00	.039
Wilks	.97299	3.27622	2.00	236.00	.039
Roy	.02701				

Univariate F-tests with (1,237) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q5A	.77421	210.63165	.77421	.88874	.87113	.352
Q5B	3.20084	118.59832	3.20084	.50041	6.39638	.012

IMPORTANCE OF PARTICULAR ENVIRONMENTAL ISSUES

B1 EXPORTERS/NONE EXPORTERS

MANOVA q6a to q6m by q14 (1,2) /print cellinfo.

229 cases accepted.

0 cases rejected because of out-of-range factor values.

12 cases rejected because of missing data.

2 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q6A		ENV ISS - ACID RAIN			
FACTOR	CODE	Mean	Std. Dev.	N	
Q14	exporter	3.293	1.218	92	
Q14	none exp	3.146	1.154	137	
For entire sample		3.205	1.180	229	

Cell Means and Standard Deviations (CONT.)

Variable .. Q6B		ENV ISS - CPC'S			
FACTOR	CODE	Mean	Std. Dev.	N	
Q14	exporter	3.565	1.252	92	
Q14	none exp	3.299	1.159	137	
For entire sample		3.406	1.202	229	

Variable .. Q6C		ENV ISS - GLOBAL WARMING			
FACTOR	CODE	Mean	Std. Dev.	N	
Q14	exporter	3.641	1.201	92	
Q14	none exp	3.248	1.168	137	
For entire sample		3.406	1.194	229	

Variable .. Q6D		ENV ISS - WATER POLLUTION			
FACTOR	CODE	Mean	Std. Dev.	N	
Q14	exporter	4.076	1.051	92	
Q14	none exp	3.577	1.264	137	
For entire sample		3.777	1.206	229	

Cell Means and Standard Deviations (CONT.)

Variable .. Q6E		ENV ISS - ENERGY USAGE			
FACTOR	CODE	Mean	Std. Dev.	N	

Q14	exporter	4.130	.940	92
Q14	none exp	3.942	1.049	137
For entire sample		4.017	1.009	229

Variable .. Q6F ENV ISS - EFFLUENT WASTE DISPOSAL

FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	3.891	1.114	92
Q14	none exp	3.569	1.247	137
For entire sample		3.699	1.203	229

Variable .. Q6G ENV ISS - DEFORESTATION

FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	3.457	1.244	92
Q14	none exp	3.343	1.239	137
For entire sample		3.389	1.240	229

Cell Means and Standard Deviations (CONT.)

Variable .. Q6H ENV ISS - NOISE POLLUTION

FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	3.772	1.017	92
Q14	none exp	3.715	1.057	137
For entire sample		3.738	1.039	229

Variable .. Q6I ENV ISS - VEHICLE EMISSIONS

FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	3.457	1.226	92
Q14	none exp	3.555	1.104	137
For entire sample		3.515	1.153	229

Variable .. Q6J ENV ISS - SOLID WASTE DISPOSAL

FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	3.641	1.254	92
Q14	none exp	3.620	1.151	137
For entire sample		3.629	1.191	229

Variable .. Q6K ENV ISS - RESOURCE DEPLETION

FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	3.489	1.181	92
Q14	none exp	3.584	1.142	137
For entire sample		3.546	1.156	229

Variable .. Q6L ENV ISS - EMPLOYEE H/S

FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	4.576	.802	92
Q14	none exp	4.504	.796	137
For entire sample		4.533	.797	229

Variable .. Q6M		ENV ISS - FINANCIAL SUPPORT ENV GROUPS			
FACTOR	CODE	Mean	Std. Dev.	N	
Q14	exporter	3.043	1.257	92	
Q14	none exp	3.124	.966	137	
For entire sample		3.092	1.090	229	

Cell Means and Standard Deviations (CONT.)

EFFECT .. Q14

Multivariate Tests of Significance (S = 1, M = 5 1/2, N = 106 1/2)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillai's	.12164	2.29040	13.00	215.00	.007
Hotellings	.13849	2.29040	13.00	215.00	.007
Wilks	.87836	2.29040	13.00	215.00	.007
Roys	.12164				

EFFECT .. Q14 (CONT.)

Univariate F-tests with (1,227) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q6A	1.19733	316.15638	1.19733	1.39276	.85968	.355
Q6B	3.89282	325.33862	3.89282	1.43321	2.71615	.101
Q6C	8.50635	316.72509	8.50635	1.39526	6.09659	.014
Q6D	13.72927	317.91265	13.72927	1.40050	9.80315	.002
Q6E	1.96250	229.96763	1.96250	1.01307	1.93718	.165
Q6F	5.70532	324.50428	5.70532	1.42953	3.99104	.047
Q6G	.70848	349.70200	.70848	1.54054	.45989	.498
Q6H	.17514	246.10433	.17514	1.08416	.16155	.688
Q6I	.53100	302.66550	.53100	1.33333	.39825	.529
Q6J	.02396	323.42582	.02396	1.42478	.01682	.897
Q6K	.49476	304.27380	.49476	1.34041	.36911	.544
Q6L	.28880	144.71557	.28880	.63751	.45301	.502
Q6M	.35764	270.71660	.35764	1.19258	.29586	.584

IMPORTANCE OF PARTICULAR ENVIRONMENTAL ISSUES

INITIATIVE/NO INITIATIVE

231 cases accepted.

0 cases rejected because of out-of-range factor values.

10 cases rejected because of missing data.

2 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q6A		ENV ISS - ACID RAIN			
FACTOR	CODE	Mean	Std. Dev.	N	
Q15	SOME INI	3.352	1.112	128	
Q15	NO INITI	3.010	1.233	103	
For entire sample		3.199	1.177	231	

Cell Means and Standard Deviations (CONT.)

Variable .. Q6B		ENV ISS - CFC'S		
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	3.586	1.083	128
Q15	NO INITI	3.175	1.294	103
For entire sample		3.403	1.197	231

Variable .. Q6C		ENV ISS - GLOBAL WARMING		
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	3.578	1.098	128
Q15	NO INITI	3.165	1.284	103
For entire sample		3.394	1.200	231

Variable .. Q6D		ENV ISS - WATER POLLUTION		
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	3.906	1.111	128
Q15	NO INITI	3.621	1.299	103
For entire sample		3.779	1.205	231

Cell Means and Standard Deviations (CONT.)

Variable .. Q6E		ENV ISS - ENERGY USAGE		
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	4.195	.905	128
Q15	NO INITI	3.786	1.081	103
For entire sample		4.013	1.006	231

Variable .. Q6F		ENV ISS - EFFLUENT WASTE DISPOSAL		
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	3.813	1.114	128
Q15	NO INITI	3.544	1.319	103
For entire sample		3.693	1.214	231

Variable .. Q6G		ENV ISS - DEFORESTATION		
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	3.492	1.143	128
Q15	NO INITI	3.252	1.334	103
For entire sample		3.385	1.235	231

Cell Means and Standard Deviations (CONT.)

Variable .. Q6H		ENV ISS - NOISE POLLUTION		
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	3.836	.937	128
Q15	NO INITI	3.592	1.150	103
For entire sample		3.727	1.042	231

Variable .. Q6I		ENV ISS - VEHICLE EMISSIONS		
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FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	3.625	1.101	128
Q15	NO INITI	3.350	1.218	103
For entire sample		3.502	1.160	231

Variable .. Q6J ENV ISS - SOLID WASTE DISPOSAL				
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	3.836	1.092	128
Q15	NO INITI	3.398	1.271	103
For entire sample		3.641	1.193	231

Cell Means and Standard Deviations (CONT.)

Variable .. Q6K ENV ISS - RESOURCE DEPLETION				
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	3.687	1.063	128
Q15	NO INITI	3.369	1.237	103
For entire sample		3.545	1.152	231

Variable .. Q6L ENV ISS - EMPLOYEE H/S				
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	4.578	.809	128
Q15	NO INITI	4.485	.778	103
For entire sample		4.537	.795	231

Variable .. Q6M ENV ISS - FINANCIAL SUPPORT ENV GROUPS				
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	3.227	1.036	128
Q15	NO INITI	2.913	1.130	103
For entire sample		3.087	1.088	231

Cell Means and Standard Deviations (CONT.)

EFFECT .. Q15

Multivariate Tests of Significance ($S = 1$, $M = 5 \frac{1}{2}$, $N = 107 \frac{1}{2}$)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillais	.06809	1.21957	13.00	217.00	.267
Hotellings	.07306	1.21957	13.00	217.00	.267
Wilks	.93191	1.21957	13.00	217.00	.267
Roy's	.06809				

EFFECT .. Q15 (CONT.)

Univariate F-tests with (1,229) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q6A	6.66985	312.16998	6.66985	1.36319	4.89283	.028
Q6B	9.64939	319.90906	9.64939	1.39698	6.90730	.009
Q6C	9.73859	321.41292	9.73859	1.40355	6.93854	.009

Q6D	4.63225	329.10801	4.63225	1.43715	3.22321	.074
Q6E	9.54288	223.41816	9.54288	.97563	9.78130	.002
Q6F	4.12409	335.05340	4.12409	1.46312	2.81871	.095
Q6G	3.28088	347.42908	3.28088	1.51716	2.16252	.143
Q6H	3.38971	246.42847	3.38971	1.07611	3.14997	.077
Q6I	4.33144	305.41748	4.33144	1.33370	3.24769	.073
Q6J	10.94319	316.23430	10.94319	1.38094	7.92447	.005
Q6K	5.79214	299.48058	5.79214	1.30778	4.42901	.036
Q6L	.49032	144.94691	.49032	.63296	.77466	.380
Q6M	5.62512	266.64328	5.62512	1.16438	4.83099	.029

IMPORTANCE OF ENVIRONMENTAL ISSUES

BY SIZE OF COMPANY

MANOVA q5a to q5b by q2 (1,5) /print cellinfo.

237 cases accepted.

0 cases rejected because of out-of-range factor values.

4 cases rejected because of missing data.

3 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q5A		IMP ENV ISSUES - COMP			
FACTOR	CODE	Mean	Std. Dev.	N	
Q2	0-10	3.687	.969	131	
Q2	11-25	3.688	.854	48	
Q2	26-100	3.881	1.017	42	
Q2	101-200	4.125	.641	8	

Cell Means and Standard Deviations (CONT.)

Variable .. Q5A		IMP ENV ISSUES - COMP			
FACTOR	CODE	Mean	Std. Dev.	N	
Q2	200+	4.500	.535	8	
For entire sample		3.764	.945	237	

Variable .. Q5B		IMP ENV ISS - IND			
FACTOR	CODE	Mean	Std. Dev.	N	
Q2	0-10	4.229	.740	131	
Q2	11-25	4.208	.743	48	
Q2	26-100	4.071	.640	42	
Q2	101-200	4.500	.535	8	
Q2	200+	4.875	.354	8	
For entire sample		4.228	.718	237	

Cell Means and Standard Deviations (CONT.)

EFFECT .. Q2

Multivariate Tests of Significance (S = 2, M = 1/2, N = 114 1/2)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
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Pillais	.06706	2.01227	8.00	464.00	.043
Hotellings	.06954	1.99931	8.00	460.00	.045
Wilks	.93399	2.00580	8.00	462.00	.044
Roys	.04182				

EFFECT .. Q2 (CONT.)

Univariate F-tests with (4,232) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q5A	7.00773	203.76020	1.75193	.87828	1.99474	.096
Q5B	4.98905	116.70715	1.24726	.50305	2.47941	.045

IMPORTANCE OF PARTICULAR ENVIRONMENTAL ISSUES

BY SIZE

MANOVA q6a to q6m by q2 (1,5) /print cellinfo.

229 cases accepted.

0 cases rejected because of out-of-range factor values.

12 cases rejected because of missing data.

5 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q6A		ENV ISS - ACID RAIN			
FACTOR	CODE	Mean	Std. Dev.	N	
Q2	0-10	3.271	1.210	129	
Q2	11-25	3.205	1.153	44	
Q2	26-100	3.075	1.228	40	
Q2	101-200	3.125	.354	8	

Cell Means and Standard Deviations (CONT.)

Variable .. Q6A		ENV ISS - ACID RAIN			
FACTOR	CODE	Mean	Std. Dev.	N	
Q2	200+	2.875	.991	8	
For entire sample		3.205	1.172	229	

Variable .. Q6B		ENV ISS - CFC'S			
FACTOR	CODE	Mean	Std. Dev.	N	
Q2	0-10	3.411	1.190	129	
Q2	11-25	3.250	1.184	44	
Q2	26-100	3.400	1.257	40	
Q2	101-200	3.375	1.061	8	
Q2	200+	4.250	.707	8	
For entire sample		3.406	1.187	229	

Cell Means and Standard Deviations (CONT.)

Variable .. Q6C		ENV ISS - GLOBAL WARMING			
FACTOR	CODE	Mean	Std. Dev.	N	
Q2	0-10	3.364	1.218	129	
Q2	11-25	3.364	1.278	44	
Q2	26-100	3.400	1.128	40	
Q2	101-200	3.250	1.282	8	
Q2	200+	3.875	.835	8	
For entire sample		3.384	1.200	229	

Variable .. Q6D		ENV ISS - WATER POLLUTION			
FACTOR	CODE	Mean	Std. Dev.	N	
Q2	0-10	3.550	1.231	129	
Q2	11-25	3.955	1.219	44	
Q2	26-100	4.000	1.086	40	
Q2	101-200	4.375	.916	8	
Q2	200+	4.625	.744	8	
For entire sample		3.773	1.207	229	

Cell Means and Standard Deviations (CONT.)

Variable .. Q6E		ENV ISS - ENERGY USAGE			
FACTOR	CODE	Mean	Std. Dev.	N	
Q2	0-10	3.806	1.061	129	
Q2	11-25	4.227	1.008	44	
Q2	26-100	4.225	.800	40	
Q2	101-200	4.375	.518	8	
Q2	200+	4.625	.744	8	
For entire sample		4.009	1.009	229	

Variable .. Q6F		ENV ISS - EFFLUENT WASTE DISPOSAL			
FACTOR	CODE	Mean	Std. Dev.	N	
Q2	0-10	3.512	1.238	129	
Q2	11-25	3.841	1.219	44	
Q2	26-100	3.825	1.083	40	
Q2	101-200	4.250	.886	8	
Q2	200+	4.750	.463	8	
For entire sample		3.699	1.203	229	

Cell Means and Standard Deviations (CONT.)

Variable .. Q6G		ENV ISS - DEFORESTATION			
FACTOR	CODE	Mean	Std. Dev.	N	
Q2	0-10	3.372	1.269	129	
Q2	11-25	3.545	1.210	44	
Q2	26-100	3.325	1.248	40	
Q2	101-200	3.500	.756	8	
Q2	200+	3.000	.926	8	
For entire sample		3.389	1.225	229	

Variable .. Q6H		ENV ISS - NOISE POLLUTION			
FACTOR	CODE	Mean	Std. Dev.	N	

Q2	0-10	3.674	1.105	129
Q2	11-25	3.705	1.025	44
Q2	26-100	3.825	.958	40
Q2	101-200	4.000	.926	8
Q2	200+	3.750	.707	8
For entire sample		3.721	1.043	229

Cell Means and Standard Deviations (CONT.)

Variable .. Q6I		ENV ISS - VEHICLE EMISSIONS		
FACTOR	CODE	Mean	Std. Dev.	N
Q2	0-10	3.504	1.173	129
Q2	11-25	3.523	1.089	44
Q2	26-100	3.575	1.238	40
Q2	101-200	3.750	.886	8
Q2	200+	3.000	1.069	8
For entire sample		3.511	1.153	229

Variable .. Q6J		ENV ISS - SOLID WASTE DISPOSAL		
FACTOR	CODE	Mean	Std. Dev.	N
Q2	0-10	3.504	1.245	129
Q2	11-25	3.545	1.088	44
Q2	26-100	3.950	.959	40
Q2	101-200	4.500	.756	8
Q2	200+	4.125	1.458	8
For entire sample		3.646	1.182	229

Cell Means and Standard Deviations (CONT.)

Variable .. Q6K		ENV ISS - RESOURCE DEPLETION		
FACTOR	CODE	Mean	Std. Dev.	N
Q2	0-10	3.550	1.205	129
Q2	11-25	3.636	1.163	44
Q2	26-100	3.425	1.059	40
Q2	101-200	3.875	.835	8
Q2	200+	3.000	.926	8
For entire sample		3.537	1.153	229

Variable .. Q6L		ENV ISS - EMPLOYEE H/S		
FACTOR	CODE	Mean	Std. Dev.	N
Q2	0-10	4.442	.828	129
Q2	11-25	4.659	.608	44
Q2	26-100	4.575	.958	40
Q2	101-200	4.875	.354	8
Q2	200+	4.750	.463	8
For entire sample		4.533	.797	229

Cell Means and Standard Deviations (CONT.)

Variable .. Q6M		ENV ISS - FINANCIAL SUPPORT ENV GROUPS		
FACTOR	CODE	Mean	Std. Dev.	N

Q2	0-10	3.155	1.057	129
Q2	11-25	3.114	1.166	44
Q2	26-100	2.900	1.150	40
Q2	101-200	2.875	.641	8
Q2	200+	3.125	1.126	8
For entire sample		3.092	1.082	229

EFFECT .. Q2

Multivariate Tests of Significance (S = 4, M = 4, N = 105)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillais	.37775	1.72475	52.00	860.00	.001
Hotelling's	.45667	1.84865	52.00	842.00	.000
Wilks	.66094	1.78639	52.00	823.18	.001
Roys	.23006				

Univariate F-tests with (4,224) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q6A	2.16574	311.18797	.54144	1.38923	.38974	.816
Q6B	6.78163	314.44981	1.69541	1.40379	1.20773	.308
Q6C	2.15062	326.03279	.53765	1.45550	.36939	.830
Q6D	18.61057	313.58157	4.65264	1.39992	3.32351	.011
Q6E	13.37522	218.60731	3.34381	.97593	3.42629	.010
Q6F	17.31569	312.89392	4.32892	1.39685	3.09906	.016

EFFECT .. Q2 (CONT.)

Univariate F-tests with (4,224) D. F. (CONT.)

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q6G	2.58685	339.82363	.64671	1.51707	.42629	.790
Q6H	1.35386	246.75967	.33847	1.10161	.30725	.873
Q6I	2.72237	300.50033	.68059	1.14152	.50733	.730
Q6J	14.41719	303.93215	3.60430	1.35684	2.65639	.034
Q6K	4.18020	298.75430	1.04505	1.33372	.78356	.537
Q6L	3.15405	141.85032	.78851	.63326	1.24516	.293
Q6M	2.39319	264.68104	.59830	1.18161	.50634	.731

MANOVA Q5A TO Q5H BY Q1 (1,4).

236 cases accepted.

0 cases rejected because of out-of-range factor values.

5 cases rejected because of missing data.

4 non-empty cells.

1 design will be processed.

EFFECT .. Q1

Multivariate Tests of Significance (S = 2, M = 0, N = 114 1/2)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
-----------	-------	-----------	------------	----------	-----------

Pillais	.05648	2.24737	6.00	464.00	.038
Hotellings	.05899	2.26130	6.00	460.00	.037
Wilks	.94392	2.25441	6.00	462.00	.037
Roya	.04820				

Univariate F-tests with (3,232) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q5A	10.06223	200.11998	3.35408	.86259	3.88839	.010
Q5B	2.66722	117.51499	.88907	.50653	1.75522	.157

IMPORTANCE OF ENVIRONMENTAL ISSUES

BY COMPANY CHARACTERISTICS

MANOVA Q5A TO Q5B BY Q1 (1,4) /print cellinfo.

236 cases accepted.

0 cases rejected because of out-of-range factor values.

5 cases rejected because of missing data.

4 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q5A		IMP ENV ISSUES - COMP			
FACTOR	CODE	Mean	Std. Dev.	N	
Q1	A SINGLE	3.679	.937	159	
Q1	A HEADQU	3.636	1.055	33	
Q1	A SUBSID	4.132	.811	38	
Q1	A SUBSID	4.500	.548	6	
For entire sample		3.767	.946	236	

Cell Means and Standard Deviations (CONT.)

Variable .. Q5B		IMP ENV ISS - IND			
FACTOR	CODE	Mean	Std. Dev.	N	
Q1	A SINGLE	4.195	.725	159	
Q1	A HEADQU	4.212	.740	33	
Q1	A SUBSID	4.316	.662	38	
Q1	A SUBSID	4.833	.408	6	
For entire sample		4.233	.715	236	

EFFECT .. Q1

Multivariate Tests of Significance (S = 2, M = 0, N = 114 1/2)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillais	.05648	2.24737	6.00	464.00	.038
Hotellings	.05899	2.26130	6.00	460.00	.037
Wilks	.94392	2.25441	6.00	462.00	.037
Roya	.04820				

Univariate F-tests with (3,232) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q5A	10.06223	200.11998	3.35408	.86259	3.88839	.010
Q5B	2.66722	117.51499	.88907	.50653	1.75522	.157

IMPORTANCE OF PARTICULAR ENVIRONMENTAL ISSUES

BY COMPANY CHARACTERISTICS

MANOVA Q5A TO Q5B BY Q1 (1,4) /print cellinfo.

228 cases accepted.

0 cases rejected because of out-of-range factor values.

13 cases rejected because of missing data.

4 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q5A		ENV ISS - ACID RAIN			
FACTOR	CODE	Mean	Std. Dev.	N	
Q1	A SINGLE	3.201	1.207	154	
Q1	A HEADQU	3.188	1.091	32	
Q1	A SUBSID	3.222	1.124	36	
Q1	A SUBSID	3.331	1.366	6	
For entire sample		3.206	1.175	228	

Cell Means and Standard Deviations (CONT.)

Variable .. Q5B		ENV ISS - CFC'S			
FACTOR	CODE	Mean	Std. Dev.	N	
Q1	A SINGLE	3.338	1.195	154	
Q1	A HEADQU	3.313	1.091	32	
Q1	A SUBSID	3.667	1.265	36	
Q1	A SUBSID	4.167	.753	6	
For entire sample		3.408	1.189	228	

Variable .. Q6C

		ENV ISS - GLOBAL WARMING			
FACTOR	CODE	Mean	Std. Dev.	N	
Q1	A SINGLE	3.364	1.230	154	
Q1	A HEADQU	3.344	1.153	32	
Q1	A SUBSID	3.417	1.204	36	
Q1	A SUBSID	4.000	.632	6	
For entire sample		3.386	1.202	228	

Cell Means and Standard Deviations (CONT.)

Variable .. Q6D		ENV ISS - WATER POLLUTION			
FACTOR	CODE	Mean	Std. Dev.	N	
Q1	A SINGLE	3.662	1.243	154	

Q1	A HEADQU	3.812	1.176	32
Q1	A SUBSID	4.028	1.055	36
Q1	A SUBSID	5.000	.000	6
For entire sample		3.776	1.209	228

Variable .. Q6E		ENV ISS - ENERGY USAGE		
FACTOR	CODE	Mean	Std. Dev.	N
Q1	A SINGLE	3.916	1.022	154
Q1	A HEADQU	4.094	.928	32
Q1	A SUBSID	4.222	1.045	36
Q1	A SUBSID	4.667	.516	6
For entire sample		4.009	1.011	228

Cell Means and Standard Deviations (CONT.)

Variable .. Q6F		ENV ISS - EFFLUENT WASTE DISPOSAL		
FACTOR	CODE	Mean	Std. Dev.	N
Q1	A SINGLE	3.526	1.216	154
Q1	A HEADQU	3.812	1.120	32
Q1	A SUBSID	4.167	1.108	36
Q1	A SUBSID	4.833	.408	6
For entire sample		3.702	1.205	228

Variable .. Q6G		ENV ISS - DEFORESTATION		
FACTOR	CODE	Mean	Std. Dev.	N
Q1	A SINGLE	3.409	1.261	154
Q1	A HEADQU	3.375	1.212	32
Q1	A SUBSID	3.333	1.121	36
Q1	A SUBSID	3.333	1.366	6
For entire sample		3.390	1.228	228

Cell Means and Standard Deviations (CONT.)

Variable .. Q6H		ENV ISS - NOISE POLLUTION		
FACTOR	CODE	Mean	Std. Dev.	N
Q1	A SINGLE	3.656	1.025	154
Q1	A HEADQU	3.813	1.120	32
Q1	A SUBSID	3.861	1.099	36
Q1	A SUBSID	4.167	.753	6
For entire sample		3.724	1.044	228

Variable .. Q6I		ENV ISS - VEHICLE EMISSIONS		
FACTOR	CODE	Mean	Std. Dev.	N
Q1	A SINGLE	3.481	1.156	154
Q1	A HEADQU	3.531	1.218	32
Q1	A SUBSID	3.639	1.073	36
Q1	A SUBSID	3.500	1.517	6
For entire sample		3.513	1.155	228

Cell Means and Standard Deviations (CONT.)

Variable .. Q6J		ENV ISS - SOLID WASTE DISPOSAL		
-----------------	--	--------------------------------	--	--

FACTOR	CODE	Mean	Std. Dev.	N
Q1	A SINGLE	3.545	1.166	154
Q1	A HEADQU	3.750	1.107	32
Q1	A SUBSID	3.944	1.241	36
Q1	A SUBSID	4.000	1.549	6
For entire sample		3.649	1.183	228

Variable .. Q6K		ENV ISS - RESOURCE DEPLETION		
FACTOR	CODE	Mean	Std. Dev.	N
Q1	A SINGLE	3.597	1.186	154
Q1	A HEADQU	3.563	1.014	32
Q1	A SUBSID	3.306	1.117	36
Q1	A SUBSID	3.333	1.366	6
For entire sample		3.539	1.155	228

Cell Means and Standard Deviations (CONT.)

Variable .. Q6L		ENV ISS - EMPLOYEE H/S		
FACTOR	CODE	Mean	Std. Dev.	N
Q1	A SINGLE	4.505	.785	154
Q1	A HEADQU	4.500	.880	32
Q1	A SUBSID	4.667	.793	36
Q1	A SUBSID	4.833	.408	6
For entire sample		4.539	.793	228

Variable .. Q6M		ENV ISS - FINANCIAL SUPPORT ENV GROUPS		
FACTOR	CODE	Mean	Std. Dev.	N
Q1	A SINGLE	3.104	1.115	154
Q1	A HEADQU	2.875	.942	32
Q1	A SUBSID	3.139	1.046	36
Q1	A SUBSID	3.667	1.211	6
For entire sample		3.092	1.085	228

Cell Means and Standard Deviations (CONT.)

EFFECT .. Q1

Multivariate Tests of Significance (S = 3, M = 4 1/2, N = 105)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillais	.21168	1.24959	39.00	642.00	.146
Hotellings	.24542	1.32568	39.00	632.00	.092
Wilks	.79646	1.28737	39.00	628.53	.117
Roys	.16445				

EFFECT .. Q1 (CONT.)

Univariate F-tests with (3,224) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q6A	.12111	313.19030	.04037	1.39817	.02887	.993
Q6B	6.91590	314.14989	2.30530	1.40245	1.64376	.180

A66

Q6C	2.42997	325.60511	.80999	1.45359	.55723	.644
Q6D	13.30332	318.28878	4.43444	1.42093	3.12080	.027
Q6E	5.80555	226.17690	1.93518	1.00972	1.91656	.128
Q6F	20.61486	309.10444	6.87162	1.37993	4.97969	.002
Q6G	.19817	342.06061	.06606	1.52706	.04326	.988
Q6H	2.81848	244.77363	.93949	1.09274	.85976	.463
Q6I	.74466	302.21586	.24822	1.34918	.18398	.907
Q6J	5.85912	312.07071	1.95304	1.39317	1.40186	.243
Q6K	2.75855	299.88618	.91952	1.33878	.68683	.561
Q6L	1.31790	141.32684	.43930	.63092	.69628	.555
Q6M	3.58924	263.47655	1.19641	1.17623	1.01715	.386

GET /FILE 'c:\spss\portrec.sys'.

The SPSS/PC+ system file is read from

file c:\spss\portrec.sys_

The file was created on 4/19/93 at 11:02:54

and is titled SPSS/PC+ System File Written by Data Entry II

The SPSS/PC+ system file contains

241 cases, each consisting of

94 variables (including system variables).

94 variables will be used in this session.

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This procedure was completed at 11:18:36

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FACTOR /VARIABLES Q6A TO Q6M /save regression (all queens).

This FACTOR analysis requires 23040 (22.5K) BYTES of memory.

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----- FACTOR ANALYSIS -----

Analysis Number 1 Listwise deletion of cases with missing values

Extraction 1 for Analysis 1, Principal-Components Analysis (PC)

Initial Statistics:

Variable	Communality	* Factor	Eigenvalue	Pct of Var	Cum Pct
		*			
Q6A	1.00000	* 1	7.24266	55.7	55.7
Q6B	1.00000	* 2	1.05129	8.1	63.8
Q6C	1.00000	* 3	.99348	7.6	71.4
Q6D	1.00000	* 4	.68422	5.3	76.7
Q6E	1.00000	* 5	.56508	4.5	81.2
Q6F	1.00000	* 6	.54492	4.2	85.4
Q6G	1.00000	* 7	.44709	3.4	88.8
Q6H	1.00000	* 8	.42758	3.3	92.1
Q6I	1.00000	* 9	.26800	2.1	94.2
Q6J	1.00000	* 10	.24012	1.8	96.0
Q6K	1.00000	* 11	.19713	1.5	97.6
Q6L	1.00000	* 12	.16985	1.5	99.0
Q6M	1.00000	* 13	.12859	1.0	100.0

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----- FACTOR ANALYSIS -----

PC Extracted 2 factors.

Factor Matrix:

	FACTOR 1	FACTOR 2
Q6A	.83662	.27880
Q6B	.79106	.35129
Q6C	.81819	.30548
Q6D	.80990	-.17894
Q6E	.71820	-.35025
Q6F	.78442	-.18203
Q6G	.84431	.11765
Q6H	.71140	-.39438
Q6I	.80117	-.14971
Q6J	.75758	-.29675
Q6K	.76565	.00752
Q6L	.20010	.41625
Q6M	.63202	.34036

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FACTOR ANALYSIS

Final Statistics:

Variable	Communality	* Factor	Eigenvalue	Pct of Var	Cum Pct
		*			
Q6A	.77766	* 1	7.24266	55.7	55.7
Q6B	.74918	* 2	1.05129	8.1	63.8
Q6C	.76276	*			
Q6D	.68795	*			
Q6E	.63849	*			
Q6F	.64845	*			
Q6G	.72671	*			
Q6H	.66162	*			
Q6I	.66429	*			
Q6J	.66198	*			
Q6K	.58628	*			
Q6L	.21330	*			
Q6M	.51529	*			

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FACTOR ANALYSIS

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normalization.

Varimax converged in 3 iterations.

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2
Q6A	.51401	.71655
Q6B	.43460	.74853

Q6C	.48344	.72735
Q6D	.76088	.33016
Q6E	.78711	.13764
Q6F	.74206	.31272
Q6G	.61478	.59055
Q6H	.80749	.09791
Q6I	.73667	.34871
Q6J	.78762	.20406
Q6K	.61567	.45522
Q6L	-.08211	.45449
Q6M	.31220	.64639

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----- FACTOR ANALYSIS -----

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2
FACTOR 1	.80988	.58660
FACTOR 2	-.58660	.80988

2 PC EXACT FACTOR SCORES WILL BE SAVED WITH ROOTNAME: QUEENS

FOLLOWING FACTOR SCORES WILL BE ADDED TO THE ACTIVE FILE:

NAME LABEL

QUEENS1	REGR FACTOR SCORE	1 FOR ANALYSIS	1
QUEENS2	REGR FACTOR SCORE	2 FOR ANALYSIS	1

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This procedure was completed at 11:21:18

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T-TEST /PAIRS QUEENS1 QUEENS2.

Paired samples t-test:	QUEENS1	REGR FACTOR SCORE	1 FOR ANALYSIS	1
	QUEENS2	REGR FACTOR SCORE	2 FOR ANALYSIS	1

Variable	Number of Cases	Mean	Standard Deviation	Standard Error
QUEENS1	231	.0000	1.000	.066
QUEENS2	231	.0000	1.000	.066

(Difference)	Standard	Standard	2-Tail	t	Degrees of	2-Tail
Mean	Deviation	Error	Corr. Prob.	Value	Freedom	Prob.
.0000	1.414	.093	.000	1.000	.00	238

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This procedure was completed at 11:24:55

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PROCESS IF (quesn1 gt 0.5).

FREQUENCIES /VARIABLES Q6A TO Q6M.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
There also may be up to 1610 Value Labels for each Variable.

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Q6A ENV ISS - ACID RAIN

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	5	6.3	6.3	6.3
QUITE UNIMPORTANT	2	2	2.5	2.5	8.8
NEITHER UNIMPORTANT	3	28	35.0	35.0	43.8
QUITE IMPORTANT	4	19	23.8	23.8	67.5
EXTREMELY IMPORTANT	5	26	32.5	32.5	100.0
TOTAL		80	100.0	100.0	

Valid Cases 80 Missing Cases 0

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Q6B ENV ISS - CPC'S

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	4	5.0	5.0	5.0
QUITE UNIMPORTANT	2	5	6.3	6.3	11.3
NEITHER UNIMPORTANT	3	19	23.8	23.8	35.0
QUITE IMPORTANT	4	20	25.0	25.0	60.0
EXTREMELY IMPORTANT	5	32	40.0	40.0	100.0
TOTAL		80	100.0	100.0	

Valid Cases 80 Missing Cases 0

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Q6C ENV ISS - GLOBAL WARMING

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
NOT AT ALL IMPORTANT	1	5	6.3	6.3	6.3
QUITE UNIMPORTANT	2	3	3.8	3.8	10.0
NEITHER UNIMPORTANT	3	20	25.0	25.0	35.0
QUITE IMPORTANT	4	22	27.5	27.5	62.5
EXTREMELY IMPORTANT	5	30	37.5	37.5	100.0
TOTAL		80	100.0	100.0	

Valid Cases 80 Missing Cases 0

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Q6D ENV ISS - WATER POLLUTION

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
NOT AT ALL IMPORTANT	1	1	1.3	1.3	1.3
NEITHER UNIMPORTANT	3	3	3.8	3.8	5.0
QUITE IMPORTANT	4	15	18.8	18.8	23.8
EXTREMELY IMPORTANT	5	61	76.3	76.3	100.0
TOTAL		80	100.0	100.0	

Valid Cases 80 Missing Cases 0

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Q6E ENV ISS - ENERGY USAGE

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
NEITHER UNIMPORTANT	3	1	1.3	1.3	1.3
QUITE IMPORTANT	4	25	31.3	31.3	32.5
EXTREMELY IMPORTANT	5	54	67.5	67.5	100.0
TOTAL		80	100.0	100.0	

Valid Cases 80 Missing Cases 0

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Q6F ENV ISS - EFFLUENT WASTE DISPOSAL

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent

NOT AT ALL IMPORTANT	1	1	1.3	1.3	1.3
NEITHER UNIMPORTANT	3	5	6.3	6.3	7.5
QUITE IMPORTANT	4	17	21.3	21.3	28.8
EXTREMELY IMPORTANT	5	57	71.3	71.3	100.0
TOTAL			80	100.0	100.0

Valid Cases 80 Missing Cases 0

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Q6G ENV ISS - DEFORESTATION

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
NOT AT ALL IMPORTANT	1	4	5.0	5.0	5.0
QUITE UNIMPORTANT	2	1	1.3	1.3	6.3
NEITHER UNIMPORTANT	3	18	22.5	22.5	28.8
QUITE IMPORTANT	4	19	23.8	23.8	52.5
EXTREMELY IMPORTANT	5	38	47.5	47.5	100.0
TOTAL			80	100.0	100.0

Valid Cases 80 Missing Cases 0

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Q6H ENV ISS - NOISE POLLUTION

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
NEITHER UNIMPORTANT	3	3	3.8	3.8	3.8
QUITE IMPORTANT	4	30	37.5	37.5	41.3
EXTREMELY IMPORTANT	5	47	58.8	58.8	100.0
TOTAL			80	100.0	100.0

Valid Cases 80 Missing Cases 0

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Q6I ENV ISS - VEHICLE EMISSIONS

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
NOT AT ALL IMPORTANT	1	1	1.3	1.3	1.3
NEITHER UNIMPORTANT	3	8	10.0	10.0	11.3
QUITE IMPORTANT	4	28	35.0	35.0	46.3
EXTREMELY IMPORTANT	5	43	53.8	53.8	100.0
TOTAL			80	100.0	100.0

Valid Cases 80 Missing Cases 0

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Q6J ENV ISS - SOLID WASTE DISPOSAL

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
NEITHER UNIMPORTANT	3	3	3.8	3.8	3.8
QUITE IMPORTANT	4	26	32.5	32.5	36.3
EXTREMELY IMPORTANT	5	51	63.8	63.8	100.0
TOTAL		80	100.0	100.0	

Valid Cases 80 Missing Cases 0

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Q6K ENV ISS - RESOURCE DEPLETION

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
NOT AT ALL IMPORTANT	1	2	2.5	2.5	2.5
QUITE UNIMPORTANT	2	2	2.5	2.5	5.0
NEITHER UNIMPORTANT	3	13	16.3	16.3	21.3
QUITE IMPORTANT	4	23	28.8	28.8	50.0
EXTREMELY IMPORTANT	5	40	50.0	50.0	100.0
TOTAL		80	100.0	100.0	

Valid Cases 80 Missing Cases 0

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Q6L ENV ISS - EMPLOYEE H/S

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
NOT AT ALL IMPORTANT	1	4	5.0	5.0	5.0
QUITE UNIMPORTANT	2	1	1.3	1.3	6.3
NEITHER UNIMPORTANT	3	2	2.5	2.5	8.8
QUITE IMPORTANT	4	12	15.0	15.0	23.8
EXTREMELY IMPORTANT	5	61	76.3	76.3	100.0
TOTAL		80	100.0	100.0	

Valid Cases 80 Missing Cases 0

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Q6H ENV ISS - FINANCIAL SUPPORT ENV GROUPS

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
NOT AT ALL IMPORTANT	1	8	10.0	10.0	10.0
QUITE UNIMPORTANT	2	6	7.5	7.5	17.5
NEITHER UNIMPORTANT	3	34	42.5	42.5	60.0
QUITE IMPORTANT	4	16	20.0	20.0	80.0
EXTREMELY IMPORTANT	5	16	20.0	20.0	100.0

TOTAL		80	100.0	100.0	

Valid Cases 80 Missing Cases 0

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This procedure was completed at 11:29:03

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PROCESS IF (quesn1 gt 0.5).

FREQUENCIES /VARIABLES q2.

***** Memory allows a total of 12881 Values, accumulated across all Variables.

There also may be up to 1610 Value Labels for each Variable.

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Q2 EMPLOYEES

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
0-10	1	39	48.8	49.4	49.4
11-25	2	16	20.0	20.3	69.6
26-100	3	16	20.0	20.3	89.9
101-200	4	4	5.0	5.1	94.9
200+	5	4	5.0	5.1	100.0
.		1	1.3	MISSING	

TOTAL		80	100.0	100.0	

Valid Cases 79 Missing Cases 1

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This procedure was completed at 11:29:51

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PROCESS IF (queens1 gt 0).

FREQUENCIES /VARIABLES q2.

***** Memory allows a total of 12881 Values, accumulated across all Variables.

There also may be up to 1616 Value Labels for each Variable.

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Q2 EMPLOYERS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	64	49.2	49.6	49.6
11-25	2	27	20.8	20.9	70.5
26-100	3	25	19.2	19.4	89.9
101-200	4	7	5.4	5.4	95.3
200+	5	5	4.6	4.7	100.0
.	.	1	.8	MISSING	

TOTAL		130	100.0	100.0	

Valid Cases 129 Missing Cases 1

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This procedure was completed at 11:34:27

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FINISH.

End of Include file.

-

PRACTICES AND PROCEDURES - BY SECTOR

MANOVA q9a to q9j by q3 (1,10) /print cellinfo.

215 cases accepted.

0 cases rejected because of out-of-range factor values.

31 cases rejected because of missing data.

10 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q9A		C/PRACTICE - RECYCLING		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	2.625	1.302	8
Q3	ENERGY-W	1.500	.707	2
Q3	MINERAL	3.333	.577	3
Q3	ENGINEER	2.500	1.144	22

Cell Means and Standard Deviations (CONT.)

Variable .. Q9A		C/PRACTICE - RECYCLING		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	OTHER MA	3.093	.996	43
Q3	CONSTRUC	2.800	1.082	15
Q3	DISTRIBU	3.091	1.044	11
Q3	TRANSPOR	3.000	1.414	5
Q3	FINANCIA	2.917	1.165	12
Q3	OTHER SE	2.968	1.140	94
For entire sample		2.916	1.112	215

Variable .. Q9B		C/PRACTICE - ENERGY EFF PROG		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	3.000	.926	8
Q3	ENERGY-W	1.500	.707	2
Q3	MINERAL	2.000	1.000	3
Q3	ENGINEER	2.818	1.006	22

Cell Means and Standard Deviations (CONT.)

Variable .. Q9B		C/PRACTICE - ENERGY EFF PROG		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	OTHER MA	2.884	.823	43
Q3	CONSTRUC	2.667	.976	15
Q3	DISTRIBU	2.909	.831	11
Q3	TRANSPOR	3.400	.894	5
Q3	FINANCIA	2.583	.996	12
Q3	OTHER SE	2.670	1.072	94
For entire sample		2.744	.988	215

Variable .. Q9C		C/PRACTICE - WASTE MANAGEMENT		
FACTOR	CODE	Mean	Std. Dev.	N

Q3	AGRI-FOR	2.125	.991	8
Q3	ENERGY-W	3.000	1.414	2
Q3	MINERAL	3.333	.577	3
Q3	ENGINEER	2.545	1.101	22

Cell Means and Standard Deviations (CONT.)

Variable .. Q9C		C/PRACTICE - WASTE MANAGEMENT		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	OTHER MA	2.860	1.037	43
Q3	CONSTRUC	2.933	1.100	15
Q3	DISTRIBU	2.455	1.128	11
Q3	TRANSPOR	2.000	1.225	5
Q3	FINANCIA	1.833	1.115	12
Q3	OTHER SE	2.223	1.109	94
For entire sample		2.437	1.121	215

Variable .. Q9D		C/PRACTICE - SUPPLIERS POLICY		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	2.000	.535	8
Q3	ENERGY-W	1.500	.707	2
Q3	MINERAL	1.667	.577	3
Q3	ENGINEER	1.909	.426	22

Cell Means and Standard Deviations (CONT.)

Variable .. Q9D		C/PRACTICE - SUPPLIERS POLICY		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	OTHER MA	2.488	.827	43
Q3	CONSTRUC	2.067	.704	15
Q3	DISTRIBU	2.091	.944	11
Q3	TRANSPOR	2.400	.894	5
Q3	FINANCIA	1.833	.937	12
Q3	OTHER SE	2.149	.816	94
For entire sample		2.153	.797	215

Variable .. Q9E		C/PRACTICE - PACKAGING		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	2.375	.916	8
Q3	ENERGY-W	1.500	.707	2
Q3	MINERAL	1.333	.577	3
Q3	ENGINEER	2.318	.945	22

Cell Means and Standard Deviations (CONT.)

Variable .. Q9E		C/PRACTICE - PACKAGING		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	OTHER MA	2.209	1.059	43
Q3	CONSTRUC	2.067	.884	15
Q3	DISTRIBU	2.636	1.120	11
Q3	TRANSPOR	2.600	1.140	5
Q3	FINANCIA	1.417	.793	12

Q3	OTHER SE	2.234	1.121	94
For entire sample		2.195	1.059	215

Variable .. Q9F		C/PRACTICE - ENV AUDIT		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	1.750	.707	8
Q3	ENERGY-W	3.000	1.414	2
Q3	MINERAL	1.667	.577	3
Q3	ENGINEER	2.045	.575	22

Cell Means and Standard Deviations (CONT.)

Variable .. Q9F		C/PRACTICE - ENV AUDIT		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	OTHER MA	2.140	.743	43
Q3	CONSTRUC	2.333	.816	15
Q3	DISTRIBU	1.909	.701	11
Q3	TRANSPOR	1.400	.548	5
Q3	FINANCIA	1.250	.452	12
Q3	OTHER SE	1.798	.681	94
For entire sample		1.902	.726	215

Variable .. Q9G		C/PRACTICE - POLLUTION CONTROL POLICY		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	2.125	1.126	8
Q3	ENERGY-W	3.000	1.414	2
Q3	MINERAL	3.000	1.000	3
Q3	ENGINEER	2.591	1.141	22

Cell Means and Standard Deviations (CONT.)

Variable .. Q9G		C/PRACTICE - POLLUTION CONTROL POLICY		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	OTHER MA	2.395	.979	43
Q3	CONSTRUC	2.467	1.125	15
Q3	DISTRIBU	2.091	.944	11
Q3	TRANSPOR	2.200	1.095	5
Q3	FINANCIA	1.167	.389	12
Q3	OTHER SE	1.766	.885	94
For entire sample		2.060	1.019	215

Variable .. Q9H		C/PRACTICE - STAFF TRAINING		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	1.750	.707	8
Q3	ENERGY-W	2.000	.000	2
Q3	MINERAL	2.000	.000	3
Q3	ENGINEER	2.045	.486	22

Cell Means and Standard Deviations (CONT.)

Variable .. Q9H		C/PRACTICE - STAFF TRAINING		
FACTOR	CODE	Mean	Std. Dev.	N

Q3	OTHER MA	2.209	.742	43
Q3	CONSTRUC	2.333	.976	15
Q3	DISTRIBU	2.364	.924	11
Q3	TRANSPOR	2.200	1.095	5
Q3	FINANCIA	1.333	.492	12
Q3	OTHER SE	1.809	.766	94
For entire sample		1.963	.779	215

Variable .. Q9I		C/PRACTICE - TRANSPORT POLICY		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	1.625	.518	8
Q3	ENERGY-W	2.000	.000	2
Q3	MINERAL	1.667	.577	3
Q3	ENGINEER	2.091	.610	22

Cell Means and Standard Deviations (CONT.)

Variable .. Q9I		C/PRACTICE - TRANSPORT POLICY		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	OTHER MA	2.023	.831	43
Q3	CONSTRUC	2.600	.986	15
Q3	DISTRIBU	2.182	.603	11
Q3	TRANSPOR	2.800	.837	5
Q3	FINANCIA	1.250	.452	12
Q3	OTHER SE	2.032	.909	94
For entire sample		2.037	.853	215

Variable .. Q9J		C/PRACTICE - EMS		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	AGRI-FOR	1.625	.518	8
Q3	ENERGY-W	2.500	.707	2
Q3	MINERAL	2.000	1.000	3
Q3	ENGINEER	2.136	.640	22

Cell Means and Standard Deviations (CONT.)

Variable .. Q9J		C/PRACTICE - EMS		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	OTHER MA	2.093	.840	43
Q3	CONSTRUC	2.333	.816	15
Q3	DISTRIBU	2.091	.539	11
Q3	TRANSPOR	2.200	1.095	5
Q3	FINANCIA	1.500	.674	12
Q3	OTHER SE	1.809	.737	94
For entire sample		1.944	.765	215

EFFECT .. Q3

Multivariate Tests of Significance (S = 9, M = 0, N = 97)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
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Pillais	.68564	1.68494	90.00	1836.00	.000
Hotelling	.81005	1.74810	90.00	1748.00	.000
Wilks	.47525	1.72550	90.00	1339.60	.000
Roy	.24225				

Univariate F-tests with (9,205) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q9A	11.19344	253.29959	1.24372	1.23561	1.00656	.436
Q9B	9.60321	199.32702	1.06702	.97233	1.09739	.366
Q9C	25.10754	243.79479	2.78973	1.18924	2.34580	.015
Q9D	9.58186	126.35302	1.06465	.61636	1.72733	.085
Q9E	14.41816	225.37719	1.60202	1.09940	1.45717	.166
Q9F	15.81284	97.13600	1.75698	.47383	3.70801	.000

EFFECT .. Q3 (CONT.)

Univariate F-tests with (9,205) D. F. (CONT.)

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q9G	35.78155	186.43241	3.97573	.90943	4.37169	.000
Q9H	14.23286	115.46947	1.58143	.56327	2.80761	.004
Q9I	17.17511	138.52721	1.90835	.67574	2.82407	.004
Q9J	10.14080	115.18943	1.12676	.56190	2.00526	.040

PRACTICES AND PROCEDURES - REDUCED SECTOR

MANOVA q9a to q9j by q3 (1,3) /print cellinfo.

214 cases accepted.

10 cases rejected because of out-of-range factor values.

17 cases rejected because of missing data.

3 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q9A		C/PRACTICE - RECYCLING			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	2.908	1.052	87	
Q3	service	2.965	1.147	115	
Q3	retail	3.000	1.044	12	
For entire sample		2.944	1.099	214	

Cell Means and Standard Deviations (CONT.)

Variable .. Q9B		C/PRACTICE - ENERGY EFF PROG			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	2.770	.911	87	
Q3	service	2.670	1.057	115	
Q3	retail	2.833	.835	12	
For entire sample		2.720	.986	214	

Variable .. Q9C		C/PRACTICE - WASTE MANAGEMENT			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	2.851	1.051	87	
Q3	service	2.183	1.113	115	
Q3	retail	2.417	1.084	12	
For entire sample		2.467	1.129	214	

Cell Means and Standard Deviations (CONT.)

Variable .. Q9D		C/PRACTICE - SUPPLIERS POLICY			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	2.241	.777	87	
Q3	service	2.130	.822	115	
Q3	retail	2.083	.900	12	
For entire sample		2.173	.807	214	

Variable .. Q9E		C/PRACTICE - PACKAGING			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	2.184	.983	87	
Q3	service	2.165	1.100	115	
Q3	retail	2.583	1.084	12	
For entire sample		2.196	1.052	214	

Cell Means and Standard Deviations (CONT.)

Variable .. Q9F		C/PRACTICE - ENV AUDIT			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	2.115	.722	87	
Q3	service	1.739	.677	115	
Q3	retail	2.000	.739	12	
For entire sample		1.907	.719	214	

Variable .. Q9G		C/PRACTICE - POLLUTION CONTROL POLICY			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	2.460	1.032	87	
Q3	service	1.748	.887	115	
Q3	retail	2.000	.953	12	
For entire sample		2.051	1.008	214	

Cell Means and Standard Deviations (CONT.)

Variable .. Q9H		C/PRACTICE - STAFF TRAINING			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	manufact	2.161	.713	87	
Q3	service	1.791	.789	115	
Q3	retail	2.331	.888	12	
For entire sample		1.972	.787	214	

Variable .. Q9I		C/PRACTICE - TRANSPORT POLICY			
FACTOR	CODE	Mean	Std. Dev.	N	

Q3	manufact	2.149	.815	87
Q3	service	2.017	.936	115
Q3	retail	2.167	.577	12
For entire sample		2.079	.871	214

Cell Means and Standard Deviations (CONT.)

Variable .. Q9J		C/PRACTICE - EMS		
FACTOR	CODE	Mean	Std. Dev.	N
Q3	manufact	2.138	.780	87
Q3	service	1.817	.768	115
Q3	retail	2.083	.515	12
For entire sample		1.963	.774	214

EFFECT .. Q3

Multivariate Tests of Significance (S = 2, N = 3 1/2, N = 102)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillai's	.21854	2.49028	20.00	406.00	.000
Hotelling's	.26264	2.63955	20.00	402.00	.000
Wilks	.78734	2.56518	20.00	404.00	.000
Roy's	.18714				

Univariate F-tests with (2,211) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q9A	.20187	257.12524	.10093	1.21860	.08283	.921
Q9B	.66513	206.51244	.33256	.97873	.33979	.712
Q9C	22.13167	249.13936	11.06584	1.18076	9.37183	.000
Q9D	.71162	137.89118	.35581	.65351	.54446	.581
Q9E	1.92200	233.83501	.96100	1.10822	.86715	.422
Q9F	7.10635	103.02449	3.55318	.48827	7.27711	.001

EFFECT .. Q3 (CONT.)

Univariate F-tests with (2,211) D. F. (CONT.)

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q9G	25.13843	191.29615	12.56921	.90662	13.86387	.000
Q9H	8.42668	123.40510	4.21334	.58486	7.20403	.001
Q9I	.96018	160.68936	.48009	.76156	.63040	.533
Q9J	5.27422	122.42671	2.63711	.58022	4.54501	.012

PRACTICES AND PROCEDURES - EXPORTERS/NONE EXPORTERS

MANOVA q9a to q9j by q14 (1,2) /print cellinfo.

224 cases accepted.

0 cases rejected because of out-of-range factor values.

17 cases rejected because of missing data.

2 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q9A		C/PRACTICE - RECYCLING		
FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	2.930	1.071	86
Q14	none exp	2.913	1.137	138
For entire sample		2.920	1.110	224

Cell Means and Standard Deviations (CONT.)

Variable .. Q9B		C/PRACTICE - ENERGY EFF PROG		
FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	2.884	.926	86
Q14	none exp	2.616	1.013	138
For entire sample		2.719	.987	224

Variable .. Q9C		C/PRACTICE - WASTE MANAGEMENT		
FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	2.535	1.048	86
Q14	none exp	2.406	1.169	138
For entire sample		2.455	1.124	224

Variable .. Q9D		C/PRACTICE - SUPPLIERS POLICY		
FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	2.151	.790	86
Q14	none exp	2.181	.804	138
For entire sample		2.170	.797	224

Cell Means and Standard Deviations (CONT.)

Variable .. Q9E		C/PRACTICE - PACKAGING		
FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	2.407	.987	86
Q14	none exp	2.072	1.065	138
For entire sample		2.201	1.046	224

Variable .. Q9F		C/PRACTICE - ENV AUDIT		
FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	2.035	.694	86
Q14	none exp	1.848	.744	138
For entire sample		1.920	.729	224

Variable .. Q9G		C/PRACTICE - POLLUTION CONTROL POLICY		
FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	2.186	.988	86
Q14	none exp	2.000	1.025	138
For entire sample		2.071	1.013	224

Cell Means and Standard Deviations (CONT.)

Variable .. Q9H		C/PRACTICE - STAFF TRAINING		
FACTOR	CODE	Mean	Std. Dev.	N

Q14	exporter	2.035	.743	86
Q14	none exp	1.913	.797	138
For entire sample		1.960	.777	224

Variable .. Q9I C/PRACTICE - TRANSPORT POLICY

FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	2.070	.716	86
Q14	none exp	2.058	.942	138
For entire sample		2.063	.861	224

Variable .. Q9J C/PRACTICE - EMS

FACTOR	CODE	Mean	Std. Dev.	N
Q14	exporter	2.058	.709	86
Q14	none exp	1.891	.799	138
For entire sample		1.955	.768	224

Cell Means and Standard Deviations (CONT.)

EFFECT .. Q14

Multivariate Tests of Significance (S = 1, M = 4, N = 105 1/2)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillai's	.06894	1.57714	10.00	213.00	.115
Hotellings	.07404	1.57714	10.00	213.00	.115
Wilks	.93106	1.57714	10.00	213.00	.115
Roy's	.06894				

EFFECT .. Q14 (CONT.)

Univariate F-tests with (1,222) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q9A	.01565	274.53792	.01565	1.23666	.01266	.911
Q9B	3.79911	213.48214	3.79911	.96163	3.95070	.048
Q9C	.88286	280.67071	.88286	1.26428	.69831	.404
Q9D	.04767	141.50590	.04767	.63741	.07479	.785
Q9E	5.92865	238.03118	5.92865	1.07221	5.52936	.020
Q9F	1.85387	116.69970	1.85387	.52567	3.52666	.062
Q9G	1.83389	227.02326	1.83389	1.02263	1.79331	.182
Q9H	.78652	133.85187	.78652	.60294	1.30449	.255
Q9I	.00737	165.11763	.00737	.74377	.00991	.921
Q9J	1.47470	130.07887	1.47470	.58594	2.51681	.114

PRACTICES AND PROCEDURES - INITIATIVES OR NO INITIATIVES

MANOVA q9a to q9j by q15 (1,2) /print cellinfo.

226 cases accepted.

0 cases rejected because of out-of-range factor values.

15 cases rejected because of missing data.

2 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q9A		C/PRACTICE - RECYCLING		
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	3.470	.961	132
Q15	NO INITI	2.128	.793	94
For entire sample		2.912	1.112	226

Cell Means and Standard Deviations (CONT.)

Variable .. Q9B		C/PRACTICE - ENERGY EFF PROG		
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	3.015	1.034	132
Q15	NO INITI	2.277	.739	94
For entire sample		2.708	.990	226

Variable .. Q9C		C/PRACTICE - WASTE MANAGEMENT		
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	2.758	1.243	132
Q15	NO INITI	2.021	.747	94
For entire sample		2.451	1.123	226

Variable .. Q9D		C/PRACTICE - SUPPLIERS POLICY		
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	2.341	.846	132
Q15	NO INITI	1.915	.650	94
For entire sample		2.164	.797	226

Cell Means and Standard Deviations (CONT.)

Variable .. Q9E		C/PRACTICE - PACKAGING		
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	2.318	1.155	132
Q15	NO INITI	2.021	.842	94
For entire sample		2.195	1.044	226

Variable .. Q9F		C/PRACTICE - ENV ADDIT		
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	2.000	.791	132
Q15	NO INITI	1.798	.615	94
For entire sample		1.916	.728	226

Variable .. Q9G		C/PRACTICE - POLLUTION CONTROL POLICY		
FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	2.273	1.160	132
Q15	NO INITI	1.777	.658	94
For entire sample		2.056	1.011	226

Cell Means and Standard Deviations (CONT.)

Variable .. Q9H		C/PRACTICE - STAFF TRAINING		
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FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	2.008	.852	132
Q15	NO INITI	1.894	.663	94
For entire sample		1.960	.779	226

Variable .. Q9I C/PRACTICE - TRANSPORT POLICY

FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	2.227	.962	132
Q15	NO INITI	1.819	.622	94
For entire sample		2.058	.860	226

Variable .. Q9J C/PRACTICE - EMS

FACTOR	CODE	Mean	Std. Dev.	N
Q15	SOME INI	2.053	.850	132
Q15	NO INITI	1.809	.610	94
For entire sample		1.951	.767	226

Cell Means and Standard Deviations (CONT.)

EFFECT .. Q15

Multivariate Tests of Significance (S = 1, M = 4, N = 106 1/2)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillai's	.41951	15.53781	10.00	215.00	.000
Hotellings	.72269	15.53781	10.00	215.00	.000
Wilks	.58049	15.53781	10.00	215.00	.000
Roy's	.41951				

EFFECT .. Q15 (CONT.)

Univariate F-tests with [1,224] D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q9A	98.88322	179.34687	98.88322	.80066	123.50280	.000
Q9B	29.94746	190.77821	29.94746	.85169	35.16246	.000
Q9C	29.76473	254.19987	29.76473	1.13482	26.22857	.000
Q9D	9.96424	132.97824	9.96424	.59365	16.78462	.000
Q9E	4.83982	240.59381	4.83982	1.07408	4.50601	.035
Q9F	2.24308	117.15957	2.24308	.52303	4.28860	.040
Q9G	13.51410	216.49033	13.51410	.96647	13.96288	.000
Q9H	.71300	135.92859	.71300	.60682	1.17497	.280
Q9I	9.14486	157.10735	9.14486	.70137	13.03853	.000
Q9J	3.28262	129.18198	3.28262	.57671	5.69203	.018

PRACTICES AND PROCEDURES - BY SIZE

MANOVA q9a to q9j by q2 (1,5) /print cellinfo.

224 cases accepted.

0 cases rejected because of out-of-range factor values.

17 cases rejected because of missing data.

5 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q9A		C/PRACTICE - RECYCLING		
FACTOR	CODE	Mean	Std. Dev.	N
Q2	0-10	2.859	1.175	128
Q2	11-25	2.886	1.039	44
Q2	26-100	2.973	1.093	37
Q2	101-200	3.625	.518	8

Cell Means and Standard Deviations (CONT.)

Variable .. Q9A		C/PRACTICE - RECYCLING		
FACTOR	CODE	Mean	Std. Dev.	N
Q2	200+	3.143	.690	7
For entire sample		2.920	1.110	224

Variable .. Q9B		C/PRACTICE - ENERGY EFF PROG		
FACTOR	CODE	Mean	Std. Dev.	N
Q2	0-10	2.516	1.094	128
Q2	11-25	2.795	.795	44
Q2	26-100	3.216	.630	37
Q2	101-200	2.750	.707	8
Q2	200+	3.286	.756	7
For entire sample		2.719	.987	224

Cell Means and Standard Deviations (CONT.)

Variable .. Q9C		C/PRACTICE - WASTE MANAGEMENT		
FACTOR	CODE	Mean	Std. Dev.	N
Q2	0-10	2.211	1.134	128
Q2	11-25	2.591	1.019	44
Q2	26-100	2.784	1.058	37
Q2	101-200	3.625	.518	8
Q2	200+	3.143	.900	7
For entire sample		2.460	1.124	224

Variable .. Q9D		C/PRACTICE - SUPPLIERS POLICY		
FACTOR	CODE	Mean	Std. Dev.	N
Q2	0-10	2.109	.816	128
Q2	11-25	2.114	.655	44
Q2	26-100	2.243	.863	37
Q2	101-200	2.500	.756	8
Q2	200+	2.571	.976	7
For entire sample		2.161	.799	224

Cell Means and Standard Deviations (CONT.)

Variable .. Q9E		C/PRACTICE - PACKAGING		
FACTOR	CODE	Mean	Std. Dev.	N

Q2	0-10	2.141	1.085	128
Q2	11-25	2.000	.889	44
Q2	26-100	2.541	1.043	37
Q2	101-200	2.375	1.188	8
Q2	200+	2.429	.787	7
For entire sample		2.196	1.045	224

Variable .. Q9F		C/PRACTICE - ENV AUDIT		
FACTOR	CODE	Mean	Std. Dev.	N
Q2	0-10	1.742	.724	128
Q2	11-25	1.955	.526	44
Q2	26-100	2.108	.658	37
Q2	101-200	2.675	.835	8
Q2	200+	2.571	.787	7
For entire sample		1.911	.728	224

Cell Means and Standard Deviations (CONT.)

Variable .. Q9G		C/PRACTICE - POLLUTION CONTROL POLICY		
FACTOR	CODE	Mean	Std. Dev.	N
Q2	0-10	1.867	.975	128
Q2	11-25	2.136	.979	44
Q2	26-100	2.405	1.066	37
Q2	101-200	2.500	.926	8
Q2	200+	2.857	.900	7
For entire sample		2.063	1.014	224

Variable .. Q9H		C/PRACTICE - STAFF TRAINING		
FACTOR	CODE	Mean	Std. Dev.	N
Q2	0-10	1.844	.818	128
Q2	11-25	2.000	.647	44
Q2	26-100	2.081	.682	37
Q2	101-200	2.500	.756	8
Q2	200+	2.714	.756	7
For entire sample		1.964	.780	224

Cell Means and Standard Deviations (CONT.)

Variable .. Q9I		C/PRACTICE - TRANSPORT POLICY		
FACTOR	CODE	Mean	Std. Dev.	N
Q2	0-10	2.055	.998	128
Q2	11-25	1.932	.452	44
Q2	26-100	2.108	.774	37
Q2	101-200	2.500	.756	8
Q2	200+	2.286	.488	7
For entire sample		2.063	.861	224

Variable .. Q9J		C/PRACTICE - EMS		
FACTOR	CODE	Mean	Std. Dev.	N
Q2	0-10	1.813	.830	128
Q2	11-25	1.977	.505	44

Q2	26-100	2.081	.547	37
Q2	101-200	2.750	.886	8
Q2	200+	2.857	.690	7
For entire sample		1.955	.768	224

Cell Means and Standard Deviations (CONT.)

EFFECT .. Q2

Multivariate Tests of Significance (S = 4, N = 2 1/2, N = 104)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillais	.33392	1.94006	40.00	852.00	.001
Hotelling	.39907	2.08018	40.00	834.00	.000
Wilks	.69479	2.01128	40.00	798.15	.000
Roy	.21098				

EFFECT .. Q2 (CONT.)

Univariate F-tests with (4,219) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q9A	4.94789	269.60568	1.23697	1.23108	1.00479	.406
Q9B	16.95457	200.32668	4.23864	.91473	4.63374	.001
Q9C	26.69493	254.94346	6.67373	1.16413	5.73283	.000
Q9D	2.78862	139.42566	.69716	.63665	1.09504	.360
Q9E	7.10992	236.24722	1.77748	1.07875	1.64771	.163
Q9F	15.65615	102.55813	3.91404	.46830	8.35794	.000
Q9G	15.42493	213.70007	3.85623	.97580	3.95187	.004
Q9H	8.65396	127.06033	2.16349	.58018	3.72897	.006
Q9I	2.71622	162.40878	.67905	.74159	.91567	.456
Q9J	13.96240	117.59117	3.49060	.53695	6.50084	.000

----- PRACTICES AND PROCEDURES - BY COMPANY CHARACTERISTICS

MANOVA Q9A TO Q9J BY Q1 (1,4) /print cellinfo.

223 cases accepted.

0 cases rejected because of out-of-range factor values.

18 cases rejected because of missing data.

4 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q9A		C/PRACTICE - RECYCLING		
FACTOR	CODE	Mean	Std. Dev.	N
Q1	A SINGLE	2.842	1.163	152
Q1	A HEADQU	2.806	1.078	31
Q1	A SUBSID	3.265	.864	14
Q1	A SUBSID	3.333	.816	6
For entire sample		2.915	1.110	223

Cell Means and Standard Deviations (CONT.)

Variable .. Q9B		C/PRACTICE - ENERGY EFF PROG			
FACTOR	CODE	Mean	Std. Dev.	N	
Q1	A SINGLE	2.658	1.017	152	
Q1	A HEADQU	2.581	.958	31	
Q1	A SUBSID	3.029	.870	34	
Q1	A SUBSID	3.333	.516	6	
For entire sample		2.722	.988	223	

Variable .. Q9C		C/PRACTICE - WASTE MANAGEMENT			
FACTOR	CODE	Mean	Std. Dev.	N	
Q1	A SINGLE	2.329	1.120	152	
Q1	A HEADQU	2.355	1.226	31	
Q1	A SUBSID	2.941	.814	34	
Q1	A SUBSID	3.833	.408	6	
For entire sample		2.466	1.122	223	

Cell Means and Standard Deviations (CONT.)

Variable .. Q9D		C/PRACTICE - SUPPLIERS POLICY			
FACTOR	CODE	Mean	Std. Dev.	N	
Q1	A SINGLE	2.079	.793	152	
Q1	A HEADQU	2.161	.688	31	
Q1	A SUBSID	2.412	.821	34	
Q1	A SUBSID	2.833	.983	6	
For entire sample		2.161	.800	223	

Variable .. Q9E		C/PRACTICE - PACKAGING			
FACTOR	CODE	Mean	Std. Dev.	N	
Q1	A SINGLE	2.145	1.076	152	
Q1	A HEADQU	2.000	.856	31	
Q1	A SUBSID	2.500	1.052	34	
Q1	A SUBSID	2.667	.816	6	
For entire sample		2.193	1.046	223	

Cell Means and Standard Deviations (CONT.)

Variable .. Q9F		C/PRACTICE - ENV AUDIT			
FACTOR	CODE	Mean	Std. Dev.	N	
Q1	A SINGLE	1.757	.630	152	
Q1	A HEADQU	2.000	.775	31	
Q1	A SUBSID	2.353	.812	34	
Q1	A SUBSID	2.833	.753	6	
For entire sample		1.910	.730	223	

Variable .. Q9G		C/PRACTICE - POLLUTION CONTROL POLICY			
FACTOR	CODE	Mean	Std. Dev.	N	
Q1	A SINGLE	1.974	.963	152	
Q1	A HEADQU	1.935	.929	31	
Q1	A SUBSID	2.412	1.104	34	
Q1	A SUBSID	3.167	.753	6	

For entire sample 2.067 1.013 223

Cell Means and Standard Deviations (CONT.)

Variable .. Q9H C/PRACTICE - STAFF TRAINING

FACTOR	CODE	Mean	Std. Dev.	N
Q1	A SINGLE	1.836	.723	152
Q1	A HEADQU	2.129	.846	31
Q1	A SUBSID	2.335	.819	34
Q1	A SUBSID	2.833	.753	6
For entire sample		1.964	.782	223

Variable .. Q9I C/PRACTICE - TRANSPORT POLICY

FACTOR	CODE	Mean	Std. Dev.	N
Q1	A SINGLE	1.993	.880	152
Q1	A HEADQU	2.065	.814	31
Q1	A SUBSID	2.265	.790	34
Q1	A SUBSID	2.333	.516	6
For entire sample		2.054	.853	223

Cell Means and Standard Deviations (CONT.)

Variable .. Q9J C/PRACTICE - EMS

FACTOR	CODE	Mean	Std. Dev.	N
Q1	A SINGLE	1.849	.753	152
Q1	A HEADQU	2.065	.727	31
Q1	A SUBSID	2.176	.758	34
Q1	A SUBSID	2.833	.753	6
For entire sample		1.955	.770	223

EFFECT .. Q1

Multivariate Tests of Significance (S = 3, M = 3, N = 104)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillai's	.21757	1.65775	30.00	636.00	.016
Hotelling's	.25295	1.75939	30.00	626.00	.008
Wilks	.79119	1.70854	30.00	617.07	.011
Roy's	.16816				

Univariate F-tests with (3,219) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q9A	6.38095	267.00022	2.12698	1.21918	1.74460	.159
Q9B	6.69950	210.06283	2.23317	.95919	2.32818	.075
Q9C	22.13267	257.36509	7.37756	1.17518	6.27779	.000
Q9D	5.87353	136.31481	1.95784	.62244	3.14542	.026
Q9E	6.05940	236.64912	2.01980	1.08059	1.86916	.136
Q9F	15.61482	102.59146	5.20494	.46845	11.11088	.000

EFFECT .. Q1 (CONT.)

Univariate F-tests with (3,219) D. F. (CONT.)

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q9G	13.15670	214.83433	4.38557	.98098	4.47060	.005
Q9H	10.39000	125.32301	3.46333	.57225	6.05212	.001
Q9I	2.53889	158.81537	.84630	.72518	1.16701	.323
Q9J	8.38636	123.16521	2.79545	.56240	4.97059	.002

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RECODE q1 (1=1) (2=2) (3=3) (4=3).

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CROSSTABS /TABLES=q7a by q1 /options 14 /statistics 1.

The raw data or transformation pass is proceeding

241 cases are written to the compressed active file.

Memory allows for 8,708 cells with 2 dimensions for general CROSSTABS.

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Q7A AWARE - EC ECO-LABELLING by Q1 BUSINESS TYPE

Q1

Page 1 of 1

Exp Val :

1A SINGLE A HEADQU A SUBSID

1 SITE BU ATERS UN IARY/BRA

Row

1 2 3 Total

Q7A

-----A-----A-----A-----

1 34.4 7.1 9.5 51

YES

21.6%

-----A-----A-----A-----

2 74.1 15.4 20.5 110

DO NOT KNOW

46.6%

-----A-----A-----A-----

3 50.5 10.5 14.0 75

NO

31.8%

-----A-----A-----A-----

0

Column 139 33 44 236

Total 67.4% 14.0% 18.6% 100.0%

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Chi-Square	Value	DF	Significance
Pearson	31.98445	4	.00000
Likelihood Ratio	28.68268	4	.00001
Mantel-Haenszel test for linear association	23.16183	1	.00000

Minimum Expected Frequency = 7.131

Number of Missing Observations: 5

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This procedure was completed at 15:00:17

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RECODE q1 (1=1) (2=2) (3=3) (4=3).

CROSSTABS /TABLES=q7b by q1 /options 14 /statistics 1.

The raw data or transformation pass is proceeding

241 cases are written to the compressed active file.

Memory allows for 8,708 cells with 2 dimensions for general CROSSTABS.

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Q7B AWARE - EC ECO-AUDIT by Q1 BUSINESS TYPE

		Q1		Page 1 of 1	
		Exp Val			
		1A SINGLE A HEADQU A SUBSID			
		1 SITE BU ATERS UN IARY/BRA		Row	
		1	2	3	Total
Q7B					
	1	26.3	5.5	7.3	39
YES					16.5%
	2	82.2	17.1	22.7	122
DO NOT KNOW					51.7%
	3	50.5	10.5	14.0	75
NO					31.8%
					0
Column		159	33	44	236
Total		67.4%	14.0%	18.6%	100.0%

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Chi-Square	Value	DF	Significance
Pearson	24.54011	4	.00006
Likelihood Ratio	23.01561	4	.00013
Mantel-Haenszel test for linear association	19.58738	1	.00001

Minimum Expected Frequency = 5.453

Number of Missing Observations: 5

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This procedure was completed at 15:00:41

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RECODE q1 (1=1) (2=2) (3=3) (4=3).

CROSSTABS /TABLES=q7c by q1 /options 14 /statistics 1.

The raw data or transformation pass is proceeding

241 cases are written to the compressed active file.

Memory allows for 8,708 cells with 2 dimensions for general CROSSTABS.

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Q7C AWARE - FORTHCOMING EC DIRECTIVES by Q1 BUSINESS TYPE

Q1 Page 1 of 1

Exp Val :

		1A SINGLE A HEADQU A SUBSID			
		SITE BU ATERS UN IARY/BRA			Row
		1	2	3	Total
Q7C		-----A-----A-----A-----			
	1	21.2	4.2	5.6	31
YES					13.4%
		-----A-----A-----A-----			
	2	85.5	16.8	22.7	125
DO NOT KNOW					54.1%
		-----A-----A-----A-----			
	3	51.3	10.1	13.6	75
NO					32.5%
		-----A-----A-----A-----			
		-----A-----A-----A-----			0
Column	158	31	42	231	
Total	68.4%	13.4%	18.2%	100.0%	

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Chi-Square	Value	DF	Significance
Pearson	12.90064	4	.01177
Likelihood Ratio	11.66594	4	.02002
Mantel-Haenszel test for linear association	10.30952	1	.00132

Minimum Expected Frequency = 4.160

Cells with Expected Frequency < 5 = 1 OF 9 (11.1%)

Number of Missing Observations: 10

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This procedure was completed at 15:01:00

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RECODE q1 (1=1) (2=2) (3=3) (4=3).

CROSSTABS /TABLES=q7d by q1 /options 14 /statistics 1.

The raw data or transformation pass is proceeding

241 cases are written to the compressed active file.

Memory allows for 8,768 cells with 2 dimensions for general CROSSTABS.

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Q7D AWARE - BS 5750 by Q1 BUSINESS TYPE

Q1

Page 1 of 1

Exp Val :

A SINGLE A HEADQU A SUBSID

SITE BU ATERS UN IARY/BRA

Row

1 2 3 Total

Q7D

-----A-----A-----A-----

1 115.8 24.5 32.7 173

YES

74.2%

-----A-----A-----A-----

2 21.4 4.5 6.0 32

DO NOT KNOW

13.7%

-----A-----A-----A-----

3 18.7 4.0 5.3 28

NO

12.0%

-----A-----A-----A-----0

Column

156 33 44 233

Total

67.0% 14.2% 18.9% 100.0%

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Chi-Square	Value	DF	Significance

Pearson	10.96817	4	.02692
Likelihood Ratio	12.51158	4	.01393
Mantel-Haenszel test for linear association	9.46463	1	.00209

Minimum Expected Frequency = 3.966

Cells with Expected Frequency < 5 = 2 OF 9 (22.2%)

Number of Missing Observations: 8

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This procedure was completed at 15:01:15

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RECODE q1 (1=1) (2=2) (3=3) (4=3).
CROSSTABS /TABLES=q7e by q1 /options 14 /statistics 1.
The raw data or transformation pass is proceeding
241 cases are written to the compressed active file.

Memory allows for 8,708 cells with 2 dimensions for general CROSSTABS.

Q7E AWARE - RS 7750 by Q1 BUSINESS TYPE

Q1		Page 1 of 1			
Exp Val :					
*A SINGLE A HEADQU A SUBSID					
* SITE BU ATERS UN IARY/BRA		Row			
* 1 * 2 * 3 *		Total			
Q7E	-----A-----A-----A-----				
	1 :	43.1 :	9.3 :	11.6 :	64
YES	:	:	:	:	28.2%
A-----A-----A-----					
	2 :	66.7 :	14.4 :	17.9 :	99
DO NOT KNOW	:	:	:	:	43.6%
A-----A-----A-----					
	3 :	43.1 :	9.3 :	11.6 :	64
NO	:	:	:	:	28.2%
A-----A-----A-----D					
Column	153	33	41	227	
Total	67.4%	14.5%	18.1%	100.0%	

Pearson	19.37284	4	.00066
Likelihood Ratio	18.80341	4	.00086
Mantel-Haenszel test for linear association	13.85876	1	.00020

Minimum Expected Frequency - 9.304

Number of Missing Observations: 14

This procedure was completed at 15:01:29

RECODE q1 (1=1) (2=2) (3=3) (4=3).

CROSSTABS /TABLES=q7f by q1 /options 14 /statistics 1.

The raw data or transformation pass is proceeding

241 cases are written to the compressed active file.

Memory allows for 8,708 cells with 2 dimensions for general CROSSTABS.

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Q7F ANARE - EPA by Q1 BUSINESS TYPE

Q1

Page 1 of 1

Exp Val

A SINGLE A HEADQU A SUBSID				
SITE BU ATERS UN IARY/BRA				
	1	2	3	Total
Q7F				
YES	59.0	12.2	16.8	88
				38.1%
DO NOT KNOW	58.4	12.1	16.6	87
				37.7%
NO	37.6	7.8	10.7	56
				24.2%
Column	155	32	44	231
Total	67.1%	13.9%	19.0%	100.0%

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Chi-Square	Value	DF	Significance
Pearson	20.63949	4	.00037
Likelihood Ratio	20.73141	4	.00036
Mantel-Haenszel test for linear association	18.44410	1	.00002

Minimum Expected Frequency = 7.758

Number of Missing Observations: 10

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This procedure was completed at 15:01:44

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RECODE q1 (1=1) (2=2) (3=3) (4=3).

CROSSTABS /TABLES=q7g by q1 /options 14 /statistics 1.

The raw data or transformation pass is proceeding

241 cases are written to the compressed active file.

Memory allows for 8,708 cells with 2 dimensions for general CROSSTABS.

Q7G ANARE - WATER ACT by Q1 BUSINESS TYPE

		Q1			Page 1 of 1	
Exp Val :						
		1A SINGLE A HEADQU A SUBSID				
		1 SITE BU ATERS UN IARY/BRA				Row
		1	2	3	Total	
Q7G		-----A-----A-----A-----				
	1	49.0	10.1	13.9	73	
YES					31.6%	
		-----A-----A-----A-----				
	2	66.4	13.7	18.9	99	
DO NOT KNOW					42.9%	
		-----A-----A-----A-----				
	3	39.6	8.2	11.2	59	
NO					25.5%	
		-----A-----A-----A-----0				
Column		155	32	44	231	
Total		67.1%	13.9%	19.0%	100.0%	

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Chi-Square	Value	DF	Significance

Pearson	17.89926	4	.00129
Likelihood Ratio	17.35665	4	.00165
Mantel-Haenszel test for linear association	15.36763	1	.00009

Minimum Expected Frequency = 8.173

Number of Missing Observations: 10

This procedure was completed at 15:01:59

RECODE q1 (1=1) (2=2) (3=3) (4=3).
CROSSTABS /TABLES=q7h by q1 /options 14 /statistics 1.
The raw data or transformation pass is proceeding
241 cases are written to the compressed active file.

Memory allows for 8,708 cells with 2 dimensions for general CROSSTABS.

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Q7H AWARE - COSER by Q1 BUSINESS TYPE

Q1 Page 1 of 1

Exp Val :

	1	2	3	Total
Q7H	1	2	3	
YES	88.2	18.8	25.0	132
				56.9%
DO NOT KNOW	42.8	9.1	12.1	64
				27.6%
NO	24.1	5.1	6.8	36
				15.5%
Column	155	33	44	232
Total	66.8%	14.2%	19.0%	100.0%

Page 36

SPSS/PC+

5/16/94

Chi-Square	Value	DF	Significance
Pearson	22.31162	4	.00017
Likelihood Ratio	24.59519	4	.00006
Mantel-Haenszel test for linear association	18.70797	1	.00002

Minimum Expected Frequency = 5.121

Number of Missing Observations: 9

Page 37

SPSS/PC+

5/16/94

This procedure was completed at 15:02:14

Page 38

SPSS/PC+

5/16/94

RECODE q2 (1=1) (2=1) (3=3) (4=4) (5=4).

CROSSTABS /TABLES=q7a by q2 /options 14 /statistics 1.

The raw data or transformation pass is proceeding

241 cases are written to the compressed active file.

Memory allows for 8,708 cells with 2 dimensions for general CROSSTABS.

Page 39

SPSS/PC+

5/16/94

Q7A AWARE - EC EC0-LABELLING by Q2 EMPLOYEES

92

Page 1 of 1

		Exp Val				
		0-10	26-100	101-200		Row
		1	3	4		Total
Q7A						
	1	38.5	9.0	3.4		51
YES						21.5%
	2	83.1	19.5	7.4		110
DO NOT KNOW						46.4%
	3	57.4	13.5	5.1		76
NO						32.1%
Column		179	42	16		237
Total		75.5%	17.7%	6.8%		100.0%

Page 40	SPSS/PC+		5/16/94
Chi-Square	Value	DF	Significance
Pearson	18.29679	4	.00108
Likelihood Ratio	18.43323	4	.00102
Mantel-Haenszel test for linear association	17.52098	1	.00003

Minimum Expected Frequency = 3.443

Cells with Expected Frequency < 5 = 1 OF 9 (11.1%)

Number of Missing Observations: 4

Page 41 SPSS/PC+ 5/16/94

This procedure was completed at 15:04:08

Page 42 SPSS/PC+ 5/16/94

```
RECODE q2 (1=1) (2=1) (3=3) (4=4) (5=4).
CROSSTABS /TABLES=q7b by q2 /options 14 /statistics 1.
The raw data or transformation pass is proceeding
241 cases are written to the compressed active file.
```

Memory allows for 8,700 cells with 2 dimensions for general CROSSTABS.

Page 43 SPSS/PC+ 5/16/94

Q78 AWARE - EC ECO-AUDIT by Q2 EMPLOYEES

Q2							Page 1 of 1
Exp Val :							
10-10 26-100 101-200							
:							
Row							
1 1 3 4 Total							
Q78	-----A-----A-----A-----						
	1	29.5	6.9	2.6	39		
YES					16.5%		
	-----A-----A-----A-----						
	2	92.1	21.6	8.2	122		
DO NOT KNOW					51.5%		
	-----A-----A-----A-----						
	3	57.4	13.5	5.1	76		
NO					32.1%		
	-----A-----A-----A-----0						
Column	179	42	16	237			
Total	75.5%	17.7%	6.8%	100.0%			

Page 44	SPSS/PC+		5/16/94
Chi-Square	Value	DF	Significance
-----	-----	---	-----
Pearson	15.97179	4	.00306
Likelihood Ratio	16.58795	4	.00232
Mantel-Haenszel test for linear association	15.68508	1	.00008

Minimum Expected Frequency = 2.633
 Cells with Expected Frequency < 5 = 1 OF 9 (11.1%)

Number of Missing Observations: 4

Page 45 SPSS/PC+ 5/16/94

This procedure was completed at 15:04:26

Page 46 SPSS/PC+ 5/16/94

RECODE q2 (1=1) (2=1) (3=3) (4=4) (5=4).
 CROSSTABS /TABLES=q7c by q2 /options 14 /statistics 1.
 The raw data or transformation pass is proceeding
 241 cases are written to the compressed active file.

Memory allows for 8,708 cells with 2 dimensions for general CROSSTABS.

Page 47 SPSS/PC+ 5/16/94

Q7C AWARE - FORTHCOMING EC DIRECTIVES by Q2 EMPLOYEES

		Q2			Page 1 of 1
Exp Val :		0-10	26-100	101-200	
		Row			
		1	3	4	Total
Q7C		1	3	4	
		23.5	5.5	2.0	31
YES					13.4%
		2	3	4	
		94.8	22.1	8.1	125
DO NOT KNOW					53.9%
		3	3	4	
		57.7	13.4	4.9	76
NO					32.8%
					0
Column		176	41	15	232
Total		75.9%	17.7%	6.5%	100.0%

Page 48	SPSS/PC+		5/16/94
Chi-Square	Value	DF	Significance
-----	-----	----	-----
Pearson	30.44624	4	.00000
Likelihood Ratio	26.46679	4	.00003
Mantel-Haenszel test for linear association	22.27617	1	.00000

Minimum Expected Frequency = 2.004

Cells with Expected Frequency < 5 = 2 OF 9 (22.2%)

Number of Missing Observations: 9

Page 49 SPSS/PC+ 5/16/94

This procedure was completed at 15:04:42

Page 50 SPSS/PC+ 5/16/94

```
RECODE q2 (1=1) (2=1) (3=3) (4=4) (5=4),
CROSSTABS /TABLES=q7d by q2 /options 14 /statistics 1.
The raw data or transformation pass is proceeding
241 cases are written to the compressed active file.
```

Memory allows for 8,708 cells with 2 dimensions for general CROSSTABS.

Page 51 SP8B/PC+ 5/16/94

Q7D AWARE - BS 5750 by Q2 EMPLOYEES

Q2 Page 1 of 1

Exp Val		0-10	26-100	101-200	Row	
		1	3	4	Total	
Q7D						
	1	130.9	31.2	11.9	174	
YES					74.4%	
	2	24.1	5.7	2.2	32	
DO NOT KNOW					13.7%	
	3	21.1	5.0	1.9	28	
NO					12.0%	
Column		176	42	16	234	
Total		75.2%	17.9%	6.8%	100.0%	

Page 52	SPSS/PC+		5/16/94
Chi-Square	Value	DF	Significance
Pearson	14.55518	4	.00572
Likelihood Ratio	18.89381	4	.00082
Mantel-Haenszel test for linear association	11.23485	1	.00080

Minimum Expected Frequency = 1.915
 Cells with Expected Frequency < 5 = 2 OF 9 (22.2%)

Number of Missing Observations: 7

Page 53 SPSS/PC+ 5/16/94

This procedure was completed at 15:04:58

Page 54 SPSS/PC+ 5/16/94

RECODE Q2 (1=1) (2=1) (3=3) (4=4) (5=4).
 CROSSTABS /TABLES=Q7a by Q2 /options 14 /statistics 1.
 The raw data or transformation pass is proceeding
 241 cases are written to the compressed active file.

Memory allows for 8,708 cells with 2 dimensions for general CROSSTABS.

Page 55 SPSS/PC+ 5/16/94

Q7E AWARE - BS 7750 by Q2 EMPLOYEES

Q2

Page 1 of 1

Exp Val					ROW
		0-10	11-20	21-30	
		1	2	3	Total
-----A-----A-----A-----					
Q7E	1	48.3	11.2	4.5	64
YES					28.1%
-----A-----A-----A-----					
	2	74.7	17.4	6.9	99
DO NOT KNOW					43.4%
-----A-----A-----A-----					
	3	49.0	11.4	4.6	65
NO					28.5%
-----A-----A-----A-----U					
Column		172	40	16	228
Total		75.4%	17.5%	7.0%	100.0%

Page 56	SPSS/PC+	5/16/94	
Chi-Square	Value	DF	Significance

Pearson	23.92479	4	.00008
Likelihood Ratio	23.54796	4	.00010
Mantel-Haenszel test for linear association	20.94277	1	.00000

Minimum Expected Frequency = 4.491

Cells with Expected Frequency < 5 = 2 OF 9 (22.2%)

Number of Missing Observations: 13

Page 57 SPSS/PC+ 5/16/94

This procedure was completed at 15:05:12

Page 58 SPSS/PC+ 5/16/94

RECODE q2 (1=1) (2=1) (3=3) (4=4) (5=4).

CROSSTABS /TABLES=q7f by q2 /options 14 /statistics 1.

The raw data or transformation pass is proceeding

241 cases are written to the compressed active file.

Memory allows for 8,708 cells with 2 dimensions for general CROSSTABS.

Page 59 SPSS/PC+ 5/16/94

Q7F ANARE - EPA by Q2 EMPLOYEES

Q2

Page 1 of 1

Exp Val					Row
		10-10	26-100	101-200	
		1	3	4	Total
-----A-----A-----A-----					
Q7F	1	66.4	15.9	5.7	88
YES					37.9%
-----A-----A-----A-----					
	2	65.6	15.8	5.6	87
DO NOT KNOW					37.5%
-----A-----A-----A-----					
	3	43.0	10.3	3.7	57
NO					24.6%
-----A-----A-----A-----					
Column		175	42	15	232
Total		75.4%	18.1%	6.5%	100.0%

Page 60	SPSS/PC+	5/16/94	
Chi-Square	Value	DF	Significance

Pearson	24.82143	4	.00005
Likelihood Ratio	26.38434	4	.00003
Mantel-Haenszel test for linear association	22.04957	1	.00000

Minimum Expected Frequency = 3.685
Cells with Expected Frequency < 5 = 1 OF 9 (11.1%)

Number of Missing Observations: 9

Page 61 SPSS/PC+ 5/16/94

This procedure was completed at 15:05:26

Page 62 SPSS/PC+ 5/16/94

RECODE q2 (1=1) (2=1) (3=3) (4=4) (5=4).
CROSSTABS /TABLES=q7g by q2 /options 14 /statistics 1.
The raw data or transformation pass is proceeding
241 cases are written to the compressed active file.

Memory allows for 8,708 cells with 2 dimensions for general CROSSTABS.

Page 63 SPSS/PC+ 5/16/94

Q7G AWARE - WATER ACT by Q2 EMPLOYEES

	10-10	26-100	101-200	Row
	1	3	4	Total
Q7D				
YES	1 55.1 13.2 4.7 73			
				31.5%
DO NOT KNOW	2 74.7 17.9 6.4 99			
				42.7%
NO	3 45.3 10.9 3.9 60			
				25.9%
Column	175	42	15	232
Total	75.4%	18.1%	6.5%	100.0%

Page 64	SPSS/PC+		5/16/94
Chi-Square	Value	DF	Significance
-----	-----	---	-----
Pearson	34.09157	4	.00000
Likelihood Ratio	34.09185	4	.00000
Mantel-Haenszel test for linear association	26.08101	1	.00000

Minimum Expected Frequency = 3.879

Cells with Expected Frequency < 5 = 2 OF 9 (22.2%)

Number of Missing Observations: 9

Page 65 SPSS/PC+ 5/16/94

This procedure was completed at 15:05:43

Page 66 SPSS/PC+ 5/16/94

RECODE q2 (1=1) (2=1) (3=3) (4=4) (5=4).

CROSSTABS /TABLES=q7h by q2 /options 14 /statistics 1.

The raw data or transformation pass is proceeding

241 cases are written to the compressed active file.

Memory allows for 8,708 cells with 2 dimensions for general CROSSTABS.

Page 67 SPSS/PC+ 5/16/94

Q7H ANARE - COSHH by Q2 EMPLOYEES

Q2 Page 1 of 1
Exp Val 1
10-10 26-100 101-200

		Row			
		1	3	4	Total
Q7E					
	1	99.1	23.8	9.1	132
YES					56.7%
	2	48.1	11.5	4.4	64
DO NOT KNOW					27.5%
	3	27.8	6.7	2.5	37
NO					15.9%
Column		175	42	16	233
Total		75.1%	18.0%	6.9%	100.0%

Page 68	SPSS/PC+		5/16/94
Chi-Square	Value	DF	Significance
-----	-----	---	-----
Pearson	21.11315	4	.00030
Likelihood Ratio	26.19195	4	.00003
Mantel-Haenszel test for linear association	17.42792	1	.00003

Minimum Expected Frequency = 2.541
Cells with Expected Frequency < 5 = 2 OF 9 (22.2%)

Number of Missing Observations: 8

Page 69 SPSS/PC+ 5/16/94

This procedure was completed at 15:05:57

Page 70 SPSS/PC+ 5/16/94

FINISH.

End of Include file.

APPENDIX 2

In-depth Interviews

7/1993

Company 1 - Heavy Manufacturer

COST - Most important criteria.

Background - Manufacture component parts for the aircraft industry. Grind dust and metals (cobalt is a sensitive issue).

Process all coolants. USA owned. Rationalisation process on how they deal with waste. Problems with waste disposal middle men, not up to date with the new Duty of Care requirements.

General feeling of anti 1990 EPA and legislation as a regulator. But the interviewee said that legislation could be effective to encourage self-regulation. Recycling, energy efficiency and waste minimisation programmes in place.

Shared responsibility for environmental issues. Essential to have shop floor interest and understanding. Environmental information diffusion is the main requirement for managers and workers to improve their environmental performance. One stop shop would be useful if only to supply newsletters.

Changing the individuals perceptions and increasing their understanding of their responsibilities through environmental training courses. Half day seminars were suggested to direct in house training methods. Plus proper layout of reports to senior managers regarding environmental issues.

Essential to have standards like the BS 7750 and policing through these rather than through legislation. Has implemented BS 5750 costly, time consuming and difficult. Would consider BS 7750 from the image point of view.

CPF, (Continuing Educational Forum run by PMG, Plymouth Manufacturers Group). Seminars, one on energy efficiency. Trade journals and associations were held in high regard and could be the best route to make people aware of their responsibilities.

"If there's profit in it then there is interest, if there is no profit then interest wains"

Company 2 - Packaging Company

Polystyrene packaging company dealing with Toshiba, Panasonic, Hitachi. Two satellites but Torpoint is the HQ. Est. 1965, therefore fairly old and market is still increasing.

No strategic written down approach to the environment. The interviewee sees environmental issues as transitory and unpredictable. "How can you define the solution when the problem is undefined?". But had operational initiatives such as a recycling programme, waste minimisation, and pollution control policies and considers packaging output.

But have plans to implement BS 7750 as well as BS 5750. BS 5750 was seen as a cosmetic exercise as you can obtain the standard by satisfying quality procedures and still

selling rubbish. BS 7750 is seen in a more positive light as clear targets and requirements are laid out.

No direct pressure from customers to become more environmentally friendly. But pressure to use cardboard or re-cycled polystyrene. Especially from West Germany. (through Toshiba).

Therefore legislative pressure filtering back down the supply chain from West Germany (Herr Kopfler the environmental Minister). Didn't want polystyrene. Fundamental problem with Polystyrene is the lack of alternatives. The pulp packaging is more environmentally unfriendly and the 30, 50, 80%, 100% recycled Polystyrene is 50% more expensive. i.e. £1000 per tonne becomes £1500 per tonne. Pulp still goes back to trees.

Answer is a integrated, unified and structured approach to the solution, i.e. for legislators to speak firstly to trade associations, like the British Plastics Federation and to individual leaders in the industries. Then to develop considered, legislation's. These could then be policed by the Health and Safety inspectorate as well as being self regulated by companies.

Solution is from intelligent discussion, research and identification of credible solutions in a sensible time series. Plus means by which to do the recommendations.

18 months two years ago, there was an inkling of discussions by the Government with BPF, now fissioned out. Consumer goods manufacturer has very important views on environmental issues. They seem to be determining policy as much as HQ.

Suggesting that the supply side of his equation, i.e. Panasonic and Toshiba, should be forcing the legislators arm but are not at this moment. Market pressure seen as uninformed comment. i.e. no idea about alternatives to polystyrene. The tail can't wag the dog. Global companies are in the driving seat and should be forcing sympathetic legislation's that are credible.

The company has reacted to market pressure by investing in equipment which enables them to recycle on site. Plus produce alternatives, but people don't want it.

Recycling has been 100% successful. Waste recycling has saved them a lot. Reduced costs. As with energy efficiency programme. Cost saving is the best motivator. Vague topic and undefined problem. Extremely negative about the solutions, i.e. the new packaging directive requires transport back to source which means increased transport.

Heavy investment in the environment. But sceptical and cynical. Can recycle any waste used on site and any materials brought in from outside. i.e. tubes brought in. Potential for end consumer to send back Polystyrene. No specific transport policy. Not aware of the eco-labelling scheme. Plus possibility that many others were not as he said yes in the survey.

The British do not like "sticks". Especially if they are European sticks. But exporters realise that they have to keep up with European regulations or risk reduction of market share. Legislation does increase awareness well. Especially at the industrial level. Mustn't have blanket legislation's.

Very concerned about the ACBE proposal to pressure companies to become more environmentally clean through loans. As it would become a personal issue and subjective and would not necessarily respect the judgement of the environmentalist at the bank etc.

Research is taking place into looking into alternatives and the Plastic Federation is trying to encourage people that polystyrene is not that bad and therefore to release the pressure.

Company 3 - Small Office

Business Background - Single office/site business. Environmental issues, office based. Rapidly expanding and in the stage of considering expansion by taking on more help. Deals with individuals as well as companies. Regular travelling by car, salesman technique. 8 years p/t, 3 years full time.

Main issue was that the company was interested in environmental issues for personal ethical issues more than for short term financial response.

Although environmental issues are the *raison d'être* of the company. Runs the business as an extension of the household. He recycles waste and tries to keep energy usage to a minimum.

Does not have a strategic plan to accommodate the environment, but does feel that a company should be able to strategically plan however small they are. They should be flexible and always aware of future problems. Has a recycling programme, an energy efficiency procedure, a waste policy and considers the environmental implications of transport. Does 40 000 miles a year mostly in the car. But tries to arrange jobs close to each other for convenience sake rather than anything else.

Takes household and business waste up to chelsom meadows. Was asked to pay when he had c.£500 of paper work to scrap. Tries not to make any more copies of material than he needs. Turns off machines at the wall when he goes away. No low energy light bulbs in the office.

Essentially the business is an educational diffusion agency in itself and provides companies with plans to change and *improve* their internal business environment if not their external one as well. (reference to paper and tobacco coming from trees). Also, he never gets regulations through, i.e. he had to go looking for the new Health and Safety at work regulations, from January 1993, that require some sort of environmental awareness on smoking. Information diffusion problem.

Interested in environmental issues mainly because he has worked in medicine and in an environmental health department for the NHS. Educated about the environment. Does not see environmental compliance as a cost saving exercise, more as an ethical issue. Sees the solution to be self imposed rather than being made to comply by legislation. Also feels that this would be more effective as then companies would comply fully without reservation if they believed in the change.

Therefore he believes in some sort of legislation but mostly in self regulation for efficiency purposes. Legislation could lead to developing a policy just for the sake of it. Minimum legislation for those who are not convinced. Convinced, may do more. If the customer does not demand changes then must look at the supply side, i.e. to create the demand through supply. But therefore requires legislation.

Most have not thought about sustainable growth. Increase public consciousness and educational programmes. Health and Safety or fire reasons lead to Stop Smoking, but USA suing for passive smoking is another reason to call him in on a corporate level.

Used to be a member of Plymouth Rotary Club, but not in touch with support organisations. Interested in Groundwork or a one stop advice shop from a commercial point of view, i.e. acquiring work through seminars. Not concerned about financial incentives to become more environmentally friendly. But unaware of the requirements.

Highlighted the confusion with 'eco' labels from a consumers point of view. Highlights day to day survival rather than strategic planning ahead. But "any business that is going to survive has to look ahead". Lack of strategic planning has lead to many small businesses going bust over the last few years. Aware that there are environmental issues that he is not aware of with respect to the business. Would like to be informed of what the requirements or possibilities are for environmental improvement.

Legislation means that companies will wait until they are made to undertake the requirements and then they will only do the minimum requirement. Therefore it is better to educate and encourage companies of the virtues of environmental improvement rather than imposing unwanted requirements on companies that they will not understand.

Workforce support is absolutely essential.

Company 4 - Manufacturer

Part of a PLC. 18 branches, Plymouth is one of the smallest branches. Safety equipment for ships plus fishing equipment. HQ is in Grimsby.

There is a central policy on the environment, but it has not filtered down yet to Plymouth. Reason is customer pressure from larger buyers. No manufacturing processes in the division. Health and safety manger is most involved with the environmental issues.

All they want is a piece of paper to show that they have an environmental policy. The fact that it has not and probably will not ever be implemented is neither here nor there. It is a charade. The larger firms do not even need assurance, just a piece of paper.

The interviewee had not heard of BS 7750 and suggested it was nothing new. BS 5750 had been implemented and the interviewee suggested it make them more efficient and was worth doing as it is a requirement to allow them to compete. Doubts that the environment assurance will be as conclusive but if it was they would consider its implementation. Could implement it.

Branch is more or less autonomous, each branch has a branch manager, who reports to an area manager. Far more pressing things than environmental issues. 5 years ago there were big pools of resources therefore time to discuss these "peripheral" issues. Now when they get together to discuss policy and direction keeping above water is the most important thing.

Not really thought about it very much and customer pressure and legislation would be the only real concerns that would lead them to consider environmental issues on a large scale. Seen as a very low priority due to time and financial restraints.

Very sceptical about the use of economic instruments in the environmental field, but the interviewee did not really understand the implications or concepts discussed. Although the company did have a recycling initiative.

Company 5 - Guest House

Deals with yearly tourist trade on the level of a small hotel. Does not feel environmental issues are at all important to the business practices.

Has no buying ethics aside the cheapest available commodities. Does not feel any real consumer pressure to change. Used to buy environmentally friendly household goods, washing powders and detergents. No longer does as they were not as good.

Has not heard of the British Tourist Boards Green Initiatives or feels they will be relevant. BS 7750 seen as totally inappropriate and a waste of time.

Generally felt that environmental issues are still important but are the problem of large scale manufacturing companies and not guest houses. Some interest in the issue that a clean environment would benefit the South West's Tourist trade, but does not feel that they could induce any change.

Only pressure to change would be through the customers, many of whom are regulars.

Company 6 - Small antiques distributor

Buys and sells antiquities in the South West and abroad where possible. Believes in entrepreneurial spirit and free will. Therefore does not appreciate any form of regulation or legislation.

No specific environmental policies as lack of time and motivation. Although he did consider the environmental implications of his transportation mode. Transport is essential and therefore not an issue. But does have an unleaded car as the petrol is cheaper. General feeling that the environment is irrelevant and that waste is an unfortunate necessity. i.e. packaging.

General feeling that economic instruments like these are good. If costs are reduced then interest increases. But never consider energy efficiency as an option. Although did recognise this as a possibility, if only to reduce bills by turning off the light.

Sole trader therefore no other employee to educate which made BS 7750 irrelevant. Did not have any sort of management system or strategic management structure in place aside to maximise profit and survive the recession.

Only incentive to change would be from customers unless legislation forced him to. This was seen as unlikely in his business as it would be impractical. Therefore economic instruments and customer pressure would be the most effective ways of improving his environmental performance.

Company 7 - Shop/Retail outlet.

Selling office stationary.

Unaware of any environmental pressures. Do not feel they are particularly environmentally unfriendly. But feel that an environmental newsletter distributed through retail trade associations would be useful.

No staff training or pressure from staff to consider environmental issues. Only source of environmental impact they felt they had was through the company transport policy. As most vans were running on lead free petrol this was seen as adequate.

Packaging was not an issue they had considered and they had no formal environmental policy although they agreed that this could be a possibility. Operation initiatives, did, however include recycling.

Company 8 - Management consultancy

Did not feel it had particularly large impact on the environment but was interested from a commercial point of view. Felt its environmental impact would come from internal operations within the office.

No audit had been undertaken, but they encourage the reduction of office paper, recycling and the use of energy saving measures, i.e. turning off lights when not required. No further analysis of energy usage had been undertaken.

The use of trade journals were felt primary sources of information diffusion. They also said that trade journals were the most frequently referred to source of information for many of their clients. Suggesting that this would be the best avenue to walk down if changes were to occur. They were unaware of the implications of the 1990 EPA but considered legislation a necessity in the long term.

BS 7750 was being considered but only as a commercial exercise.

Company 9 - Small engineering

Specialisation was small batch injection moulding mainly in engineering polymers. Assembly and fabrication.

Employee and investor pressures had lead to the formulation of an environmental policy. Trade journal is seen as very useful but the chamber of commerce is not. Groundwork Trust has been approached for help and were helpful.

Feeling that free consultancy and increased information flows would be helpful. Concurrently, more half day seminars would be useful. When the interviewer pointed out that there was an environmental forum (Plymouth Environment Forum) for the exchange of views the interviewee was very interested.

Waste disposal, employee health and safety, energy efficiency and the control of emission were seen as the most important issues. BS 7750 was seen as appropriate but the interviewee did not envisage employing it in the near future. Was currently seeking BS 5750 accreditation and felt this was enough for the meantime. Although it was suggested that BS 7750 may be considered at a later date if customer pressure increased.

Company 10 - Manufacture -

Manufacture of joinery and other specialist requirements of the construction industry.

The use of solvents requires the company to be subject to the COSHH requirements and this has led to an interest in the environment generally. The pressure to address the issue has come through a feeling of legislative compliance rather than customer pressure.

Does not consider itself a prime polluter but accepts that it has some detrimental effect on the environment. Feels information is hard to get hold of and requires further assistance on the legislative level.

Being a small local manufacturer, the impact on the local community is of concern. Although the company has not as yet been subject to local criticism, the standing of the company in the locality is an important issue.

The interviewee felt that legislation development would "level the playing field" and could therefore be beneficial. Personal conviction is seen as of secondary importance to legislative pressures as a catalyst for change. Feels that BS 7750 could be applicable to the company but recognises that it would have to reconsider its own management channels first. Being a small company the interviewee also feels there should be some financial subsidy to encourage environmental best practice.

Economic instruments were viewed in a very negative light as the market was seen as uninformed. Case study material from firms with similar constraints would be useful.

Company 11 - Manufacturer engineering.

Light engineering company producing sheet metal and light fabrication work.

Legislation is the prime cause for concern. Is as yet unaware of its legislative requirements but is taking steps to redress this balance. They did, however feel the necessity for legislation if only to level the playing field.

The interviewee felt that a one stop advice shop would be useful as a starting point and that a data base would also be of use. BS 7750 was viewed as a waste of time and money and would never be considered. It was also described as "jobs for the boys" for his experience of BS 5750.

Time and money were seen as the most important reasons for the company's lack of environmental initiatives. The interviewee also felt that although they would have to keep up with the developments of legislation, "Green" was no longer such an important issue.

They had no formal environmental policy. The use of economic instruments as a way of cleaning up the environment was seen as extremely dangerous although some re-evaluation of the tax system could be beneficial for small firms.

Company 12 - Design, marketing and communications company

As an office based company the interviewee felt the company's environmental impact was very low and therefore a low priority. Waste paper was recycled but apart from this there were no environmental initiatives in place.

This was due to the perceived lack of environmental impact and to the lack of external pressure to change. BS 7750 was viewed as a complete waste of time and also totally inappropriate. They had no formal environmental policy.

The company would not be interested in any external consultancy even if it were subsidised as time would still be wasted.

Company 13 - Large tourist attraction

Environmental issues were taken very seriously here due to customer pressure and personal conviction. An environmental audit had been undertaken and an holistic approach was being taken throughout the company with respect to environmental issues. A written environmental policy was also produced and available to the general public. This was a substantial document that went into detail about current practices and was not simply cosmetic.

Energy efficiency measures were in place, low energy light bulbs and increases in insulation were being considered. The company also felt the requirement to divulge what it was doing to its customers and felt that there were marketing opportunities available in this respect.

BS 7750 was seen as a possibility but the interviewee felt that the company had environmental issues well in hand. It was agreed that BS 7750 was a possibility if only for commercial exploitation.

Trade journals had been very useful but further best practices would be interesting to compare and improve. Legislation was also seen as a requirement to level the playing field and they were aware of the implications of the 1990 EPA to their business practices.

Company 14 - Solicitors practice

Environmental issues were viewed here as a commercial opportunity and nothing more.

The interviewee felt that his company had no environmental impact over and above that of a normal household. They did however feel that more co-ordination of environmental information and best practices would be useful. They also felt that further legislation could be useful to reduce SMEs environmental impacts but could not see how it would be policed.

In general they felt that information on how to improve practices was limited and required attention. BS 7750 was seen as inappropriate and unnecessary.

APPENDIX 3

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FREQUENCIES /VARIABLES ALL /STATISTICS ALL.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
There also may be up to 1610 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
single site business	1	124	69.7	69.7	69.7
headquarters unit	2	24	13.5	13.5	83.1
subsidiary or branch	3	24	13.5	13.5	96.6
subsid. branch forei	4	6	3.4	3.4	100.0
TOTAL		178	100.0	100.0	
Mean	1.506	Std Err	.064	Median	1.000
Mode	1.000	Std Dev	.852	Variance	.726
Kurtosis	.958	S E Kurt	.362	Skewness	1.479
S E Skew	.182	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	268.000		

Valid Cases 178 Missing Cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
0-10	1	109	61.2	61.2	61.2
11-25	2	28	15.7	15.7	77.0
26-100	3	24	13.5	13.5	90.4
101-200	4	10	5.6	5.6	96.1
200+	5	7	3.9	3.9	100.0
TOTAL		178	100.0	100.0	
Mean	1.753	Std Err	.085	Median	1.000
Mode	1.000	Std Dev	1.128	Variance	1.272
Kurtosis	1.018	S E Kurt	.362	Skewness	1.409
S E Skew	.182	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	312.000		

Valid Cases 178 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	10	5.6	5.6	5.6
secondary	2	84	47.2	47.2	52.8
tertiary	3	83	46.6	46.6	99.4
	10	1	.6	.6	100.0
		-----	-----	-----	
	TOTAL	178	100.0	100.0	
Mean	2.455	Std Err	.062	Median	2.000
Mode	2.000	Std Dev	.824	Variance	.679
Kurtosis	38.765	S E Kurt	.362	Skewness	4.130
S E Skew	.182	Range	9.000	Minimum	1.000
Maximum	10.000	Sum	437.000		

Valid Cases 178 Missing Cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
under 1 year	1	2	1.1	1.1	1.1
1-5 years	2	22	12.4	12.4	13.5
6-10 years	3	43	24.2	24.2	37.6
11-50 years	4	85	47.8	47.8	85.4
50 years+	5	26	14.6	14.6	100.0
		-----	-----	-----	
	TOTAL	178	100.0	100.0	
Mean	3.624	Std Err	.069	Median	4.000
Mode	4.000	Std Dev	.920	Variance	.846
Kurtosis	-.202	S E Kurt	.362	Skewness	-.502
S E Skew	.182	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	645.000		

Valid Cases 178 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
yes	1	70	39.3	39.3	39.3
no	2	108	60.7	60.7	100.0
		-----	-----	-----	
TOTAL		178	100.0	100.0	

Mean	1.607	Std Err	.037	Median	2.000
Mode	2.000	Std Dev	.490	Variance	.240
Kurtosis	-1.826	S E Kurt	.362	Skewness	-.441
S E Skew	.182	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	286.000		

Valid Cases 178 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
yes	1	29	16.3	16.3	16.3
no	2	149	83.7	83.7	100.0
		-----	-----	-----	
TOTAL		178	100.0	100.0	

Mean	1.837	Std Err	.028	Median	2.000
Mode	2.000	Std Dev	.370	Variance	.137
Kurtosis	1.405	S E Kurt	.362	Skewness	-1.841
S E Skew	.182	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	327.000		

Valid Cases 178 Missing Cases 0

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Q7A no strat policy

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
operational env init	1	55	30.9	36.9	36.9
no opinion	2	94	52.8	63.1	100.0
.	.	29	16.3	MISSING	
		-----	-----	-----	
TOTAL		178	100.0	100.0	

Mean	1.631	Std Err	.040	Median	2.000
Mode	2.000	Std Dev	.484	Variance	.234

Kurtosis	-1.723	S E Kurt	.395	Skewness	-.548
S E Skew	.199	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	243.000		

Valid Cases 149 Missing Cases 29

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Q7B no strat pol

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
env issues not rel	1	48	27.0	32.2	32.2
no opinion	2	101	56.7	67.8	100.0
	.	29	16.3	MISSING	
	TOTAL	178	100.0	100.0	

Mean	1.678	Std Err	.038	Median	2.000
Mode	2.000	Std Dev	.469	Variance	.220
Kurtosis	-1.428	S E Kurt	.395	Skewness	-.769
S E Skew	.199	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	250.000		

Valid Cases 149 Missing Cases 29

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Q7C no strat pol

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
lack of info	1	21	11.8	14.1	14.1
no opinion	2	128	71.9	85.9	100.0
	.	29	16.3	MISSING	
	TOTAL	178	100.0	100.0	

Mean	1.859	Std Err	.029	Median	2.000
Mode	2.000	Std Dev	.349	Variance	.122
Kurtosis	2.378	S E Kurt	.395	Skewness	-2.085
S E Skew	.199	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	277.000		

Valid Cases 149 Missing Cases 29

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Q7D no strat pol

				Valid	Cum
Value Label	Value	Frequency	Percent	Percent	Percent
lack of in house exp	1	13	7.3	8.7	8.7
no opinion	2	136	76.4	91.3	100.0
	.	29	16.3	MISSING	
		-----	-----	-----	
TOTAL		178	100.0	100.0	
Mean	1.913	Std Err	.023	Median	2.000
Mode	2.000	Std Dev	.283	Variance	.080
Kurtosis	6.824	S E Kurt	.395	Skewness	-2.955
S E Skew	.199	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	285.000		

Valid Cases 149 Missing Cases 29

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Q7E no strat pol

				Valid	Cum
Value Label	Value	Frequency	Percent	Percent	Percent
lack of ability to a	1	15	8.4	10.1	10.1
no opinion	2	134	75.3	89.9	100.0
	.	29	16.3	MISSING	
		-----	-----	-----	
TOTAL		178	100.0	100.0	
Mean	1.899	Std Err	.025	Median	2.000
Mode	2.000	Std Dev	.302	Variance	.091
Kurtosis	5.260	S E Kurt	.395	Skewness	-2.681
S E Skew	.199	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	283.000		

Valid Cases 149 Missing Cases 29

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Q7F no strat pol

				Valid	Cum
Value Label	Value	Frequency	Percent	Percent	Percent
financially constrai	1	45	25.3	30.2	30.2
no opinion	2	104	58.4	69.8	100.0
	.	29	16.3	MISSING	
		-----	-----	-----	
TOTAL		178	100.0	100.0	

Mean	1.698	Std Err	.038	Median	2.000
Mode	2.000	Std Dev	.461	Variance	.212
Kurtosis	-1.258	S E Kurt	.395	Skewness	-.871
S E Skew	.199	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	253.000		

Valid Cases 149 Missing Cases 29

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Q7G no strat pol

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
lack of time	1	50	28.1	33.6	33.6
no opinion	2	99	55.6	66.4	100.0
.	.	29	16.3	MISSING	
	TOTAL	178	100.0	100.0	

Mean	1.664	Std Err	.039	Median	2.000
Mode	2.000	Std Dev	.474	Variance	.224
Kurtosis	-1.526	S E Kurt	.395	Skewness	-.704
S E Skew	.199	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	248.000		

Valid Cases 149 Missing Cases 29

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Q7H no strat pol

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
company inertia	1	7	3.9	4.7	4.7
no opinion	2	142	79.8	95.3	100.0
.	.	29	16.3	MISSING	
	TOTAL	178	100.0	100.0	

Mean	1.953	Std Err	.017	Median	2.000
Mode	2.000	Std Dev	.212	Variance	.045
Kurtosis	16.938	S E Kurt	.395	Skewness	-4.326
S E Skew	.199	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	291.000		

Valid Cases 149 Missing Cases 29

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Q7I no strat pol

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
lack of reasons to s	1	22	12.4	14.8	14.8
no opinion	2	127	71.3	85.2	100.0
	.	29	16.3	MISSING	
	TOTAL	178	100.0	100.0	
Mean	1.852	Std Err	.029	Median	2.000
Mode	2.000	Std Dev	.356	Variance	.127
Kurtosis	2.054	S E Kurt	.395	Skewness	-2.007
S E Skew	.199	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	276.000		

Valid Cases 149 Missing Cases 29

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Q7J no strat pol

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
lack of legislative	1	5	2.8	3.4	3.4
no opinion	2	144	80.9	96.6	100.0
	.	29	16.3	MISSING	
	TOTAL	178	100.0	100.0	
Mean	1.966	Std Err	.015	Median	2.000
Mode	2.000	Std Dev	.181	Variance	.033
Kurtosis	25.730	S E Kurt	.395	Skewness	-5.233
S E Skew	.199	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	293.000		

Valid Cases 149 Missing Cases 29

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Q7K no strat pol

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
lack of incentives t	1	14	7.9	9.4	9.4
no opinion	2	135	75.8	90.6	100.0
	.	29	16.3	MISSING	

		TOTAL	178	100.0	100.0
Mean	1.906	Std Err	.024	Median	2.000
Mode	2.000	Std Dev	.293	Variance	.086
Kurtosis	5.986	S E Kurt	.395	Skewness	-2.812
S E Skew	.199	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	284.000		

Valid Cases 149 Missing Cases 29

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Q7L no strat pol

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
no longer an imports	1	2	1.1	1.3	1.3
no opinion	2	147	82.6	98.7	100.0
	.	29	16.3	MISSING	
		TOTAL	178	100.0	100.0

Mean	1.987	Std Err	.009	Median	2.000
Mode	2.000	Std Dev	.115	Variance	.013
Kurtosis	71.945	S E Kurt	.395	Skewness	-6.543
S E Skew	.199	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	296.000		

Valid Cases 149 Missing Cases 29

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	6	3.4	3.4	3.4
no	2	172	96.6	96.6	100.0
		TOTAL	178	100.0	100.0

Mean	1.966	Std Err	.014	Median	2.000
Mode	2.000	Std Dev	.181	Variance	.033
Kurtosis	25.444	S E Kurt	.362	Skewness	-5.211
S E Skew	.182	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	350.000		

Valid Cases 178 Missing Cases 0

Q9 able to implement 77507

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
yes	1	55	30.9	32.0	32.0
no	2	117	65.7	68.0	100.0
	.	6	3.4	MISSING	
TOTAL		178	100.0	100.0	

Mean	1.680	Std Err	.036	Median	2.000
Mode	2.000	Std Dev	.468	Variance	.219
Kurtosis	-1.409	S E Kurt	.368	Skewness	-.780
S E Skew	.185	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	289.000		

Valid Cases 172 Missing Cases 6

Q10 willing to implement 77507

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
yes	1	40	22.5	72.7	72.7
no	2	15	8.4	27.3	100.0
	.	123	69.1	MISSING	
TOTAL		178	100.0	100.0	

Mean	1.273	Std Err	.061	Median	1.000
Mode	1.000	Std Dev	.449	Variance	.202
Kurtosis	-.934	S E Kurt	.634	Skewness	1.049
S E Skew	.322	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	70.000		

Valid Cases 55 Missing Cases 123

Q11A why not able to implement

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
lack of interest	1	12	6.7	10.3	10.3
no opinion	2	104	58.4	89.7	100.0
	.	62	34.8	MISSING	

TOTAL	178	100.0	100.0
-------	-----	-------	-------

Mean	1.897	Std Err	.028	Median	2.000
Mode	2.000	Std Dev	.306	Variance	.094
Kurtosis	5.048	S E Kurt	.446	Skewness	-2.638
S E Skew	.225	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	220.000		

Valid Cases 116 Missing Cases 62

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Q11B why not able to implement

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
lack of time	1	45	25.3	38.5	38.5
no opinion	2	72	40.4	61.5	100.0
	.	61	34.3	MISSING	
	TOTAL	178	100.0	100.0	

Mean	1.615	Std Err	.045	Median	2.000
Mode	2.000	Std Dev	.489	Variance	.239
Kurtosis	-1.800	S E Kurt	.444	Skewness	-.481
S E Skew	.224	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	189.000		

Valid Cases 117 Missing Cases 61

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Q11C why not able to implement

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
lack of financial re	1	56	31.5	47.9	47.9
no opinion	2	61	34.3	52.1	100.0
	.	61	34.3	MISSING	
	TOTAL	178	100.0	100.0	

Mean	1.521	Std Err	.046	Median	2.000
Mode	2.000	Std Dev	.502	Variance	.252
Kurtosis	-2.027	S E Kurt	.444	Skewness	-.087
S E Skew	.224	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	178.000		

Valid Cases 117 Missing Cases 61

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Q11D why not able to implement

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
lack of internal com	1	8	4.5	6.8	6.8
no opinion	2	109	61.2	93.2	100.0
	.	61	34.3	MISSING	
TOTAL		178	100.0	100.0	

Mean	1.932	Std Err	.023	Median	2.000
Mode	2.000	Std Dev	.253	Variance	.064
Kurtosis	10.179	S E Kurt	.444	Skewness	-3.465
S E Skew	.224	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	226.000		

Valid Cases 117 Missing Cases 61

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Q11E why not able to implement

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
inappropriate nature	1	52	29.2	44.4	44.4
no opinion	2	65	36.5	55.6	100.0
	.	61	34.3	MISSING	
TOTAL		178	100.0	100.0	

Mean	1.556	Std Err	.046	Median	2.000
Mode	2.000	Std Dev	.499	Variance	.249
Kurtosis	-1.983	S E Kurt	.444	Skewness	-.227
S E Skew	.224	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	182.000		

Valid Cases 117 Missing Cases 61

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Q11F why not able to implement

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
not cost effective	1	26	14.6	22.2	22.2

no opinion	2	91	51.1	77.8	100.0
.	.	61	34.3	MISSING	

TOTAL		178	100.0	100.0	

Mean	1.778	Std Err	.039	Median	2.000
Mode	2.000	Std Dev	.418	Variance	.174
Kurtosis	-.171	S E Kurt	.444	Skewness	-1.354
S E Skew	.224	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	208.000		

Valid Cases 117 Missing Cases 61

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Q11G why not able to implement

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
limited available at	1	53	29.8	45.3	45.3
no opinion	2	64	36.0	54.7	100.0
.	.	61	34.3	MISSING	

TOTAL		178	100.0	100.0	

Mean	1.547	Std Err	.046	Median	2.000
Mode	2.000	Std Dev	.500	Variance	.250
Kurtosis	-1.998	S E Kurt	.444	Skewness	-.191
S E Skew	.224	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	181.000		

Valid Cases 117 Missing Cases 61

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Q11H why not able to implement

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
not company policy	1	17	9.6	14.5	14.5
no opinion	2	100	56.2	85.5	100.0
.	.	61	34.3	MISSING	

TOTAL		178	100.0	100.0	

Mean	1.855	Std Err	.033	Median	2.000
Mode	2.000	Std Dev	.354	Variance	.125
Kurtosis	2.196	S E Kurt	.444	Skewness	-2.039
S E Skew	.224	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	217.000		

Valid Cases 117 Missing Cases 61

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Q12 qual

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	3	1	.6	100.0	100.0
	.	177	99.4	MISSING	
	TOTAL	178	100.0	100.0	
Mean	3.000	Median	3.000	Mode	3.000
Range	.000	Minimum	3.000	Maximum	3.000
Sum	3.000				

Valid Cases 1 Missing Cases 177

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Q13 rema

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
not at all interaste	1	29	16.3	16.4	16.4
quite uninterested	2	15	8.4	8.5	24.9
neither interested n	3	54	30.3	30.5	55.4
quite interested	4	62	34.8	35.0	90.4
extremely interested	5	17	9.6	9.6	100.0
	.	1	.6	MISSING	
	TOTAL	178	100.0	100.0	
Mean	3.130	Std Err	.091	Median	3.000
Mode	4.000	Std Dev	1.211	Variance	1.466
Kurtosis	-.686	S E Kurt	.363	Skewness	-.486
S E Skew	.183	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	554.000		

Valid Cases 177 Missing Cases 1

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Q14 spc

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
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not at all interested	1	48	27.0	27.1	27.1
quite uninterested	2	20	11.2	11.3	38.4
neither interested n	3	37	20.8	20.9	59.3
quite interested	4	54	30.3	30.5	89.8
extremely interested	5	18	10.1	10.2	100.0
.	.	1	.6	MISSING	

TOTAL	178	100.0	100.0
-------	-----	-------	-------

Mean	2.853	Std Err	.104	Median	3.000
Mode	4.000	Std Dev	1.378	Variance	1.899
Kurtosis	-1.336	S E Kurt	.363	Skewness	-.128
S E Skew	.183	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	505.000		

Valid Cases 177 Missing Cases 1

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Q15 payback member?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	4	2.2	2.2	2.2
no	2	173	97.2	97.2	99.4
	3	1	.6	.6	100.0
TOTAL		178	100.0	100.0	

Mean	1.983	Std Err	.013	Median	2.000
Mode	2.000	Std Dev	.167	Variance	.028
Kurtosis	32.873	S E Kurt	.362	Skewness	-3.359
S E Skew	.182	Range	2.000	Minimum	1.000
Maximum	3.000	Sum	353.000		

Valid Cases 178 Missing Cases 0

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Q16A env helpline

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
not at all interested	1	59	33.1	33.7	33.7
quite uninterested	2	10	5.6	5.7	39.4
neither interested n	3	37	32.0	32.6	72.0
quite interested	4	38	21.3	21.7	93.7
extremely interested	5	11	6.2	6.3	100.0
.	.	3	1.7	MISSING	

		TOTAL	178	100.0	100.0
Mean	2.611	Std Err	.100	Median	3.000
Mode	1.000	Std Dev	1.317	Variance	1.733
Kurtosis	-1.270	S E Kurt	.365	Skewness	.015
S E Skew	.184	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	457.000		

Valid Cases 175 Missing Cases 3

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Q16B confidential advice

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
not at all interested	1	52	29.2	29.7	29.7
quite uninterested	2	14	7.9	8.0	37.7
neither interested n	3	62	34.8	35.4	73.1
quite interested	4	36	20.2	20.6	93.7
extremely interested	5	11	6.2	6.3	100.0
.	.	3	1.7	MISSING	
	TOTAL	178	100.0	100.0	

Mean	2.657	Std Err	.096	Median	3.000
Mode	3.000	Std Dev	1.272	Variance	1.617
Kurtosis	-1.133	S E Kurt	.365	Skewness	-.027
S E Skew	.184	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	465.000		

Valid Cases 175 Missing Cases 3

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Q16C newsletter

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
not at all interested	1	47	26.4	26.9	26.9
quite uninterested	2	14	7.9	8.0	34.9
neither interested n	3	48	27.0	27.4	62.3
quite interested	4	58	32.6	33.1	95.4
extremely interested	5	8	4.5	4.6	100.0
.	.	3	1.7	MISSING	
	TOTAL	178	100.0	100.0	

Mean	2.806	Std Err	.097	Median	3.000
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Mode	4.000	Std Dev	1.281	Variance	1.640
Kurtosis	-1.263	S E Kurt	.365	Skewness	-.278
S E Skew	.184	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	491.000		

Valid Cases	175	Missing Cases	3
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Q16D handbook

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
not at all intereste	1	49	27.5	28.0	28.0
quite uninterested	2	10	5.6	5.7	33.7
neither interested n	3	57	32.0	32.6	66.3
quite interested	4	49	27.5	38.0	94.3
extremely interested	5	10	5.6	5.7	100.0
	.	3	1.7	MISSING	
TOTAL		178	100.0	100.0	

Mean	2.777	Std Err	.097	Median	3.000
Mode	3.000	Std Dev	1.283	Variance	1.645
Kurtosis	-1.193	S E Kurt	.365	Skewness	-.219
S E Skew	.184	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	486.000		

Valid Cases	175	Missing Cases	3
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Q16Z eny pr

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
not at all interested	1	57	32.0	32.6	32.6
quite uninterested	2	10	5.6	5.7	38.3
neither interested n	3	67	37.6	38.3	76.6
quite interested	4	34	19.1	19.4	96.0
extremely interested	5	7	3.9	4.0	100.0
.	.	3	1.7	MISSING	
TOTAL		178	100.0	100.0	

Mean	2.566	Std Err	.094	Median	3.000
Mode	3.000	Std Dev	1.239	Variance	1.534
Kurtosis	-1.194	S E Kurt	.365	Skewness	-.042
S E Skew	.184	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	449.000		

Valid Cases 175 Missing Cases 3

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Q17 interested in payback?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
not at all intereste	1	61	34.3	35.3	35.3
quite uninterested	2	12	6.7	6.9	42.2
neither interested n	3	58	32.6	33.5	75.7
quite interested	4	38	21.3	22.0	97.7
extremely interested	5	4	2.2	2.3	100.0
	.	5	2.8	MISSING	
TOTAL		178	100.0	100.0	

Mean	2.491	Std Err	.094	Median	3.000
Mode	1.000	Std Dev	1.242	Variance	1.542
Kurtosis	-1.378	S E Kurt	.367	Skewness	-.008
S E Skew	.185	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	431.000		

Valid Cases 173 Missing Cases 5

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Q18 qual2

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	.	178	100.0	MISSING	
TOTAL		178	100.0	100.0	

Valid Cases 0 Missing Cases 178

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SPSS/PC+

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Q19A env helpline

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
neither useful nor n	3	2	1.1	100.0	100.0
	.	176	98.9	MISSING	
TOTAL		178	100.0	100.0	

Mean	3.000	Std Err	.000	Median	3.000
Mode	3.000	Std Dev	.000	Variance	.000
Range	.000	Minimum	3.000	Maximum	3.000
Sum	6.000				

Valid Cases 2 Missing Cases 176

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Q19B confid advice

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
neither useful nor n	3	2	1.1	100.0	100.0
	.	176	98.9	MISSING	
	TOTAL	178	100.0	100.0	

Mean	3.000	Std Err	.000	Median	3.000
Mode	3.000	Std Dev	.000	Variance	.000
Range	.000	Minimum	3.000	Maximum	3.000
Sum	6.000				

Valid Cases 2 Missing Cases 176

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Q19C newsletter

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
neither useful nor n	3	2	1.1	66.7	66.7
quite useful	4	1	.6	33.3	100.0
	.	175	98.3	MISSING	
	TOTAL	178	100.0	100.0	

Mean	3.333	Std Err	.333	Median	3.000
Mode	3.000	Std Dev	.577	Variance	.333
Skewness	1.732	S E Skew	1.225	Range	1.000
Minimum	3.000	Maximum	4.000	Sum	10.000

Valid Cases 3 Missing Cases 175

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Q19D handbook

Valid	Cum
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Value Label	Value	Frequency	Percent	Percent	Percent
neither useful nor n	3	2	1.1	66.7	66.7
quite useful	4	1	.6	33.3	100.0
	.	175	98.3	MISSING	
TOTAL		178	100.0	100.0	

Mean	3.333	Std Err	.333	Median	3.000
Mode	3.000	Std Dev	.577	Variance	.333
Skewness	1.732	S E Skew	1.225	Range	1.000
Minimum	3.000	Maximum	4.000	Sum	10.000

Valid Cases 3 Missing Cases 175

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Q19K env pr

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
neither useful nor n	3	2	1.1	66.7	66.7
quite useful	4	1	.6	33.3	100.0
	.	175	98.3	MISSING	
TOTAL		178	100.0	100.0	

Mean	3.333	Std Err	.333	Median	3.000
Mode	3.000	Std Dev	.577	Variance	.333
Skewness	1.732	S E Skew	1.225	Range	1.000
Minimum	3.000	Maximum	4.000	Sum	10.000

Valid Cases 3 Missing Cases 175

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Q19P consultancy service

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
neither useful nor n	3	3	1.7	100.0	100.0
	.	175	98.3	MISSING	
TOTAL		178	100.0	100.0	

Mean	3.000	Std Err	.000	Median	3.000
Mode	3.000	Std Dev	.000	Variance	.000
Range	.000	Minimum	3.000	Maximum	3.000
Sum	9.000				

Valid Cases 3 Missing Cases 175

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Q19G staff training

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
neither useful nor n	3	3	1.7	100.0	100.0
	.	175	98.3	MISSING	
	TOTAL	178	100.0	100.0	

Mean	3.000	Std Err	.000	Median	3.000
Mode	3.000	Std Dev	.000	Variance	.000
Range	.000	Minimum	3.000	Maximum	3.000
Sum	9.000				

Valid Cases 3 Missing Cases 175

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Q19H seminars

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
neither useful nor n	3	2	1.1	66.7	66.7
extremely useful	5	1	.6	33.3	100.0
	.	175	98.3	MISSING	
	TOTAL	178	100.0	100.0	

Mean	3.667	Std Err	.667	Median	3.000
Mode	3.000	Std Dev	1.155	Variance	1.333
Skewness	1.732	S E Skew	1.225	Range	2.000
Minimum	3.000	Maximum	5.000	Sum	11.000

Valid Cases 3 Missing Cases 175

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	121	68.0	76.6	76.6
cornwall	2	37	20.8	23.4	100.0
	.	20	11.2	MISSING	

		TOTAL	178	100.0	100.0
Mean	1.234	Std Err	.034	Median	1.000
Mode	1.000	Std Dev	.425	Variance	.180
Kurtosis	-.399	S E Kurt	.384	Skewness	1.267
S E Skew	.193	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	195.000		
Valid Cases	158	Missing Cases	20		

Page	58	SPSS/PC+	3/1/94		
This procedure was completed at 11:17:41					

Page 3 SPSS/PC+ 3/7/94

GET /FILE 'c:\spss\askew.sys'.
 The SPSS/PC+ system file is read from
 file c:\spss\askew.sys.
 The file was created on 3/01/94 at 11:06:59
 and is titled SPSS/PC+ System File Written by Data Entry II
 The SPSS/PC+ system file contains
 178 cases, each consisting of
 52 variables (including system variables).
 52 variables will be used in this session.

Page 4 SPSS/PC+ 3/7/94

This procedure was completed at 12:00:41

Page 5 SPSS/PC+ 3/7/94

PROCESS IF (q3 eq 1).

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FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
 There also may be up to 1610 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	7	70.0	70.0	70.0
headquarters unit	2	2	20.0	20.0	90.0
subsid. branch forei	4	1	10.0	10.0	100.0
TOTAL		10	100.0	100.0	

Valid Cases 10 Missing Cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	6	60.0	60.0	60.0
11-25	2	2	20.0	20.0	80.0
101-200	4	2	20.0	20.0	100.0
TOTAL		10	100.0	100.0	

Valid Cases 10 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	10	100.0	100.0	100.0
TOTAL		10	100.0	100.0	

Valid Cases 10 Missing Cases 0

Page 10 SPSS/PC+ 3/7/94

Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
1-5 years	2	1	10.0	10.0	10.0
6-10 years	3	2	20.0	20.0	30.0
11-50 years	4	4	40.0	40.0	70.0
50 years+	5	3	30.0	30.0	100.0
TOTAL		10	100.0	100.0	

Valid Cases 10 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	6	60.0	60.0	60.0
no	2	4	40.0	40.0	100.0
TOTAL		10	100.0	100.0	

Valid Cases 10 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	5	50.0	50.0	50.0
no	2	5	50.0	50.0	100.0
TOTAL		10	100.0	100.0	

Valid Cases 10 Missing Cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	1	10.0	10.0	10.0
no	2	9	90.0	90.0	100.0
	TOTAL	10	100.0	100.0	

Valid Cases 10 Missing Cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	6	60.0	60.0	60.0
cornwall	2	4	40.0	40.0	100.0
	TOTAL	10	100.0	100.0	

Valid Cases 10 Missing Cases 0

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This procedure was completed at 12:02:29

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PROCESS IF (q3 eq 2).

FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.

***** Memory allows a total of 12861 Values, accumulated across all Variables.
 There also may be up to 1610 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	60	71.4	71.4	71.4
headquarters unit	2	9	10.7	10.7	82.1
subsidiary or branch	3	11	13.1	13.1	95.2
subsid. branch forei	4	4	4.8	4.8	100.0
	TOTAL	84	100.0	100.0	

Valid Cases 84 Missing Cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	46	54.8	54.8	54.8
11-25	2	16	19.0	19.0	73.8
26-100	3	10	11.9	11.9	85.7
101-200	4	6	7.1	7.1	92.9
200+	5	6	7.1	7.1	100.0
	TOTAL	84	100.0	100.0	

Valid Cases 84 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
secondary	2	84	100.0	100.0	100.0
	TOTAL	84	100.0	100.0	

Valid Cases 84 Missing Cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
under 1 year	1	1	1.2	1.2	1.2
1-5 years	2	11	13.1	13.1	14.3
6-10 years	3	15	17.9	17.9	32.1
11-50 years	4	47	56.0	56.0	88.1
50 years+	5	10	11.9	11.9	100.0
	TOTAL	84	100.0	100.0	

Valid Cases 84 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	45	53.6	53.6	53.6
no	2	39	46.4	46.4	100.0

TOTAL 84 100.0 100.0

Valid Cases 84 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	13	15.5	15.5	15.5
no	2	71	84.5	84.5	100.0
TOTAL		84	100.0	100.0	

Valid Cases 84 Missing Cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	4	4.8	4.8	4.8
no	2	80	95.2	95.2	100.0
TOTAL		84	100.0	100.0	

Valid Cases 84 Missing Cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	58	69.0	78.4	78.4
cornwall	2	16	19.0	21.6	100.0
	.	10	11.9	MISSING	
TOTAL		84	100.0	100.0	

Valid Cases 74 Missing Cases 10

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This procedure was completed at 12:03:00

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PROCESS IF (q3 eq 1).

FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
There also may be up to 1610 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	56	67.5	67.5	67.5
headquarters unit	2	13	15.7	15.7	83.1
subsidiary or branch	3	13	15.7	15.7	98.8
subsidi. branch foral	4	1	1.2	1.2	100.0
TOTAL		83	100.0	100.0	

Valid Cases 83 Missing Cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	56	67.5	67.5	67.5
11-25	2	10	12.0	12.0	79.5
26-100	3	14	16.9	16.9	96.4
101-200	4	2	2.4	2.4	98.8
200+	5	1	1.2	1.2	100.0
TOTAL		83	100.0	100.0	

Valid Cases 83 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
tertiary	3	83	100.0	100.0	100.0
TOTAL		83	100.0	100.0	

Valid Cases 83 Missing Cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
under 1 year	1	1	1.2	1.2	1.2
1-5 years	2	10	12.0	12.0	13.3

6-10 years	3	26	31.3	31.3	44.6
11-50 years	4	33	39.8	39.8	84.3
50 years+	5	13	15.7	15.7	100.0
TOTAL	83		100.0	100.0	

Valid Cases 83 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	19	22.9	22.9	22.9
no	2	64	77.1	77.1	100.0
TOTAL		83	100.0	100.0	

Valid Cases 83 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	11	13.3	13.3	13.3
no	2	72	86.7	86.7	100.0
TOTAL		83	100.0	100.0	

Valid Cases 83 Missing Cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	1	1.2	1.2	1.2
no	2	82	98.8	98.8	100.0
TOTAL		83	100.0	100.0	

Valid Cases 83 Missing Cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	56	67.5	76.7	76.7
cornwall	2	17	20.5	23.3	100.0
	.	10	12.0	MISSING	
TOTAL		83	100.0	100.0	

Valid Cases 73 Missing Cases 10

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This procedure was completed at 12:03:36

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PROCESS IF (q4 eq 1).
FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.***** Memory allows a total of 12881 Values, accumulated across all Variables.
There also may be up to 1610 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	2	100.0	100.0	100.0
TOTAL		2	100.0	100.0	

Valid Cases 2 Missing Cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	2	100.0	100.0	100.0
TOTAL		2	100.0	100.0	

Valid Cases 2 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
secondary	2	1	50.0	50.0	50.0
tertiary	3	1	50.0	50.0	100.0
TOTAL		2	100.0	100.0	

Valid Cases 2 Missing Cases 0
 Page 40 SPSS/PC+ 3/7/94

Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
under 1 year	1	2	100.0	100.0	100.0
	TOTAL	2	100.0	100.0	

Valid Cases 2 Missing Cases 0
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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	1	50.0	50.0	50.0
no	2	1	50.0	50.0	100.0
	TOTAL	2	100.0	100.0	

Valid Cases 2 Missing Cases 0
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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
no	2	2	100.0	100.0	100.0
	TOTAL	2	100.0	100.0	

Valid Cases 2 Missing Cases 0
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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
no	2	2	100.0	100.0	100.0
	TOTAL	2	100.0	100.0	

Valid Cases 2 Missing Cases 0
 Page 44 SPSS/PC+ 3/7/94

Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	2	100.0	100.0	100.0
	TOTAL	2	100.0	100.0	

Valid Cases 2 Missing Cases 0
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This procedure was completed at 12:04:07

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PROCESS IF (q4 eq 2).
 FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
 There also may be up to 1610 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	17	77.3	77.3	77.3
headquarters unit	2	5	22.7	22.7	100.0
	TOTAL	22	100.0	100.0	

Valid Cases 22 Missing Cases 0
 Page 48 SPSS/PC+ 3/7/94

Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	17	77.3	77.3	77.3
11-25	2	2	9.1	9.1	86.4
26-100	3	3	13.6	13.6	100.0
	TOTAL	22	100.0	100.0	

Valid Cases 22 Missing Cases 0
 Page 49 SPSS/PC+ 3/7/94

Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	1	4.5	4.5	4.5
secondary	2	11	50.0	50.0	54.5
tertiary	3	10	45.5	45.5	100.0
	TOTAL	22	100.0	100.0	

Valid Cases 22 Missing Cases 0
 Page 50 SPSS/PC+ 3/7/94

Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
1-5 years	2	22	100.0	100.0	100.0
	TOTAL	22	100.0	100.0	

Valid Cases 22 Missing Cases 0
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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	7	31.8	31.8	31.8
no	2	15	68.2	68.2	100.0
	TOTAL	22	100.0	100.0	

Valid Cases 22 Missing Cases 0
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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	1	4.5	4.5	4.5
no	2	21	95.5	95.5	100.0
	TOTAL	22	100.0	100.0	

Valid Cases 22 Missing Cases 0
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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	1	4.5	4.5	4.5
no	2	21	95.5	95.5	100.0
	TOTAL	22	100.0	100.0	

Valid Cases 22 Missing Cases 0
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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	12	54.5	75.0	75.0
cornwall	2	4	18.2	25.0	100.0
	.	6	27.3	MISSING	
	TOTAL	22	100.0	100.0	

Valid Cases 16 Missing Cases 6
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This procedure was completed at 12:04:31

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PROCESS IF (q4 eq 3).
 FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
 There also may be up to 1610 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	34	79.1	79.1	79.1
headquarters unit	2	6	14.0	14.0	93.0
subsidiary or branch	3	2	4.7	4.7	97.7
subsid. branch forei	4	1	2.3	2.3	100.0
	TOTAL	43	100.0	100.0	

Valid Cases 43 Missing Cases 0
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Q2 employees

Valid Cum

Value Label	Value	Frequency	Percent	Percent	Percent
0-10	1	34	79.1	79.1	79.1
11-25	2	4	9.3	9.3	88.4
26-100	3	4	9.3	9.3	97.7
101-200	4	1	2.3	2.3	100.0
	TOTAL	43	100.0	100.0	

Valid Cases 43 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	2	4.7	4.7	4.7
secondary	2	15	34.9	34.9	39.5
tertiary	3	26	60.5	60.5	100.0
	TOTAL	43	100.0	100.0	

Valid Cases 43 Missing Cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
6-10 years	3	43	100.0	100.0	100.0
	TOTAL	43	100.0	100.0	

Valid Cases 43 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	12	27.9	27.9	27.9
no	2	31	72.1	72.1	100.0
	TOTAL	43	100.0	100.0	

Valid Cases 43 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	6	14.0	14.0	14.0
no	2	37	86.0	86.0	100.0
	TOTAL	43	100.0	100.0	

Valid Cases 43 Missing Cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
no	2	43	100.0	100.0	100.0
	TOTAL	43	100.0	100.0	

Valid Cases 43 Missing Cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	33	76.7	84.6	84.6
cornwall	2	6	14.0	15.4	100.0
	.	4	9.3	MISSING	
	TOTAL	43	100.0	100.0	

Valid Cases 39 Missing Cases 4

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This procedure was completed at 12:05:00

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PROCESS IF (q4 eq 4).

FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
-------------	-------	-----------	---------	---------------	-------------

single site business	1	60	70.6	70.6	70.6
headquarters unit	2	10	11.8	11.8	82.4
subsidiary or branch	3	13	15.3	15.3	97.6
subsid. branch forel	4	2	2.4	2.4	100.0
TOTAL		85	100.0	100.0	

Valid Cases 85 Missing Cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	48	56.5	56.5	56.5
11-25	2	18	21.2	21.2	77.6
26-100	3	11	12.9	12.9	90.6
101-200	4	3	3.5	3.5	94.1
200+	5	5	5.9	5.9	100.0
TOTAL		85	100.0	100.0	

Valid Cases 85 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	4	4.7	4.7	4.7
secondary	2	47	55.3	55.3	60.0
tertiary	3	33	38.8	38.8	98.8
	10	1	1.2	1.2	100.0
TOTAL		85	100.0	100.0	

Valid Cases 85 Missing Cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
11-50 years	4	85	100.0	100.0	100.0
TOTAL		85	100.0	100.0	

Valid Cases 85 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	38	44.7	44.7	44.7
no	2	47	55.3	55.3	100.0
TOTAL		85	100.0	100.0	

Valid Cases 85 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	15	17.6	17.6	17.6
no	2	70	82.4	82.4	100.0
TOTAL		85	100.0	100.0	

Valid Cases 85 Missing Cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	4	4.7	4.7	4.7
no	2	81	95.3	95.3	100.0
TOTAL		85	100.0	100.0	

Valid Cases 85 Missing Cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	56	68.2	74.4	74.4
cornwall	2	20	23.5	25.6	100.0
	7	8.2	MISSING		
TOTAL		85	100.0	100.0	

Valid Cases 78 Missing Cases 7

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This procedure was completed at 12:05:25

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PROCESS IF (q4 eq 5).
FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
There also may be up to 1610 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	11	42.3	42.3	42.3
headquarters unit	2	3	11.5	11.5	53.8
subsidiary or branch	3	9	34.6	34.6	88.5
subsid. branch forei	4	3	11.5	11.5	100.0
TOTAL		26	100.0	100.0	

Valid Cases 26 Missing Cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	8	30.8	30.8	30.8
11-25	2	4	15.4	15.4	46.2
26-100	3	6	23.1	23.1	69.2
101-200	4	6	23.1	23.1	92.3
200+	5	2	7.7	7.7	100.0
TOTAL		26	100.0	100.0	

Valid Cases 26 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	3	11.5	11.5	11.5
secondary	2	10	38.5	38.5	50.0
tertiary	3	13	50.0	50.0	100.0
TOTAL		26	100.0	100.0	

Valid Cases 26 Missing Cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
50 years+	5	26	100.0	100.0	100.0
TOTAL		26	100.0	100.0	

Valid Cases 26 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	12	46.2	46.2	46.2
no	2	14	53.8	53.8	100.0
TOTAL		26	100.0	100.0	

Valid Cases 26 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	7	26.9	26.9	26.9
no	2	19	73.1	73.1	100.0
TOTAL		26	100.0	100.0	

Valid Cases 26 Missing Cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	1	3.8	3.8	3.8
no	2	25	96.2	96.2	100.0
TOTAL		26	100.0	100.0	

Valid Cases 26 Missing Cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	16	61.5	69.6	69.6
cornwall	2	7	26.9	30.4	100.0
	.	3	11.5	MISSING	
	TOTAL	26	100.0	100.0	

Valid Cases 23 Missing Cases 3

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This procedure was completed at 12:05:52

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PROCESS IF (q5 eq 1).
FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
There also may be up to 1610 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	42	60.0	60.0	60.0
headquarters unit	2	8	11.4	11.4	71.4
subsidiary or branch	3	14	20.0	20.0	91.4
subsid. branch forei	4	6	8.6	8.6	100.0
	TOTAL	70	100.0	100.0	

Valid Cases 70 Missing Cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	34	48.6	48.6	48.6
11-25	2	10	14.3	14.3	62.9
26-100	3	11	15.7	15.7	78.6
101-200	4	8	11.4	11.4	90.0
200+	5	7	10.0	10.0	100.0
	TOTAL	70	100.0	100.0	

Valid Cases 70 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	6	8.6	8.6	8.6
secondary	2	45	64.3	64.3	72.9
tertiary	3	19	27.1	27.1	100.0
	TOTAL	70	100.0	100.0	

Valid Cases 70 Missing Cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
under 1 year	1	1	1.4	1.4	1.4
1-5 years	2	7	10.0	10.0	11.4
6-10 years	3	12	17.1	17.1	28.6
11-50 years	4	18	25.7	25.7	54.3
50 years+	5	12	17.1	17.1	100.0
	TOTAL	70	100.0	100.0	

Valid Cases 70 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	70	100.0	100.0	100.0
	TOTAL	70	100.0	100.0	

Valid Cases 70 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	15	21.4	21.4	21.4
no	2	55	78.6	78.6	100.0
	TOTAL	70	100.0	100.0	

Valid Cases 70 Missing Cases 0

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 Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	2	2.9	2.9	2.9
no	2	68	97.1	97.1	100.0
	TOTAL	70	100.0	100.0	

Valid Cases 70 Missing Cases 0

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 Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	51	72.9	79.7	79.7
cornwall	2	13	18.6	20.3	100.0
	.	6	8.6	MISSING	
	TOTAL	70	100.0	100.0	

Valid Cases 64 Missing Cases 6

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 This procedure was completed at 12:06:26

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PROCESS IF (q5 eq 2).

FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
 There also may be up to 1610 Value Labels for each Variable.

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 Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	82	75.9	75.9	75.9
headquarters unit	2	16	14.8	14.8	90.7
subsidiary or branch	3	10	9.3	9.3	100.0
	TOTAL	108	100.0	100.0	

Valid Cases 108 Missing Cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	75	69.4	69.4	69.4
11-25	2	18	16.7	16.7	86.1
26-100	3	13	12.0	12.0	98.1
101-200	4	2	1.9	1.9	100.0
	TOTAL	108	100.0	100.0	

Valid Cases 108 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	4	3.7	3.7	3.7
secondary	2	39	36.1	36.1	39.8
tertiary	3	64	59.3	59.3	99.1
	10	1	.9	.9	100.0
	TOTAL	108	100.0	100.0	

Valid Cases 108 Missing Cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
under 1 year	1	1	.9	.9	.9
1-5 years	2	15	13.9	13.9	14.8
6-10 years	3	31	28.7	28.7	43.5
11-50 years	4	47	43.5	43.5	87.0
50 years+	5	14	13.0	13.0	100.0
	TOTAL	108	100.0	100.0	

Valid Cases 108 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
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no	2	108	100.0	100.0	100.0
	TOTAL	108	100.0	100.0	

Valid Cases 108 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	14	13.0	13.0	13.0
no	2	94	87.0	87.0	100.0
	TOTAL	108	100.0	100.0	

Valid Cases 108 Missing Cases 0

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Q8 implamented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	4	3.7	3.7	3.7
no	2	104	96.3	96.3	100.0
	TOTAL	108	100.0	100.0	

Valid Cases 108 Missing Cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	70	64.8	74.5	74.5
cornwall	2	24	22.2	25.5	100.0
	.	14	13.0	MISSING	
	TOTAL	108	100.0	100.0	

Valid Cases 94 Missing Cases 14

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This procedure was completed at 12:06:51

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PROCESS IF (q6 eq 1).
FREQUENCIES Q1 Q3 Q4 Q5 Q6 Q8 Q20.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	10	34.5	34.5	34.5
headquarters unit	2	4	13.8	13.8	48.3
subsidiary or branch	3	11	37.9	37.9	86.2
subsid. branch forei	4	4	13.8	13.8	100.0
	TOTAL	29	100.0	100.0	

Valid Cases 29 Missing Cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	10	34.5	34.5	34.5
11-25	2	3	10.3	10.3	44.8
26-100	3	6	20.7	20.7	65.5
101-200	4	5	17.2	17.2	82.8
200+	5	5	17.2	17.2	100.0
	TOTAL	29	100.0	100.0	

Valid Cases 29 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	5	17.2	17.2	17.2
secondary	2	13	44.8	44.8	62.1
tertiary	3	11	37.9	37.9	100.0
	TOTAL	29	100.0	100.0	

Valid Cases 29 Missing Cases 0

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Q4 company age

Valid Cum

Value Label	Value	Frequency	Percent	Percent	Percent
1-5 years	2	1	3.4	3.4	3.4
6-10 years	3	6	20.7	20.7	24.1
11-50 years	4	15	51.7	51.7	75.9
50 years+	5	7	24.1	24.1	100.0
TOTAL		29	100.0	100.0	

Valid Cases 29 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	15	51.7	51.7	51.7
no	2	14	48.3	48.3	100.0
TOTAL		29	100.0	100.0	

Valid Cases 29 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	29	100.0	100.0	100.0
TOTAL		29	100.0	100.0	

Valid Cases 29 Missing Cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	6	20.7	20.7	20.7
no	2	23	79.3	79.3	100.0
TOTAL		29	100.0	100.0	

Valid Cases 29 Missing Cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	18	62.1	69.2	69.2
cornwall	2	8	27.6	30.8	100.0
.	3	3	10.3	MISSING	
TOTAL		29	100.0	100.0	

Valid Cases 26 Missing Cases 3

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This procedure was completed at 12:07:20

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PROCESS IF (q6 eq 2).
FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
There also may be up to 1610 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	114	76.5	76.5	76.5
headquarters unit	2	20	13.4	13.4	89.9
subsidiary or branch	3	13	8.7	8.7	98.7
subsid. branch forei	4	2	1.3	1.3	100.0
TOTAL		149	100.0	100.0	

Valid Cases 149 Missing Cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	99	66.4	66.4	66.4
11-25	2	25	16.8	16.8	83.2
26-100	3	18	12.1	12.1	95.3
101-200	4	5	3.4	3.4	98.7
200+	5	2	1.3	1.3	100.0
TOTAL		149	100.0	100.0	

Valid Cases 149 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	5	3.4	3.4	3.4
secondary	2	71	47.7	47.7	51.0
tertiary	3	72	48.3	48.3	99.3
	10	1	.7	.7	100.0
TOTAL		149	100.0	100.0	

Valid Cases 149 Missing Cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
under 1 year	1	2	1.3	1.3	1.3
1-5 years	2	21	14.1	14.1	15.4
6-10 years	3	37	24.8	24.8	40.3
11-50 years	4	70	47.0	47.0	87.2
50 years+	5	19	12.8	12.8	100.0
TOTAL		149	100.0	100.0	

Valid Cases 149 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	55	36.9	36.9	36.9
no	2	94	63.1	63.1	100.0
TOTAL		149	100.0	100.0	

Valid Cases 149 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
no	2	149	100.0	100.0	100.0
TOTAL		149	100.0	100.0	

Valid Cases 149 Missing Cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
no	2	149	100.0	100.0	100.0
TOTAL		149	100.0	100.0	

Valid Cases 149 Missing Cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	103	69.1	78.0	78.0
cornwall	2	29	19.5	22.0	100.0
	.	17	11.4	MISSING	
TOTAL		149	100.0	100.0	

Valid Cases 132 Missing Cases 17

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This procedure was completed at 12:07:50

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PROCESS IF (q8 eq 1).
FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.***** Memory allows a total of 12881 Values, accumulated across all Variables.
There also may be up to 1610 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	1	16.7	16.7	16.7
headquarters unit	2	1	16.7	16.7	33.3
subsidiary or branch	3	4	66.7	66.7	100.0
TOTAL		6	100.0	100.0	

Valid Cases 6 Missing Cases 0

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Q3 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	2	33.3	33.3	33.3
11-25	2	2	33.3	33.3	66.7
26-100	3	1	16.7	16.7	83.3
200+	5	1	16.7	16.7	100.0
TOTAL		6	100.0	100.0	

Valid Cases 6 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	1	16.7	16.7	16.7
secondary	2	4	66.7	66.7	83.3
tertiary	3	1	16.7	16.7	100.0
TOTAL		6	100.0	100.0	

Valid Cases 6 Missing Cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
1-5 years	2	1	16.7	16.7	16.7
11-50 years	4	4	66.7	66.7	83.3
50 years+	5	1	16.7	16.7	100.0
TOTAL		6	100.0	100.0	

Valid Cases 6 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	2	33.3	33.3	33.3
no	2	4	66.7	66.7	100.0
TOTAL		6	100.0	100.0	

Valid Cases 6 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	6	100.0	100.0	100.0
TOTAL		6	100.0	100.0	

Valid Cases 6 Missing Cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	6	100.0	100.0	100.0
TOTAL		6	100.0	100.0	

Valid Cases 6 Missing Cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	3	50.0	60.0	60.0
cornwall	2	2	33.3	40.0	100.0
.	1	1	16.7	MISSING	
TOTAL		6	100.0	100.0	

Valid Cases 5 Missing Cases 1

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This procedure was completed at 12:08:44

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PROCESS IF (q8 eq 2).
FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
There also may be up to 1610 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	123	71.5	71.5	71.5
headquarters unit	2	23	13.4	13.4	84.9
subsidiary or branch	3	20	11.6	11.6	96.5
subsid. branch forei	4	6	3.5	3.5	100.0
TOTAL		172	100.0	100.0	

Valid Cases 172 Missing Cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	107	62.2	62.2	62.2
11-25	2	26	15.1	15.1	77.3
26-100	3	23	13.4	13.4	90.7
101-200	4	10	5.8	5.8	96.5
200+	5	6	3.5	3.5	100.0
TOTAL		172	100.0	100.0	

Valid Cases 172 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	9	5.2	5.2	5.2
secondary	2	80	46.5	46.5	51.7
tertiary	3	82	47.7	47.7	99.4
	10	1	.6	.6	100.0
TOTAL		172	100.0	100.0	

Valid Cases 172 Missing Cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
under 1 year	1	2	1.2	1.2	1.2
1-5 years	2	21	12.2	12.2	13.4
6-10 years	3	43	25.0	25.0	38.4
11-50 years	4	81	47.1	47.1	85.5
50 years+	5	25	14.5	14.5	100.0
TOTAL		172	100.0	100.0	

Valid Cases 172 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	68	39.5	39.5	39.5
no	2	104	60.5	60.5	100.0
TOTAL		172	100.0	100.0	

Valid Cases 172 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	23	13.4	13.4	13.4
no	2	149	86.6	86.6	100.0
TOTAL		172	100.0	100.0	

Valid Cases 172 Missing Cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
no	-2	172	100.0	100.0	100.0
TOTAL		172	100.0	100.0	

Valid Cases 172 Missing Cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	118	68.6	77.1	77.1
cornwall	2	35	20.3	22.9	100.0
	-	19	11.0	MISSING	

TOTAL 172 100.0 100.0

Valid Cases 153 Missing Cases 19

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This procedure was completed at 12:09:18

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PROCESS IF (q20 eq 1).
FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
There also may be up to 1610 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	89	73.6	73.6	73.6
headquarters unit	2	13	10.7	10.7	84.3
subsidiary or branch	3	15	12.4	12.4	96.7
subsid. branch forei	4	4	3.3	3.3	100.0
TOTAL		121	100.0	100.0	

Valid Cases 121 Missing Cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	75	62.0	62.0	62.0
11-25	2	20	16.5	16.5	78.5
26-100	3	15	12.4	12.4	90.9
101-200	4	6	5.0	5.0	95.9
200+	5	5	4.1	4.1	100.0
TOTAL		121	100.0	100.0	

Valid Cases 121 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	6	5.0	5.0	5.0
secondary	2	58	47.9	47.9	52.9
tertiary	3	56	46.3	46.3	99.2
	10	1	.8	.8	100.0
TOTAL		121	100.0	100.0	

Valid Cases 121 Missing Cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
under 1 year	1	2	1.7	1.7	1.7
1-5 years	2	12	9.9	9.9	11.6
6-10 years	3	33	27.3	27.3	38.8
11-50 years	4	58	47.9	47.9	86.8
50 years+	5	16	13.2	13.2	100.0
TOTAL		121	100.0	100.0	

Valid Cases 121 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	51	42.1	42.1	42.1
no	2	70	57.9	57.9	100.0
TOTAL		121	100.0	100.0	

Valid Cases 121 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	18	14.9	14.9	14.9
no	2	103	85.1	85.1	100.0
TOTAL		121	100.0	100.0	

Valid Cases 121 Missing Cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	3	2.5	2.5	2.5
no	2	118	97.5	97.5	100.0
	TOTAL	121	100.0	100.0	

Valid Cases 121 Missing Cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	121	100.0	100.0	100.0
	TOTAL	121	100.0	100.0	

Valid Cases 121 Missing Cases 0

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This procedure was completed at 12:09:49

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PROCESS IF (q20 eq 2).
FREQUENCIES Q1 Q2 Q3 Q4 Q5 Q6 Q8 Q20.

***** Memory allows a total of 12881 Values, accumulated across all Variables.
There also may be up to 1610 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	24	64.9	64.9	64.9
headquarters unit	2	5	13.5	13.5	78.4
subsidiary or branch	3	7	18.9	18.9	97.3
subsid. branch forei	4	1	2.7	2.7	100.0
	TOTAL	37	100.0	100.0	

Valid Cases 37 Missing Cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	24	64.9	64.9	64.9
11-25	2	5	13.5	13.5	78.4
26-100	3	4	10.8	10.8	89.2
101-200	4	2	5.4	5.4	94.6
200+	5	2	5.4	5.4	100.0
	TOTAL	37	100.0	100.0	

Valid Cases 37 Missing Cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	4	10.8	10.8	10.8
secondary	2	16	43.2	43.2	54.1
tertiary	3	17	45.9	45.9	100.0
	TOTAL	37	100.0	100.0	

Valid Cases 37 Missing Cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
1-5 years	2	4	10.8	10.8	10.8
6-10 years	3	6	16.2	16.2	27.0
11-50 years	4	20	54.1	54.1	81.1
50 years+	5	7	18.9	18.9	100.0
	TOTAL	37	100.0	100.0	

Valid Cases 37 Missing Cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	13	35.1	35.1	35.1
no	2	24	64.9	64.9	100.0
	TOTAL	37	100.0	100.0	

Valid Cases 37 Missing Cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	8	21.6	21.6	21.6
no	2	29	78.4	78.4	100.0
TOTAL		37	100.0	100.0	

Valid Cases 37 Missing Cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	2	5.4	5.4	5.4
no	2	35	94.6	94.6	100.0
TOTAL		37	100.0	100.0	

Valid Cases 37 Missing Cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
cornwall	2	37	100.0	100.0	100.0
TOTAL		37	100.0	100.0	

Valid Cases 37 Missing Cases 0

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This procedure was completed at 12:10:13

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FINISH.

End of Include file.

CROSSTABS /TABLES= q9 q10 by q1 q2 q3 q4 q5 q20 /options 14 /statistics 1.

Memory allows for 7,849 cells with 2 dimensions for general CROSSTABS.

Q9 able to implement 7750? by Q1 business type

Q1					Page 1 of 1	
Exp Val 1						
single s headquat subsidia subsid.						
ite busi ers unit ry or br branch f					Row	
	1	2	3	4	Total	
Q9	-----A-----A-----A-----A-----					
	1	39.3	7.4	6.4	1.9	55
yes						32.0%
	A-----A-----A-----A-----					
	2	83.7	15.6	13.6	4.1	117
no						68.0%
	A-----A-----A-----A-----U					
Column	123	23	20	6	172	
Total	71.5%	13.4%	11.6%	3.5%	100.0%	

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Chi-Square	Value	DF	Significance
Pearson	14.74557	3	.00205
Likelihood Ratio	14.14719	3	.00271
Mantel-Haenszel test for linear association	12.59683	1	.00039

Minimum Expected Frequency = 1.919
Cells with Expected Frequency < 5 = 2 OF 8 (25.0%)

Number of Missing Observations: 6

Q9 able to implement 7750? by Q2 employees

Q2 Page 1 of 1

Exp Val 1

0-10 11-25 26-100 101-200 200+

Row

	1	2	3	4	5	Total
Q9						

	1	34.2	8.3	7.4	3.2	1.9	55
yes							32.0%
	2	72.8	17.7	15.6	6.8	4.1	117
no							68.0%
Column	107	26	23	10	8	172	
Total	62.2%	15.1%	13.4%	5.8%	3.5%	100.0%	

Page 9	SPSS/PC+	6/21/94	
Chi-Square	Value	DF	Significance
-----	-----	----	-----
Pearson	21.79774	4	.00022
Likelihood Ratio	20.96260	4	.00032
Mantel-Haenszel test for	15.40228	1	.00009
linear association			

Minimum Expected Frequency = 1.919

Cells with Expected Frequency < 5 = 3 OF 10 (30.0%)

Number of Missing Observations: 6

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Q9 able to implement 77507 by Q3 business sector

		Q3			Page 1 of 1	
Exp Val						
		primary	secondary	tertiary		
		1	2	3	Row	
		1	2	3	Total	
Q9		-----A-----	A-----	A-----		
	1	2.9	25.6	26.5	55	
yes					32.0%	
		-----A-----	A-----	A-----		
	2	6.1	54.4	56.5	117	
no					68.0%	
		-----A-----	A-----	A-----	0	
Column		9	80	83	172	
Total		5.2%	46.5%	48.3%	100.0%	

Page 11	SPSS/PC+	6/21/94	
Chi-Square	Value	DF	Significance
-----	-----	---	-----
Pearson	2.27163	2	.32116
Likelihood Ratio	2.28031	2	.31977
Mantel-Haenszel test for linear association	1.65173	1	.19872

Minimum Expected Frequency - 2.878

Cells with Expected Frequency < 5 - 1 OF 6 (16.7%)

Number of Missing Observations: 6

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Q9 able to implement 7750? by Q4 company age

Q4

Page 1 of 1

Exp Val :

	under 1	1-5 year	6-10 year	11-50 year	50 years		
	year	n	rn	ats	+	Row	
	1	2	3	4	5	Total	
Q9	-----	-----	-----	-----	-----	-----	
yes	1	.6	6.7	13.8	25.9	8.0	55
							32.0%
	-----	-----	-----	-----	-----	-----	-----
no	2	1.4	14.3	29.3	55.1	17.0	117
							68.0%
	-----	-----	-----	-----	-----	-----	-----
Column	2	21	43	81	25	172	
Total	1.2%	12.2%	25.0%	47.1%	14.5%	100.0%	

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Chi-Square	Value	DF	Significance
Pearson	6.19276	4	.18521
Likelihood Ratio	6.47350	4	.16647
Mantel-Haenszel test for linear association	3.22572	1	.07249

Minimum Expected Frequency - .640

Cells with Expected Frequency < 5 - 2 OF 10 (20.0%)

Number of Missing Observations: 6

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Q9 able to implement 7750? by Q5 export/non exporters

Q5 Page 1 of 1

Exp Val :

	yes	no	
			Row
	1	2	Total
Q9	-----	-----	-----

	1	21.7	33.3	55
yes				32.0%
	-----A-----			
	2	46.3	70.7	117
no				68.0%
	-----A-----U			
Column	68	104	172	
Total	39.5%	60.5%	100.0%	

Page 15	SPSS/PC+		6/21/94
Chi-Square	Value	DF	Significance

Pearson	16.79495	1	.00004
Continuity Correction	15.45254	1	.00008
Likelihood Ratio	16.67890	1	.00004
Mantel-Haenszel test for linear association	16.69731	1	.00004

Minimum Expected Frequency = 21.744

Number of Missing Observations: 6

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Q9 able to implement 7750? by Q20 devon/cornwall

		Q20		Page 1 of 1	
Exp Val :					
		devon		cornwall	
				Row	
		1		2	
		Total			
Q9		-----A-----			
	1	40.1	11.9	52	
yes				34.0%	
		-----A-----			
	2	77.9	23.1	101	
no				66.0%	
		-----A-----U			
Column		118	35	153	
Total		77.1%	22.9%	100.0%	

Page 17	SPSS/PC+		6/21/94
Chi-Square	Value	DF	Significance

Pearson	.00181	1	.96610
Continuity Correction	.00000	1	1.00000
Likelihood Ratio	.00181	1	.96611
Mantel-Haenszel test for	.00179	1	.96622

linear association

Minimum Expected Frequency - 11.895

Number of Missing Observations: 25

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SPSS/PC+

6/21/94

Q10 willing to implement 7750? by Q1 business type

Q1 Page 1 of 1

Exp Val :

		single & headquat subsidia subsid.				
		site busi ers unit ry or br branch #				Row
		1	2	3	4	Total
Q10		-----A-----A-----A-----A-----				
	1	21.8	8.0	6.5	3.6	40
yes						72.7%
		-----A-----A-----A-----A-----				
	2	8.2	3.0	2.5	1.4	15
no						27.3%
		-----A-----A-----A-----A-----				
						0
Column		30	11	9	5	55
Total		54.5%	20.0%	16.4%	9.1%	100.0%

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SPSS/PC+

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Chi-Square	Value	DF	Significance
Pearson	1.88935	3	.59569
Likelihood Ratio	2.09933	3	.55205
Mantel-Haenszel test for linear association	.78433	1	.37582

Minimum Expected Frequency - 1.364

Cells with Expected Frequency < 5 - 4 OF 8 (50.0%)

Number of Missing Observations: 123

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SPSS/PC+

6/21/94

Q10 willing to implement 7750? by Q2 employees

Q2 Page 1 of 1

Exp Val :

		0-10	11-25	26-100	101-200	200+	
							Row
		1	2	3	4	5	Total
Q10		-----A-----A-----A-----A-----					

	1	18.9	5.8	5.8	6.5	2.9	40
yes							72.7%
	2	7.1	2.2	2.2	2.5	1.1	15
no							27.3%
	Column	26	8	8	9	4	55
	Total	47.3%	14.5%	14.5%	16.4%	7.3%	100.0%

Page 21	SPSS/PC+	6/21/94	
Chi-Square	Value	DF	Significance
-----	-----	---	-----
Pearson	3.62455	4	.45919
Likelihood Ratio	4.76502	4	.31227
Mantel-Haenszel test for	2.53254	1	.11152
linear association			

Minimum Expected Frequency = 1.091

Cells with Expected Frequency < 5 = 5 OF 10 (50.0%)

Number of Missing Observations: 123

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Q10 willing to implement 7750? by Q3 business sector

	Q3	Page 1 of 1
Exp Val		
	primary secondary tertiary	
	1 2 3 Total	
Q10		
yes	1 2.2 21.8 16.0 40	
		72.7%
no	2 .8 8.2 6.0 15	
		27.3%
	Column	3 30 22 55
	Total	5.5% 54.5% 40.0% 100.0%

Page 23	SPSS/PC+		6/21/94
Chi-Square	Value	DF	Significance
-----	-----	---	-----
Pearson	2.58194	2	.27500
Likelihood Ratio	2.25856	2	.32327
Mantel-Haenszel test for linear association	1.27811	1	.25825

Minimum Expected Frequency = .818

Cells with Expected Frequency < 5 = 2 OF 6 (33.3%)

Number of Missing Observations: 123

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SPSS/PC+

6/21/94

Q10 willing to implement 7750? by Q4 company age

Q4

Page 1 of 1

Exp Val

		1-5 year 6-10 yrs 11-50 yrs 50 years					
		1	2	3	4	5	Total
Q10							
	yes	1	4.4	8.7	17.5	9.5	40
							72.7%
no		2	1.6	3.3	6.5	3.5	15
							27.3%
Column		6	12	24	13	55	
Total		10.9%	21.8%	43.6%	23.6%	100.0%	

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SPSS/PC+

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Chi-Square	Value	DF	Significance
Pearson	4.87420	3	.18124
Likelihood Ratio	6.43907	3	.09210
Mantel-Haenszel test for linear association	.00000	1	1.00000

Minimum Expected Frequency = 1.636

Cells with Expected Frequency < 5 = 4 OF 8 (50.0%)

Number of Missing Observations: 123

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SPSS/PC+

6/21/94

Q10 willing to implement 7750? by Q5 export/non exporters

Q5

Page 1 of 1

Exp Val

		yes	no		
		1	2	Row	
Q10					
		1	2		Total

	1	24.7	15.3	40
yes				72.7%

	2	9.3	5.7	15
no				27.3%

	0			
Column	34	21	55	
Total	61.8%	38.2%	100.0%	

Page 27	SPSS/PC+		6/21/94
Chi-Square	Value	DF	Significance

Pearson	.02889	1	.86504
Continuity Correction	.00000	1	1.00000
Likelihood Ratio	.02879	1	.86527
Mantel-Haenszel test for linear association	.02836	1	.86626

Minimum Expected Frequency = 5.727

Number of Missing Observations: 123

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Q10 willing to implement 77507 by Q20 devon/cornwall

		Q20		Page 1 of 1	
Exp Val					
		devon		cornwall	
				Row	
		1		2	
		Total			
Q10		-----		-----	
	1	28.5	8.5	37	
yes				71.2%	
		-----		-----	
	2	11.5	3.5	15	
no				28.8%	
		-----		-----	
		0			
	Column	40	12	52	
	Total	76.9%	23.1%	100.0%	

Page 29	SPSS/PC+		6/21/94
Chi-Square	Value	DF	Significance

Pearson	1.12745	1	.28832
Continuity Correction	.48799	1	.48463
Likelihood Ratio	1.21996	1	.26937
Mantel-Haenszel test for	1.10577	1	.29300

linear association

Fisher's Exact Test:

One-Tail	.24834
Two-Tail	.47038

Minimum Expected Frequency = 3.462

Cells with Expected Frequency < 5 = 1 OF 4 (25.0%)

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Number of Missing Observations: 126

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This procedure was completed at 12:58:22

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PROCESS IF (q1 eq 1).

FREQUENCIES q1 q2 q3 q4 q5 q6 q8 q20.

***** Memory allows a total of 11474 Values, accumulated across all Variables.

There also may be up to 1434 Value Labels for each Variable.

Q1 business type

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
single site business	1	124	100.0	100.0	100.0
	Total	124	100.0	100.0	

Valid cases 124 Missing cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-10	1	93	75.0	75.0	75.0
11-25	2	17	13.7	13.7	88.7
26-100	3	11	8.9	8.9	97.6
101-200	4	2	1.6	1.6	99.2
200+	5	1	.8	.8	100.0

Total 124 100.0 100.0

Valid cases 124 Missing cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
primary	1	7	5.6	5.6	5.6
secondary	2	60	48.4	48.4	54.0
tertiary	3	57	46.0	46.0	100.0
Total		124	100.0	100.0	

Valid cases 124 Missing cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
under 1 year	1	2	1.6	1.6	1.6
1-5 years	2	17	13.7	13.7	15.3
6-10 years	3	34	27.4	27.4	42.7
11-50 years	4	60	48.4	48.4	91.1
50 years+	5	11	8.9	8.9	100.0
Total		124	100.0	100.0	

Valid cases 124 Missing cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	42	33.9	33.9	33.9
no	2	82	66.1	66.1	100.0
Total		124	100.0	100.0	

Valid cases 124 Missing cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
yes	1	10	8.1	8.1	8.1
no	2	114	91.9	91.9	100.0
Total		124	100.0	100.0	

Valid cases 124 Missing cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
yes	1	1	.8	.8	.8
no	2	123	99.2	99.2	100.0
Total		124	100.0	100.0	

Valid cases 124 Missing cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
devon	1	89	71.8	76.8	76.8
cornwall	2	24	19.4	21.2	100.0
.	11	8.9	Missing		
Total		124	100.0	100.0	

Valid cases 113 Missing cases 11

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This procedure was completed at 13:00:03

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PROCESS IF (q1 eq 2).

FREQUENCIES q1 q2 q3 q4 q5 q6 q8 q20.

***** Memory allows a total of 11474 Values, accumulated across all Variables.
 There also may be up to 1434 Value Labels for each Variable.

Q1 business type

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
headquarters unit	2	24	100.0	100.0	100.0

Total		24	100.0	100.0	

Valid cases 24 Missing cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
0-10	1	9	37.5	37.5	37.5
11-25	2	4	16.7	16.7	54.2
26-100	3	7	29.2	29.2	83.3
101-200	4	4	16.7	16.7	100.0

Total		24	100.0	100.0	

Valid cases 24 Missing cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
primary	1	2	8.3	8.3	8.3
secondary	2	9	37.5	37.5	45.8
tertiary	3	13	54.2	54.2	100.0

Total		24	100.0	100.0	

Valid cases 24 Missing cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
1-5 years	2	5	20.8	20.8	20.8
6-10 years	3	6	25.0	25.0	45.8
11-50 years	4	10	41.7	41.7	87.5
50 years+	5	3	12.5	12.5	100.0

Total		24	100.0	100.0	

Valid cases 24 Missing cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
yes	1	8	33.3	33.3	33.3
no	2	16	66.7	66.7	100.0

Total		24	100.0	100.0	

Valid cases 24 Missing cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
yes	1	4	16.7	16.7	16.7
no	2	20	83.3	83.3	100.0

Total		24	100.0	100.0	

Valid cases 24 Missing cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
yes	1	1	4.2	4.2	4.2

no	2	23	95.8	95.8	100.0
<hr/>					
Total	24	100.0	100.0		

Valid cases 24 Missing cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
devon	1	13	54.2	72.2	72.2
cornwall	2	5	20.8	27.8	100.0
		6	25.0	Missing	
<hr/>					
Total	24	100.0	100.0		

Valid cases 18 Missing cases 6

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This procedure was completed at 13:00:17

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PROCESS IF (q2 eq 1).

FREQUENCIES q1 q2 q3 q4 q5 q6 q8 q20.

***** Memory allows a total of 11474 Values, accumulated across all Variables.
There also may be up to 1434 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
single site business	1	93	85.3	85.3	85.3
headquarters unit	2	9	8.3	8.3	93.6
subsidiary or branch	3	6	5.5	5.5	99.1
subsid. branch forei	4	1	.9	.9	100.0
<hr/>					
Total	109	100.0	100.0		

Valid cases 109 Missing cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
0-10	1	109	100.0	100.0	100.0
<hr/>					
Total		109	100.0	100.0	

Valid cases 109 Missing cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
primary	1	6	5.5	5.5	5.5
secondary	2	46	42.2	42.2	47.7
tertiary	3	57	52.3	52.3	100.0
<hr/>					
Total		109	100.0	100.0	

Valid cases 109 Missing cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
under 1 year	1	2	1.8	1.8	1.8
1-5 years	2	17	15.6	15.6	17.4
6-10 years	3	34	31.2	31.2	48.6
11-50 years	4	48	44.0	44.0	92.7
50 years+	5	8	7.3	7.3	100.0
<hr/>					
Total		109	100.0	100.0	

Valid cases 109 Missing cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent

yes	1	34	31.2	31.2	31.2
no	2	75	68.8	68.8	100.0
Total		109	100.0	100.0	

Valid cases 109 Missing cases 0

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Q5 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	10	9.2	9.2	9.2
no	2	99	90.8	90.8	100.0
Total		109	100.0	100.0	

Valid cases 109 Missing cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	2	1.8	1.8	1.8
no	2	107	98.2	98.2	100.0
Total		109	100.0	100.0	

Valid cases 109 Missing cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
devon	1	75	68.8	75.8	75.8
cornwall	2	24	22.0	24.2	100.0
.	.	10	9.2	Missing	
Total		109	100.0	100.0	

Valid cases 99 Missing cases 10

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This procedure was completed at 13:00:46

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PROCESS IF (q2 eq 2).

FREQUENCIES q1 q2 q3 q4 q5 q6 q8 q20.

***** Memory allows a total of 11474 Values, accumulated across all Variables.

There also may be up to 1434 Value Labels for each Variable.

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Q1 business type

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
single site business	1	17	60.7	60.7	60.7
headquarters unit	2	4	14.3	14.3	75.0
subsidiary or branch	3	7	25.0	25.0	100.0
Total			100.0	100.0	

Valid cases 28 Missing cases 0

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Q2 employees

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
11-25	2	28	100.0	100.0	100.0
Total			100.0	100.0	

Valid cases 28 Missing cases 0

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Q3 business sector

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
primary	1	2	7.1	7.1	7.1
secondary	2	16	57.1	57.1	64.3

tertiary	3	10	35.7	35.7	100.0
<hr/>					
Total	28	100.0	100.0		

Valid cases 28 Missing cases 0

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Q4 company age

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
1-5 years	2	2	7.1	7.1	7.1
6-10 years	3	4	14.3	14.3	21.4
11-50 years	4	18	64.3	64.3	85.7
50 years+	5	4	14.3	14.3	100.0
<hr/>					
Total		28	100.0	100.0	

Valid cases 28 Missing cases 0

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Q5 export/non exporters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	10	35.7	35.7	35.7
no	2	18	64.3	64.3	100.0
<hr/>					
Total		28	100.0	100.0	

Valid cases 28 Missing cases 0

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Q6 strategic man policy

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
yes	1	3	10.7	10.7	10.7
no	2	25	89.3	89.3	100.0
<hr/>					
Total		28	100.0	100.0	

Valid cases 28 Missing cases 0

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Q8 implemented the standard

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
yes	1	2	7.1	7.1	7.1
no	2	26	92.9	92.9	100.0
		-----	-----	-----	
Total		28	100.0	100.0	

Valid cases 28 Missing cases 0

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Q20 devon/cornwall

Value Label	Value	Frequency	Percent	Valid	Cum
				Percent	Percent
devon	1	20	71.4	80.0	80.0
cornwall	2	5	17.9	20.0	100.0
	.	3	10.7	Missing	
		-----	-----	-----	
Total		28	100.0	100.0	

Valid cases 25 Missing cases 3

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This procedure was completed at 13:01:03

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FINISH.

End of include file.

-

MANOVA q13 by q3 (1,3) /print cellinfo.

NOTE 12167

The last subcommand is not a design specification--A full factorial model is generated for this problem.

176 cases accepted.

0 cases rejected because of out-of-range factor values.

1 cases rejected because of missing data.

3 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q13		rems			
FACTOR	CODE		Mean	Std. Dev.	N
Q3	primary		3.100	1.449	10
Q3	secondar		3.143	1.184	84
Q3	tertiary		3.122	1.231	82
For entire sample			3.131	1.214	176

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* * ANALYSIS OF VARIANCE -- DESIGN 1 * *

Cell Means and Standard Deviations (CONT.)

Tests of Significance for Q13 using UNIQUE sums of squares

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN CELLS	257.97	173	1.49		
CONSTANT	706.69	1	706.69	473.93	.000
Q3	.03	2	.01	.01	.991

3592 BYTES OF WORKSPACE NEEDED FOR MANOVA EXECUTION.

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This procedure was completed at 9:13:23

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MANOVA q14 by q3 (1,3) /print cellinfo.

NOTE 12167

The last subcommand is not a design specification--A full factorial model is generated for this problem.

176 cases accepted.

0 cases rejected because of out-of-range factor values.

1 cases rejected because of missing data.

3 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q14		epc			
FACTOR	CODE	Mean	Std. Dev.	N	
Q3	primary	2.300	1.418	10	
Q3	secondar	3.131	1.351	84	
Q3	tertiary	2.634	1.365	82	
For entire sample		2.852	1.382	176	

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* * ANALYSIS OF VARIANCE -- DESIGN 1 * *

Cell Means and Standard Deviations (CONT.)

Tests of Significance for Q14 using UNIQUE sums of squares

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN CELLS	320.68	173	1.85		
CONSTANT	524.14	1	524.14	282.76	.000
Q3	13.48	2	6.74	3.63	.028

1592 BYTES OF WORKSPACE NEEDED FOR MANOVA EXECUTION.

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This procedure was completed at 3:14:04

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MANOVA q16a to q16e by q3 (1,3) /print cellinfo.

NOTE 12167

The last subcommand is not a design specification--A full factorial model is generated for this problem.

174 cases accepted.

0 cases rejected because of out-of-range factor values.

3 cases rejected because of missing data.

3 non-empty cells.

1 design will be processed.

Cell Means and Standard Deviations

Variable .. Q16A env helpline

FACTOR	CODE	Mean	Std. Dev.	N
Q3	primary	2.400	1.430	10
Q3	secondar	2.798	1.342	84
Q3	tertiary	2.462	1.262	80
For entire sample		2.621	1.315	174

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* * ANALYSIS OF VARIANCE -- DESIGN 1 * *

Cell Means and Standard Deviations (CONT.)

Variable .. Q16B confidential advice

FACTOR	CODE	Mean	Std. Dev.	N
Q3	primary	2.300	1.160	10
Q3	secondar	2.845	1.294	84
Q3	tertiary	2.525	1.242	80
For entire sample		2.667	1.269	174

Variable .. Q16C newsletter

FACTOR	CODE	Mean	Std. Dev.	N
Q3	primary	2.400	1.430	10
Q3	secondar	2.929	1.278	84
Q3	tertiary	2.750	1.258	80
For entire sample		2.816	1.277	174

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* * ANALYSIS OF VARIANCE -- DESIGN 1 * *

Cell Means and Standard Deviations (CONT.)

Variable .. Q16D handbook

FACTOR	CODE	Mean	Std. Dev.	N
Q3	primary	2.300	1.337	10
Q3	secondar	2.893	1.317	84
Q3	tertiary	2.738	1.230	80
For entire sample		2.787	1.279	174

Variable .. Q16E env pr

FACTOR	CODE	Mean	Std. Dev.	N
Q3	primary	2.400	1.506	10
Q3	secondar	2.583	1.234	84
Q3	tertiary	2.588	1.219	80
For entire sample		2.575	1.237	174

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* * ANALYSIS OF VARIANCE -- DESIGN 1 * *

Cell Means and Standard Deviations (CONT.)

EFFECT .. Q3

Multivariate Tests of Significance (S = 2, M = 1, N = 82 1/2)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillai's	.05956	1.03132	10.00	336.00	.416
Hotellings	.06193	1.02796	10.00	332.00	.419
Wilks	.94108	1.02966	10.00	334.00	.418
Roy's	.04544				

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* * ANALYSIS OF VARIANCE -- DESIGN 1 * *

EFFECT .. Q3 (CONT.)

Univariate F-tests with (2,171) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q16A	5.11849	293.84702	2.55925	1.71840	1.48932	.228
Q16B	5.62857	273.03810	2.81429	1.59671	1.76255	.175
Q16C	3.14351	278.97143	1.57176	1.63141	.96343	.384
Q16D	3.50897	279.62321	1.75448	1.63522	1.07293	.344
Q16E	.32457	264.20417	.16228	1.54505	.10503	.900

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* * ANALYSIS OF VARIANCE -- DESIGN 1 * *

EFFECT .. CONSTANT

Multivariate Tests of Significance (S = 1, M = 1 1/2, N = 82 1/2)

Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F
Pillai's	.68567	72.85903	5.00	167.00	.000
Hotellings	2.18141	72.85903	5.00	167.00	.000
Wilks	.31433	72.85903	5.00	167.00	.000
Roy's	.68567				

Univariate F-tests with (1,171) D. F.

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Q16A	471.66542	293.84702	471.66542	1.71840	274.47883	.000

Q16B	472.91238	273.03810	472.91238	1.59671	296.17851	.000
Q16C	524.60465	278.97143	524.60465	1.63141	321.56481	.000
Q16D	505.53181	279.62321	505.53181	1.63522	309.15151	.000
Q16E	460.73411	264.20417	460.73411	1.54505	298.19943	.000

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8552 BYTES OF WORKSPACE NEEDED FOR MANOVA EXECUTION.

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This procedure was completed at 9:15:05

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CROSSTABS /TABLES q6 by q3 /options 14 /statistics 1.

***** Given WORKSPACE allows for 9446 Cells with
2 Dimensions for CROSSTAB problem *****

Crosstabulation: Q9 able to implement 7750?
By Q5 export/non exporters

	Count	%yes	%no	%
Q5-> Exp Val				Row
		1	2	Total
Q9				
	1	34	21	55
yes		22.0	33.0	32.4%
	2	34	81	115
no		46.0	69.0	67.6%
Column	68	102	170	
Total	40.0%	60.0%	100.0%	

Chi-Square	D.F.	Significance	Min E.F.	Cells with E.F. < 5
14.81061	1	.0001	22.000	None
16.12648	1	.0001	{ Before Yates Correction }	

Number of Missing Observations = 7

NPAR TESTS /MANN-WHITNEY q6 by q3 (1,3) /print cellinfo.

ERROR 11610, Text: PRINT

INVALID NPAR TESTS SUBCOMMAND--Valid subcommands are CHI-SQUARE, EXPECTED,
K-S, RUNS, BINOMIAL, MCHEMAR, SIGN, WILCOXON, COCHRAN, FRIEDMAN, KENDALL,
MEDIAN, M-W, W-W, MOSES, and K-W.

This command not executed.

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NPAR TESTS /MANN-WHITNEY q6 by q3 (1,3).

***** WORKSPACE allows for 9042 cases for NPAR TESTS *****

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- - - - Mann-Whitney U - Wilcoxon Rank Sum W Test

Q6 strategic man policy
by Q3 business sector

Mean Rank	Cases
31.75	10 Q3 = 1 primary
48.84	83 Q3 = 3 tertiary

	93 Total

Corrected for Ties			
U	W	Z	2-tailed P
262.5	317.5	-2.8930	.0038

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This procedure was completed at 10:13:47

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NPAR TESTS /MANN-WHITNEY q6 by q3 (2,3).

***** WORKSPACE allows for 9042 cases for NPAR TESTS *****

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- - - - Mann-Whitney U - Wilcoxon Rank Sum W Test

Q6 strategic man policy
by Q3 business sector

Mean Rank	Cases
83.08	84 Q3 = 2 secondary
84.93	83 Q3 = 3 tertiary

167 Total

Corrected for Ties			
U	W	Z	2-tailed P
3408.5	7049.5	-.4083	.6831

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This procedure was completed at 10:15:07

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NPAR TESTS /MAHN-WHITNEY q6 by q3 (1,2).

***** WORKSPACE allows for 9042 cases for NPAR TESTS *****

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- - - - Mann-Whitney U - Wilcoxon Rank Sum W Test

Q6 strategic man policy
by Q3 business sector

Mean Rank	Cases
33.00	10 Q3 = 1 primary
49.23	84 Q3 = 2 secondary

94	Total

Corrected for Ties			
U	W	Z	2-tailed P
275.0	330.0	-2.6089	.0091

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This procedure was completed at 10:25:27

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NPAR TESTS /MAHN-WHITNEY q7a to q7l by q3 (2,3).

***** WORKSPACE allows for 3588 cases for NPAR TESTS *****

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- - - - - Mann-Whitney U - Wilcoxon Rank Sum W Test

Q7A no strat policy
by Q3 business sector

Mean Rank	Cases
-----------	-------

71.81 71 Q3 = 2 secondary

72.19 72 Q3 = 3 tertiary

143 Total

Corrected for Ties

U	W	Z	2-tailed P
2542.5	5098.5	-.0649	.9482

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- - - - - Mann-Whitney U - Wilcoxon Rank Sum W Test

Q7B no strat pol
by Q3 business sector

Mean Rank	Cases
-----------	-------

76.37 71 Q3 = 2 secondary

67.69 72 Q3 = 3 tertiary

143 Total

Corrected for Ties

D	W	Z	2-tailed P
2245.5	5422.5	-1.5586	.1191

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- - - - - Mann-Whitney U - Wilcoxon Rank Sum W Test

Q7C no strat pol
by Q3 business sector

Mean Rank	Cases
-----------	-------

69.92 71 Q3 = 2 secondary

74.06 72 Q3 = 3 tertiary

...

143 Total

Corrected for Ties

U	W	S	2-tailed P
2408.0	4964.0	-.9947	.3199

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----- Mann-Whitney U - Wilcoxon Rank Sum W Test

Q7D no strat pol
by Q3 business sector

Mean Rank	Cases
68.94	71 Q3 = 2 secondary
75.02	72 Q3 = 3 tertiary

	143 Total

Corrected for Ties

U	W	S	2-tailed P
2338.5	4694.5	-1.6286	.0675

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----- Mann-Whitney U - Wilcoxon Rank Sum W Test

Q7E no strat pol
by Q3 business sector

Mean Rank	Cases
70.94	71 Q3 = 2 secondary
73.04	72 Q3 = 3 tertiary

	143 Total

Corrected for Ties

U	W	S	2-tailed P
2481.0	5037.0	-.5883	.5563

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SPSS/PC+

2/17/94

----- Mann-Whitney U - Wilcoxon Rank Sum W Test

Q7F no strat pol
by Q3 business sector

Mean Rank	Cases
-----------	-------

65.81 71 Q3 = 2 secondary
 78.10 72 Q3 = 3 tertiary

 143 Total

Corrected for Ties

U	W	Z	2-tailed P
2116.5	4672.5	-2.2493	.0245

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SPSS/PC+

2/17/94

- - - - Mann-Whitney U - Wilcoxon Rank Sum W Test

Q76 no strat pol
 by Q3 business sector

Mean Rank Cases

65.80 71 Q3 = 2 secondary
 78.12 72 Q3 = 3 tertiary

 143 Total

Corrected for Ties

U	W	Z	2-tailed P
2115.5	4671.5	-2.1982	.0279

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SPSS/PC+

2/17/94

- - - - Mann-Whitney U - Wilcoxon Rank Sum W Test

Q78 no strat pol
 by Q3 business sector

Mean Rank Cases

70.97 71 Q3 = 2 secondary
 73.01 72 Q3 = 3 tertiary

 143 Total

Corrected for Ties

U	W	Z	2-tailed P
2483.0	5039.0	-.8487	.3960

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SPSS/PC+

2/17/94

- - - - Mann-Whitney U - Wilcoxon Rank Sum W Test

Q71 no strat pol
by Q3 business sector

Mean Rank	Cases
70.42	71 Q3 = 2 secondary
73.56	72 Q3 = 3 tertiary

	143 Total

			Corrected for Ties
U	N	Z	2-tailed P
2443.5	4999.5	-.7409	.4588

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- - - - - Mann-Whitney U - Wilcoxon Rank Sum W Test

Q7J no strat pol
by Q3 business sector

Mean Rank	Cases
71.48	71 Q3 = 2 secondary
72.51	72 Q3 = 3 tertiary

	143 Total

			Corrected for Ties
U	W	Z	2-tailed P
2519.0	5075.0	-.4695	.6387

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- - - - - Mann-Whitney U - Wilcoxon Rank Sum W Test

Q7K no strat pol
by Q3 business sector

Mean Rank	Cases
68.93	71 Q3 = 2 secondary
75.03	72 Q3 = 3 tertiary

	143 Total

Corrected for Ties			
U	W	Z	2-tailed P
2338.0	4894.0	-1.7099	.0873

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- - - - Mann-Whitney U - Wilcoxon Rank Sum W Test

Q7L no strat pol
by Q3 business sector

Mean Rank	Cases
1.00	1
2.00	1
3.00	1
4.00	1
5.00	1
6.00	1
7.00	1
8.00	1
9.00	1
10.00	1
11.00	1
12.00	1
13.00	1
14.00	1
15.00	1
16.00	1
17.00	1
18.00	1
19.00	1
20.00	1
21.00	1
22.00	1
23.00	1
24.00	1
25.00	1
26.00	1
27.00	1
28.00	1
29.00	1
30.00	1
31.00	1
32.00	1
33.00	1
34.00	1
35.00	1
36.00	1
37.00	1
38.00	1
39.00	1
40.00	1
41.00	1
42.00	1
43.00	1
44.00	1
45.00	1
46.00	1
47.00	1
48.00	1
49.00	1
50.00	1
51.00	1
52.00	1
53.00	1
54.00	1
55.00	1
56.00	1
57.00	1
58.00	1
59.00	1
60.00	1
61.00	1
62.00	1
63.00	1
64.00	1
65.00	1
66.00	1
67.00	1
68.00	1
69.00	1
70.00	1
71.00	1
72.00	1
73.00	1
74.00	1
75.00	1
76.00	1
77.00	1
78.00	1
79.00	1
80.00	1
81.00	1
82.00	1
83.00	1
84.00	1
85.00	1
86.00	1
87.00	1
88.00	1
89.00	1
90.00	1
91.00	1
92.00	1
93.00	1
94.00	1
95.00	1
96.00	1
97.00	1
98.00	1
99.00	1
100.00	1

71.99 71 Q3 = 2 secondary

72.01 72 Q3 = 3 tertiary

...

143 Total

Corrected for Ties

U	W	Z	2-tailed P
.2855.5	.5111.5	-.0099	.9921

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Foreword

This British Standard has been prepared under the direction of the Environment and Pollution Standards Policy Committee in response to increasing concerns about environmental protection and environmental performance. It contains a specification for an environmental management system for ensuring and demonstrating compliance with stated environmental policies and objectives. It also provides guidance on the specification and its implementation within the overall management system of an organization.

The standard is designed to enable any organization to establish an effective management system, as a foundation for both sound environmental performance and participation in 'environmental auditing' schemes.

This standard shares common management system principles with BS 5750 (EN 29000, ISO 9000), the European and internationally recognized quality systems standard, and organizations may elect to use an existing management system developed in conformity with BS 5750 as a basis for environmental management. To achieve equivalence with the requirements of this standard by such means could require the application of a suitable sector application guide. Established procedures for the assessment of compliance with BS 5750 should also be capable of extension to deal with the assessment of compliance with this standard, provided that the common assessment team encompasses the appropriate level of environmental expertise and detailed knowledge of this standard.

Guidance on acceptable levels of environmental management performance for particular sectors may be given in complementary documents, e.g. sector application guides. These would be produced to explain and amplify the requirements in certain situations. They may be issued as British Standard codes of practice after they have been established and used. It is recognized that in certain industry sectors use of this standard may be delayed until agreed sector application guides are available. Such sector application guides will be particularly relevant to industrial sectors having:

- complex environmental effects
- large numbers of constituent companies
- widely differing, but loosely related, operations and disciplines
- temporary and/or off-site activities
- substantial use of subcontracting

Compliance with a British Standard does not of itself confer immunity from legal obligations.

This British Standard is issued subject to review by the technical committee responsible for drafting no later than 1 September 1993 to facilitate pilot application. At the time of the review, changes will be made where required in the light of the experience gained or to reflect changes to the draft European Community Eco-Audit Regulation (Version 3, December 1991) in the intervening time from publication of this standard.

Specification

Introduction

Organizations of all kinds are increasingly concerned to achieve and demonstrate sound environmental performance. They do so in the context of increasingly stringent legislation, the development of economic and other measures to foster environmental protection, and a general growth of concern about environmental matters.

Many organizations have undertaken environmental 'reviews' or 'audits' to assess their environmental performance. On their own, however, reviews and audits cannot provide an organization with the assurance that its performance not only meets, but will continue to meet, legislative and policy requirements. To be effective, they need to be conducted within a structured management system, integrated with overall management activity and addressing all aspects of desired environmental performance.

This British Standard specifies the elements of such an environmental management system, intended to apply to all types and sizes of organization. The basis of the approach is shown in flow chart form in figure 1. (It should be noted that any of the stages may be revisited at any time.) A system of this kind enables an organization to establish procedures to set an environmental policy and objectives, achieve compliance with them, and demonstrate such compliance to others. The standard is also intended to support certification schemes.

In addition to specifying the requirements for an environmental management system, the standard also provides guidance, in annex A, to implementation and assessment. For ease of use, the principal subclauses of the specification and guide have related numbers; thus, for example, 4.5

and A.5 both deal with environmental objectives and targets, and 4.10 and A.10 both deal with environmental management audits.

NOTE. The initial review is included in the guide, but is not part of the specification, because it is not an assessable element of an established system.

Environmental management audits and environmental management reviews are inherent, but separate, parts of the system. Audits assess both the effectiveness of the environmental management system and the achievement of the environmental objectives. Reviews check the continuing relevance of the environmental policy, update the evaluation of environmental effects, and check the efficacy of audits and follow-up actions.

This British Standard complements BS 5750, as they take parallel approaches to achieving and demonstrating compliance with specified requirements. Annex B explains the links between them. It is expected that organizations operating to BS 5750 will readily be able to extend their management systems in accordance with this standard, but operation to BS 5750 is not a prerequisite for operation to this standard.

This British Standard also complements the draft European Community Eco-Audit Regulation (Version 3, December 1991). The draft Regulation establishes a voluntary scheme, membership of which requires participating companies to have an internal environmental protection system. The standard specifies the elements of such a system. Additionally, the environmental management audits and environmental management reviews together cover the activities of 'environmental auditing' as described by the International Chamber of Commerce, and in the draft Regulation.

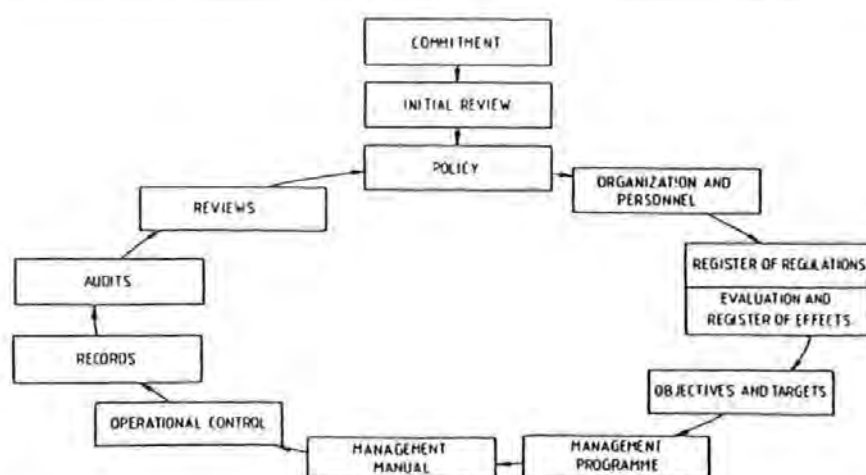


Figure 1. Schematic diagram of the stages in the implementation of an environmental management system

1 Scope

This British Standard specifies requirements for the development, implementation and maintenance of environmental management systems aimed at ensuring compliance with stated environmental policy and objectives. The standard does not itself lay down specific environmental performance criteria.

The standard is applicable to any organization which wishes to:

- a) assure itself of compliance with a stated environmental policy, and
- b) demonstrate such compliance to others.

All the elements specified in the standard are intended to be incorporated into any environmental management system, but the extent of the application of any one element will depend on such factors as the environmental policy of the organization, the nature of its activities and the conditions in which it operates.

2 Informative references

This British Standard refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

3 Definitions

For the purposes of this British Standard the following definitions apply.

3.1 environment

The surroundings and conditions in which an organization operates, including living systems (human and other) therein. As the environmental effects (see 3.2) of the organization may reach all parts of the world, the environment in this context extends from within the workplace to the global system.

3.2 environmental effect

Any direct or indirect impingement of the activities, products and services of the organization upon the environment, whether adverse or beneficial.

3.3 environmental effects evaluation

A documented evaluation of the environmental significance of the effects of the organization's activities, products and services (existing and planned) upon the environment.

3.4 environmental effects register

A list of the significant environmental effects, known or suspected, of the activities, products and services of the organization upon the environment.

3.5 environmental management

Those aspects of the overall management function (including planning) that determine and implement the environmental policy.

3.6 environmental management audit

A systematic evaluation to determine whether or not the environmental management system and environmental performance comply with planned arrangements, and whether or not the system is implemented effectively, and is suitable to fulfil the organization's environmental policy.

3.7 environmental management manual

The documentation describing the procedures for implementing the organization's environmental programme.

3.8 environmental management programme

A description of the means of achieving environmental objectives and targets.

3.9 environmental management review

The formal evaluation by management of the status and adequacy of systems and procedures in relation to environmental issues, policy and regulations as well as new objectives resulting from changing circumstances.

3.10 environmental management system

The organizational structure, responsibilities, practices, procedures, processes and resources for implementing environmental management.

3.11 environmental objectives

The goals, in terms of environmental performance, which an organization sets itself to achieve and which should be quantified wherever practicable.

3.12 environmental policy

A public statement of the intentions and principles of action of the organization regarding its environmental effects, giving rise to its objectives and targets.

3.13 environmental targets

Detailed performance requirements, quantified wherever practicable, applicable to the organization or parts thereof, which arise from the environmental objectives and which need to be met in order to achieve those objectives.

3.14 interested parties

Those with an interest in the environmental effects of an organization's activities, products and services. These include those exercising statutory environmental control over the organization, local residents, the organization's investors, insurers and workforce, customers and consumers, environmental interest groups and the general public.

3.15 organization

Any organized body or establishment, for example, a business, company, government department, charity or society. For bodies or establishments with more than one site, a single site may be defined as an organization.

3.16 verification activities

All inspection, test and monitoring work related to environmental management.

4 Environmental management system requirements

4.1 Environmental management system

The organization shall establish and maintain an environmental management system as a means of ensuring that the effects of the activities of the organization conform to its environmental policy and associated objectives and targets. This shall include:

- a) the preparation of documented system procedures and instructions in accordance with the requirements of this standard;
- b) the effective implementation of the system procedures and instructions.

In implementing the environmental management system, the organization shall take account of any pertinent code of practice to which it subscribes.

4.2 Environmental policy

The organization's management shall define and document its environmental policy. The management shall ensure that this policy:

- a) is relevant to its activities, products and services, and their environmental effects;
- b) is understood, implemented and maintained at all levels in the organization;
- c) is publicly available;
- d) includes a commitment to continual improvement of environmental performance;
- e) provides for the setting and publication of environmental objectives.

4.3 Organization and personnel

4.3.1 Responsibility, authority and resources

The organization shall define and document the responsibility, authority and interrelations of key personnel who manage, perform and verify work affecting the environment, including those who need the organizational freedom and authority to:

- a) provide sufficient resources and personnel for implementation;
- b) initiate action to ensure compliance with environmental policy;
- c) identify and record any environmental problems;
- d) initiate, recommend or provide solutions to those problems through designated channels;
- e) verify the implementation of such solutions;
- f) control further activities until any environmental deficiency or unsatisfactory condition has been corrected;
- g) act in emergency situations.

4.3.2 Verification resources and personnel

The organization shall identify in-house verification requirements and procedures, provide adequate resources and assign trained personnel for verification activities (see also 4.3.4).

4.3.3 Management representative

The organization shall appoint a management representative who, irrespective of other responsibilities, shall have defined authority and responsibility for ensuring that the requirements of this standard are implemented and maintained.

4.3.4 Personnel, communication and training

The organization shall establish and maintain procedures to ensure that its employees or members, at all levels, are aware of:

- a) the importance of compliance with the environmental policy and objectives, and with the requirements of this standard;
- b) the potential environmental effects of their work activities and the environmental benefits of improved performance;
- c) their roles and responsibilities in achieving compliance with the environmental policy and objectives, and with the requirements of this standard;
- d) the potential consequences of departure from agreed operating procedures.

The organization shall establish and maintain procedures for identifying training needs, and for providing appropriate training for all personnel whose work may have a significant effect upon the environment. Appropriate records of training shall be maintained (see also 4.9).

Personnel performing specific assigned tasks shall be qualified on the basis of appropriate education, training and/or experience, as required.

4.4 Environmental effects

4.4.1 Register of legislative, regulatory and other policy requirements

The organization shall establish and maintain procedures to record all legislative, regulatory and other policy requirements pertaining to the environmental aspects of its activities, products and services.

4.4.2 Communications

The organization shall establish and maintain procedures for receiving, documenting and responding to communications (internal and external) from relevant interested parties concerning its environmental effects and management (see also 4.9).

4.3 Environmental effects evaluation and register

The organization shall establish and maintain procedures for examining and assessing the environmental effects, both direct and indirect, of its activities, products and services, and for compiling a register of those identified as significant. The procedures shall include, where appropriate, consideration of:

- controlled and uncontrolled emissions to atmosphere;
- controlled and uncontrolled discharges to water;
- solid and other wastes;
- contamination of land;
- use of land, water, fuels and energy, and other natural resources;
- noise, odour, dust, vibration and visual impact;
- effects on specific parts of the environment and ecosystems.

The procedures shall include effects arising, or likely to arise, as consequences of:

- normal operating conditions;
- abnormal operating conditions;
- incidents, accidents and potential emergency situations;
- past activities, current activities and planned activities.

4.5 Environmental objectives and targets

The organization shall establish and maintain procedures to specify its environmental objectives, and consequent targets at all relevant levels within the organization.

In addition to compliance with all legislative and regulatory requirements, other objectives and targets shall be identified after consideration of the environmental effects register and the financial, operational and business requirements of the organization, in conjunction with the views of interested parties.

The objectives and targets shall be consistent with the environmental policy, and shall quantify wherever practicable the commitment to continual improvement in environmental performance over defined time-scales.

4.6 Environmental management programme

The organization shall establish and maintain a programme for achieving the objectives and targets. It shall include:

- designation of responsibility for targets at each function and level of the organization;
- the means by which they are to be achieved.

Separate programmes shall be established in respect of the environmental management of projects relating to new developments, or to new or modified products, services or processes, to define:

- the environmental objectives to be attained;
- the mechanisms for their achievement;
- the procedures for dealing with changes and modifications as projects proceed;
- the corrective mechanisms which shall be employed should the need arise, how they shall be activated and how their adequacy shall be measured in any particular situation in which they are applied.

NOTE. The phrase 'environmental assessment' is widely used to mean a study required by planning authorities for certain types of development.

4.7 Environmental management manual and documentation

4.7.1 Manual

The organization shall establish and maintain a manual or manuals to:

- collate the environmental policy, objectives and targets, and programme;
- document the key roles and responsibilities;
- describe the interactions of system elements;
- provide direction to related documentation and describe other aspects of the management system, where appropriate.

In addition to dealing with the normal activities of the organization, the manual (or related documentation) shall cover abnormal operating conditions, and incidents, accidents and potential emergency situations. Emergency plans shall, where appropriate, contain relevant environmental information and instructions.

4.7.2 Documentation

The organization shall establish and maintain procedures for controlling all documents required by this standard to ensure that:

- they can be identified with the appropriate organization, division, function or activity;
- they are periodically reviewed, revised as necessary and approved for adequacy by authorized personnel prior to issue;
- the current versions of relevant documents are available at all locations where operations essential to the effective functioning of the system are performed;
- obsolete documents are promptly removed from all points of issue and points of use.

4.8 Operational control

4.8.1 General

Management responsibilities shall be defined to ensure that control, verification, measurement and testing within individual parts of the organization are adequately coordinated and effectively performed.

4.8.2 Control

The organization shall identify functions, activities and processes which affect, or have the potential to affect, the environment, and are relevant to its policy, objectives and targets. The organization shall plan such functions and activities to ensure that they are carried out under controlled conditions. Particular attention shall be paid to the following:

- a) documented work instructions (consistent with, or forming a part of, the organization's environmental manual) defining the manner of conducting the activity, whether by the organization's own employees or by others acting on its behalf. Such procedures shall be prepared for situations in which the absence of such instructions could result in infringement of the environmental policy;
- b) procedures dealing with procurement and contracted activities, to ensure that suppliers and those acting on the organization's behalf comply with policy requirements that relate to them;
- c) monitoring and control of relevant process characteristics (e.g. effluent streams and waste disposal);
- d) approval of planned processes and equipment;
- e) criteria for performance, which shall be stipulated in written standards.

4.8.3 Verification, measurement and testing

The organization shall establish and maintain procedures for verification of compliance with specified requirements (e.g. in the programme, targets, manual and work instructions) and for establishing and maintaining records of the results. For each relevant activity or area, the organization shall:

- a) identify and document the verification information to be obtained;
- b) specify and document the verification procedures to be used;
- c) establish and document acceptance criteria and the action to be taken when results are unsatisfactory;
- d) assess and document the validity of previous verification information when verification systems are found to be malfunctioning.

4.8.4 Non-compliance and corrective action

The responsibility and authority for initiating investigation and corrective action in the event of non-compliance with specified requirements shall be defined.

The organization shall establish and maintain procedures for such investigation and corrective action, by which the management of the individual function or activity concerned, in consultation with the management representative (or a nominated deputy), shall:

- a) determine the cause;
- b) draw up a plan of action;
- c) initiate preventive actions, to a level corresponding to the risks encountered;
- d) apply controls to ensure that any preventive actions taken are effective;
- e) record any changes in procedures resulting from corrective action.

4.9 Environmental management records

The organization shall establish and maintain a system of records in order to demonstrate compliance with the requirements of the environmental management system, and to record the extent to which planned environmental objectives and targets have been met.

The organization shall establish and maintain procedures for the identification, collection, indexing, filing, storage, maintenance and disposition of environmental management records. Pertinent contractor and procurement records, and the results of audits and reviews (see 4.10 and 4.11) and training records (see 4.3.4) shall form an element of these records.

All environmental records shall be legible and identifiable to the activity, product or service involved. Environmental records shall be stored and maintained in such a way that they are readily retrievable and protected against damage, deterioration or loss, and their retention times shall be established and recorded.

Policies shall be established and implemented regarding the availability of records, both within the organization and to interested parties.

4.10 Environmental management audits

4.10.1 General

The organization shall establish and maintain procedures for audits to be carried out, in order to determine:

- a) whether or not environmental management activities conform to the environmental management programme, and are implemented effectively;
- b) the effectiveness of the environmental management system in fulfilling the organization's environmental policy.

For this purpose, the organization shall establish and maintain an audit plan.

4.10.2 Audit plan

The audit plan shall deal with the following points.

a) The specific activities and areas to be audited, which include:

- 1) organizational structures;
- 2) administrative and operational procedures;
- 3) work areas, operations and processes;
- 4) documentation, reports and records;
- 5) environmental performance.

b) The frequency of auditing of each activity/area, audits being scheduled on the basis of the nature and environmental importance of the activity concerned, and the results of previous audits.

c) The responsibility for auditing each activity/area.

d) The personnel requirements, and specifically that those carrying out the audits:

- 1) are independent, so far as is possible, of the specific activities or areas being audited;
- 2) have expertise in relevant disciplines;
- 3) have support, where necessary, from a wider range of specialists, who may be internal or external to the organization.

e) The protocol for conducting the audits, which may involve the use of questionnaires, checklists, interviews, measurements and direct observations, depending on the nature of the function being audited.

f) The procedures for reporting audit findings to those responsible for the activity/area audited, who shall take timely action on reported deficiencies. Reporting shall address:

- 1) conformity or nonconformity of the environmental management system elements with specified requirements;
- 2) the effectiveness of the implemented environmental management system in meeting objectives and targets;
- 3) implementation and effectiveness of any corrective actions recommended in previous audits;
- 4) conclusions and recommendations.

g) The procedures for publishing audit findings, if the organization has such a commitment.

4.11 Environmental management reviews

The organization's management shall, at appropriate intervals, review the environmental management system adopted to satisfy the requirements of this standard, to ensure its continuing suitability and effectiveness. The results of such reviews shall be published if the organization has a commitment to do so.

Management reviews shall include assessment of the results of environmental management audits (see 4.10).

Annexes

Annex A (informative)

Guide to environmental management system requirements

A.1 Environmental management system

A.1.1 *The system*

All organizational activities, products and services interact with, and have some effect upon, the environment, and an effective environmental management system needs to be capable of dealing with this complexity. Therefore, the environmental management system components will be inextricably interwoven with most, if not all, of the organization's overall management system.

Existing components of the overall system may be common to, for example, operational management, occupational health and safety management, quality management and environmental management. In such cases, documentation and records may be shared between the systems to avoid duplication, but the inter-relationships should be explained and cross-referenced.

Effective integration and coordination of the overall system components is essential to ensure consistent decision making, for example, in relation to environmental matters and occupational health and safety. However, this standard is not intended specifically to address occupational health and safety management.

The organization's management should give timely consideration to identifying, acquiring and/or developing any skills, plant equipment, controls, processes, monitoring systems and other resources needed to achieve the required environmental performance.

The environmental management system should be designed so that emphasis is placed on the prevention of adverse environmental effects, rather than on detection and amelioration after occurrence. It should:

- a) identify and assess the environmental effects arising from the organization's existing or proposed activities, products or services;
- b) identify and assess the environmental effects arising from incidents, accidents and potential emergency situations;
- c) identify the relevant regulatory requirements;
- d) enable priorities to be identified and pertinent environmental objectives and targets to be set;
- e) facilitate planning, control, monitoring, auditing and review activities to ensure both that the policy is complied with, and that it remains relevant;
- f) be capable of evolution to suit changing circumstances.

A.1.2 *Preparatory environmental review*

An organization with no existing formal environmental management system should, as a first step, establish its current position with regard to the environment by means of a preparatory review. The aim should be to consider all aspects of the organization, to identify strengths, weaknesses, risks and opportunities as a basis for establishing the environmental management system.

The preparatory review should cover four key areas:

- a) legislative and regulatory requirements;
- b) an evaluation and registration of significant environmental effects;
- c) an examination of all existing environmental management practices and procedures;
- d) an assessment of feedback from the investigation of previous incidents and non-compliance.

In all cases, consideration should be given to normal and abnormal operation of the organization, and to possible emergency conditions howsoever caused.

A suitable approach to the preparatory review would be to employ a combination of questionnaires, checklists, interviews and other forms of consultation, and direct inspection and measurement, depending on the nature of the activities.

The following list gives examples of areas which might be appropriate for many organizations to consider in the preparatory review. The list is not intended to be exhaustive, and the development of a specific list for the organization under review is itself an important and valuable early step in the review process. (Further information on environmental issues and terminology is given in the references listed in annex D.)

- areas where environmental performance could be improved
- views of relevant interested parties
- environmental objectives and targets beyond regulatory requirements
- expected changes in regulations and legislation
- adequacy of resources and environmental information
- environmental records
- environmental cost/benefit analysis and accounting methods
- internal and external communications on environmental issues
- environmental training plans
- environmental aspects of products and services

- incorporation of environmental considerations in design and marketing
- resource consumption (energy, fuels, materials)
- waste minimization/recycling initiatives
- use of hazardous processes
- use and disposal of hazardous materials and products
- transport policy
- nature conservation
- complaints and their recording and follow-up
- visual impact, noise and odours
- environmental probity of suppliers
- environmental hazard and risk assessment of potential emergency situations
- environmental aspects of emergency planning
- environmental effects of investment policies

The resulting report should highlight:

- 1) the nature and extent of problems and deficiencies; and the priorities to be accorded to rectifying them;
- 2) an improvement programme designed to ensure that the personnel and material resources required are identified and made available.

A.2 Environmental policy

The policy should:

- a) be initiated, developed and actively supported by management at the highest level;
- b) be consistent with the occupational health and safety policy and other organizational policies (such as the quality policy);
- c) not only commit the organization to meet all relevant regulatory and legislative requirements, but also define how it will seek to meet, exceed or develop the requirements of some, or all, of the other interested parties and secure continual improvement in environmental performance (see A.5);
- d) be made available, in a readily understood format, to interested parties, for example, by use of the organization's annual report, booklet or display.

The policy will frequently address very broad aspects of an organization's activities. For example, a company may wish to ensure that investment of reserves is undertaken in an environmentally responsible manner, which will require examination of the investment policy and practice.

The issues addressed in the policy will depend on the nature of the organization. Where the organization is large or complex, supporting information, in a readily understood format, may be given in the environmental objectives and programme. However, the policy may, for example, state commitments to:

- reduce waste and the consumption of resources (materials, fuel and energy);
- reduce or eliminate the production of polluting releases to the environment;
- design products in such a way as to minimize their environmental effects in production, use and disposal;
- control the environmental effects of raw material sourcing (e.g. on habitats, on species diversity and on natural beauty);
- minimize the environmental effects of new developments through strategic planning.

Appropriate levels of management should, where necessary, define specialized and/or more detailed environmental targets, consistent with the organization's policy, in addition to the overall objectives.

A.3 Organization and personnel

The management representative should have sufficient knowledge of the activities of the organization, and of environmental issues, to undertake his or her role effectively. Whilst he or she should maintain overall responsibility for implementing this standard, and for coordinating environmental management activities across all functions and groups, there may be circumstances where nominated deputies will act on his or her behalf. If the representative has other functions to perform, there should be no conflict of interest.

The responsibility of the management representative for implementing this standard does not absolve line management from their responsibilities for detailed implementation (in consultation with the representative). The allocation of such responsibilities will depend upon the nature and structure of the individual organization; some examples might be:

- a) *Senior management.* Assume responsibility for developing, resourcing, reviewing and complying with the environmental policy.
- b) *Management representative.* In addition to having overall responsibility for ensuring compliance with this standard, the management representative should ensure that developments in environmental legislation and regulation, and in environmental issues, concerns and understanding relevant to the organization, are monitored.
- c) *Finance.* Develop and maintain accounting procedures which enable identification of costs and benefits relating to environmental management.
- d) *Personnel.* Develop and maintain (in consultation with all employees) appropriate effective two-way communication and training programmes on environmental matters.
- e) *All individual function, activity and process managers (e.g. Safety, Planning, Research and Development, Product and Process Design, Marketing, Sales, Purchasing, Packaging, Distribution, Operations, Production, Finance, Site Services, Facilities, Personnel).* Develop and implement the environmental management system as it pertains to their areas of responsibility (see A.8).

In addition to allocating responsibilities, management should determine the level of competence, experience, formal qualification and training necessary to ensure the capability of personnel, especially those carrying out certain specialized environmental management functions. Where appropriate, activities and roles which affect the environmental performance of the organization should be included in job descriptions and performance appraisals.

Training may need to be provided for:

- 1) executive and management personnel, to ensure that they understand the environmental management system, have the necessary knowledge to play their part in it, and understand the criteria by which its effectiveness will be judged;
- 2) other personnel, to ensure that they can make an appropriate contribution to the environmental management system;
- 3) new recruits, and staff assigned to new tasks, equipment and procedures.

All employees should be motivated towards a proper regard for environmental concerns by, for example:

- i) introductory and refresher programmes;
- ii) effective two-way communication;
- iii) recognition of performance when environmental objectives and targets are achieved;
- iv) encouragement of employees' suggestions that lead to improved environmental performance;
- v) participation in environmental initiatives.

A.4 Environmental effects

Legislative and regulatory requirements may include planning conditions, discharge consents, process authorizations, and improvement notices; other policy requirements may include, for example, commitments to reducing waste production and energy use.

In evaluating effects and developing objectives and targets (see 4.5 and A.5), consideration needs to be given to any codes of practice to which the organization subscribes. These may commit the organization to achieve certain levels of control over adverse effects, specify numerical targets for such matters as pollutant load reduction or waste reduction, and/or require the installation and use of certain types of technology. The views of interested parties, and the frequency and nature of complaints about environmental performance, may also assist in identifying and evaluating environmental effects.

The environmental probity of suppliers should also be considered, with regard to their products and activities. Whilst in many instances it will not be possible to compile detailed registers of supplying organizations, it will often be possible to at least compare alternative suppliers in respect of their most important environmental effects.

Consideration should be given to the consequences of past activities of the organization (e.g. liability for former products), the consequences of activities of other organizations which are transferred (e.g. through acquisitions), and future consequences which may arise from present activities (e.g. responsibilities for continued monitoring and management of a landfill site).

In assessing effects, attention should be paid to both the normal and abnormal operating conditions of the organization, and to emergency situations (e.g. fire, traffic accident, explosion, flood, malicious damage, as appropriate). In dealing with the latter, both the risks of such a situation arising and the severity of potential environmental effects need to be considered as a basis for establishing objectives, controlling risks and developing an environmental component of the emergency plan.

The degree of detail of the evaluation of environmental effects should depend upon such factors as:

- a) the nature and scope of the environmental policy;
- b) the likely environmental significance of the effect in question, in relation both to other effects of the organization, and to effects from other sources upon the environmental medium or target organism/ecosystem in question;
- c) any regulatory requirements relating to the effect in question;
- d) the extent of concern of other interested parties about effects of the type in question;
- e) existing knowledge, in the organization or elsewhere, of the type of effect.

Risk assessment and other techniques may be used in order to compare the effects identified. When a regulatory assessment has been made, the organization may, depending on its environmental policy, accept the assessment implied by the regulatory conditions.

With regard to a manufacturing organization, the evaluation of effects should address all phases from product conception, through research and development, design, marketing, raw material sourcing, purchasing, production, waste management, packaging, storage, distribution, sales and use, to ultimate disposal. This is particularly important for identifying targets and objectives relating to product design functions.

With regard to a service organization, the evaluation should similarly address all aspects, stages, practices and procedures of service development and provision.

In both kinds of organization, the evaluation should address effects arising from support functions, such as planning, finance, personnel, and administration/services. Both direct and indirect effects should be considered. Examples of direct effects are: disposal/release of solid, liquid and gaseous wastes arising in a production process; usage of fuels, energy and materials in all functions of the organization; effects of transport; land management practices. Examples of indirect effects are: extraction of raw materials supplied by another organization; effects of other businesses in which the organization's reserves are invested; and effects of the use, possible misuse, and disposal of the organization's products.

The organization should identify environmental issues relevant to new developments, products, processes, services, technologies and other elements of its activities, to ensure that environmental aspects of their introduction are considered at the earliest stages of planning.

A.5 Environmental objectives and targets

The objectives should include a commitment to continual, year-on-year improvement in overall environmental performance, but not necessarily in all areas of activity.

Areas targeted for improvement should include those where improvements are most necessary to reduce risks (to environment and organization) and liabilities, and should be identified by cost-benefit analysis where practicable.

Objectives and targets should be set within the context of the environmental effects evaluation, quantified wherever practicable. Targets derived from the objectives should be quantitative and achievable, albeit demanding; when agreed, they should form components of personal accountability and performance appraisal.

A.6 Environmental management programme

Following an environmental programme is the key to compliance with the organization's environmental policy. The implementation of the programme should involve a clear and unequivocal commitment from all personnel, and in particular from management at the most senior levels.

A designated senior officer of the organization (who may or may not be the management representative) should be responsible for ensuring that suitable organizational systems are in place to ensure that appropriate operational procedures are prepared and executed.

The programme should, if appropriate, include actions to deal with the environmental consequences of the organization's past activities.

Programmes relating to the development of new products or services should address the environmental effects arising at all stages of the life cycle, to ensure that adverse environmental effects are controlled by effective planning and design. For the same reason, programmes relating to new installations or modifications to processes and plant should cover all stages of the development, from feasibility studies, through planning and design, to construction, commissioning operation, and eventual decommissioning.

A.7 Environmental management manual and documentation

The primary purpose of environmental management documentation is to provide an adequate description of the environmental management system, whilst the manual serves as a permanent reference to the implementation and maintenance of that system. Where other pre-existing parts of the overall management system (e.g. occupational health and safety, emergency plans) form parts of the environmental management system, their documentation need not be duplicated, but should be referenced in the environmental manual.

The documentation relating to the environmental management system may take various forms, but should include some or all of the following:

- a) a manual covering the whole organization;
- b) divisional manuals;
- c) specialized manuals covering individual functions (e.g. design, marketing, finance, investment) and activities (e.g. individual process lines).

These should be consistent in approach and content, and should be subject to similar rules regarding control, review and amendment.

The site emergency plan and occupational health and safety manual should also incorporate relevant environmental information and associated instructions.

The manual should be sufficiently detailed to be used by the system auditor to verify that:

- 1) the system exists;
- 2) it is fit for its purpose, given the nature of the environmental effects involved.

All written procedures should be stated simply, unambiguously and understandably and should indicate methods to be used and criteria to be satisfied.

All documentation should be legible, dated (with dates of revision and future revisions), readily identifiable, maintained in an orderly manner and retained for a specified period. Clear policies and responsibilities should be established concerning the modification of the various types of document, and their availability within the organization and to interested parties.

A.8 Operational control

Control and verification

Appropriate control and verification procedures should cover all functions, activities and processes which have, or could have if uncontrolled, a significant effect (direct or indirect) on the environment, relevant to the environmental policy. Thus, such procedures may need to deal with functions, activities and processes which:

- a) relate directly to the principal business, products or services, e.g. research and development, design, production, distribution;
- b) relate indirectly to the principal business, products or services, e.g. raw material sourcing, purchasing, and product use;
- c) provide support to the principal business, e.g. finance, personnel, and administration.

The type and scope of control and verification mechanisms should be appropriate to the nature, complexity and environmental importance of the function, activity or process which they address.

For example, control and verification within an investment department will be very different in detail from control and verification of effluent streams. In all cases, however, the objectives should be to control the activity in question in accordance with specified requirements (e.g. in the programme, manual and/or work instructions), and to verify the outcome.

In the case of indirect effects, control and verification procedures should address those functions, activities and processes by which the organization can exert influence. Thus, for example, if a company's policy commits it to providing customers with information about the environmentally-responsible use of its products, procedures should be implemented to control and verify the provision of such information. If an organization's policy commits it to purchasing materials from companies whose environmental performance meets specified standards, procedures should be implemented to obtain the necessary information from suppliers.

With regard to procurement activities, suppliers may not always be able or willing to provide all the information necessary for control purposes. However, in circumstances where information can reasonably be obtained (e.g. if the organization and suppliers are part of the same group of companies) the organization should be able to demonstrate that its suppliers observe the policy requirements of the organization.

In the case of verification involving measurement, the organization should:

- 1) identify and document the measurements to be made and specify the accuracy required of results;
- 2) specify and document the locations and times of measurement;
- 3) establish, document and maintain measurement quality control procedures, including quality control charts, and maintain records thereof;
- 4) establish and document acceptance criteria and the action to be taken when measurements are unsatisfactory;
- 5) maintain calibration records for measuring and testing equipment;
- 6) assess and document the validity of previous measurement and test results when measurement systems are found to be out of control or equipment is found to be out of calibration;
- 7) safeguard measurement and test facilities, including hardware, software and the laboratory environment, from adjustments, damage or tampering which would invalidate the measurements or tests.

Non-compliance and corrective action

Incidents of non-compliance with specified requirements may be sudden and accidental, or they may last for a period of time. They may result from deficiencies or failures in plant/equipment, from human error or from deficiencies within the management system.

In the investigation of non-compliance the causative mechanism should be fully established and reported, including the predetermining (or predisposing) factors within the management system.

Such investigation will enable the planning of corrective action, which should include measures

- restoring compliance as quickly as practicable;
- preventing recurrence;
- assessing and mitigating any adverse environmental effects;
- ensuring satisfactory interaction with other components of the management system such as occupational health and safety, and quality;
- assessing the effectiveness of the above measures.

The implementation of the corrective action should not be deemed to have been completed until the effectiveness of all the above has been demonstrated and the appropriate changes made in the procedures, documentation and records.

Where corrective action may involve the initiation of a project over a significant time scale this should form part of the management programme.

9 Environmental management records

Records are the evidence of the ongoing operation of the environmental management system. Care should be taken to limit records to the extent pertinent to the application, but they should be kept in order and designed to demonstrate compliance with environmental policy and the extent to which environmental objectives and targets are achieved. Relevant records compiled under other parts of the overall management system need not be duplicated, but means of access to them should be specified. In addition to the register of legislative and regulatory requirements, the register of environmental effects, and the reports of audits and reviews, records should include:

- details of any failures to comply with policy, and of corrective actions taken;
- details of any incidents and follow-up actions taken;

- details of any complaints and follow-up actions taken;
- appropriate supplier and contractor information;
- inspection and maintenance reports;
- product identification and composition data;
- monitoring data.

A.10 Environmental management audits

Audits may be internal (carried out by personnel from within the organization, but wherever possible independent of the part being audited) or external, but in either case the persons conducting the audit should be properly trained to carry out the task objectively and effectively. Independent, external verification of audits may be required by certain agencies; the organization should identify any such requirements it is committed to meet.

Auditors may need expertise in certain disciplines, depending on the nature and activities of the organization, or part of the organization, being audited, but they will certainly require broad knowledge of environmental processes and effects.

Whilst the primary function of audits is to assess the extent of compliance and non-compliance, and assess the effectiveness of previous corrective actions, they may suggest remedial measures to overcome problems, or they may simply note the nature of the problems and require the management of the audited function to devise and implement an appropriate solution.

The audit report should be submitted to the management representative, the local line management, and that level of senior management appropriate to the organization or function being audited.

In addition to establishing an independent audit procedure, organizations may find it beneficial to establish self-assessment procedures carried out by the responsible line management to assess audit readiness.

An existing British Standard, BS 7229, deals with quality system auditing, and its broad principles are relevant to auditing of environmental management systems.

A.11 Environmental management reviews

The scope of the review should include the entire organization and all its activities, products and services; it should not be confined to those relevant to existing environmental policy, objectives and targets.

For example, a review of the environmental management system applied to a product design department would examine the extent to which the system was implemented, and its effectiveness in ensuring that products were designed according to the organization's objectives, and whether the objectives should be modified.

Such reviews should be carried out by appropriate members of, or competent independent personnel appointed by, the organization's management.

Issues to be addressed as part of the review process should include:

- a) any recommendations which have been made in environmental management audit reports, and how these should be implemented;
- b) the continuing suitability of environmental policy, and whether it should be revised in the light of, for example:
 - 1) emerging/growing environmental concerns in specific areas;
 - 2) developing understanding of environmental issues;
 - 3) potential regulatory developments;
 - 4) concerns amongst interested parties;
 - 5) market pressures;
 - 6) changing activities of the organization;
 - 7) changes in sensitivity of the environment;
- c) the continuing suitability of environmental targets and objectives, and revisions to the environmental management programme, manual and other documentation to reflect changes in these.

Reports of reviews should make clear the reasons for their conduct (e.g. routine procedure, organizational changes, developments in understanding of environmental effects, changes in environmental sensitivity, reported deficiencies in environmental management system).

Findings, conclusions and recommendations reached as a result of review and evaluation should be submitted in documentary form for necessary action by the organization's management.

Annex B (informative)

Links to BS 5750 'Quality systems'

To assist organizations operating to BS 5750 and wishing to extend their management systems in accordance with this standard, table B.1 links the specification of requirements in this standard to the specification of requirements in BS 5750 : Part 1 : 1987.

The reasoning behind the linkages is outlined below, where the subclauses of this standard are given as headings.

NOTE. All references to BS 5750 in this annex should be read as references to BS 5750 : Part 1 : 1987.

a) 4.1 Environmental management system

The requirements that appropriate system procedures and instructions are prepared and implemented are counterparts to those in 4.2 of BS 5750. As effective implementation of any management system is dependent upon the commitment of the organization's management, there are also similarities with 4.1 of BS 5750.

b) 4.2 Environmental policy

The requirement for an environmental policy is analogous to that for a quality policy, as required by 4.1 of BS 5750, but with additional requirements; namely that the policy should be supported by environmental objectives, quantified where practicable, and that both the policy and objectives should be publicly available.

c) 4.3 Organization and personnel

The requirements of this subclause are counterparts to those of 4.1 of BS 5750 (with some additional emphasis on internal communications), and those of 4.18 of BS 5750, which addresses training.

d) 4.4 Environmental effects

No direct parallels to this subclause exist in BS 5750; it is in the area of environmental effects and their evaluation that the two standards are at their most dissimilar. However, in broad terms, the requirements pertaining to the evaluation of the environmental effects of an organization's activities may be considered as analogous to discussions with a customer prior to drawing up a specification, and applicable legislation and regulations may be considered as analogous to part of a specification.

As evaluation of environmental effects should include (amongst others) those arising from:

- 1) purchased products and services: 4.6 and 4.7 of BS 5750;
- 2) packaging and delivery: 4.15 of BS 5750;
- 3) products during use: 4.19 of BS 5750;

the systems developed for compliance with the above subclauses of BS 5750 could be extended to address environmental management.

e) 4.5 Environmental objectives and targets

The organization's objectives and targets, whether identified by regulatory bodies or self-imposed, serve a similar purpose to that of contractual requirements addressed in 4.3 of BS 5750, in that they define the level of performance to be achieved by implementation of the system. However, under environmental management the implications for the organization are necessarily more wide-ranging, as can be seen from the definition of "interested parties" (3.14 of this standard), i.e. those with an interest in the environmental effects of the organization's activities.

f) 4.6 Environmental management programme

This subclause is concerned with the means of achieving the organization's objectives and targets. In a similar way, 4.3 of BS 5750 is concerned with ensuring that the organization can meet contractual requirements, and 4.4 of BS 5750 is concerned with the means by which these are met by the control of design activities.

However, the management programme required for an environmental management system should need to be broad and related to all objectives and targets, and not confined to these two aspects.

4.7 Environmental management manual and documentation

The documentation of design activities is addressed by 4.4 of BS 5750 and control of all documents within the management system is addressed by 4.5. The requirements for document control are essentially the same in both standards, with the difference that the contents of the environmental management system manual are specified in the environmental management standard (though they may be "signposted" rather than included in full). The reference to a quality manual occurs in the note to 4.2 of BS 5750.

4.8 Operational control

This subclause requires that all activities which are relevant to compliance with the organization's environmental policy, objectives and targets are carried out under controlled conditions. The origins of BS 5750 are evident here as it does not have a single corresponding subclause, but a number of subclauses relating to different stages of the production process. These are:

- 4.4 Design control
- 4.6 Purchasing
- 4.9 Process control
- 4.10 Inspection and testing
- 4.11 Inspection, measuring and test equipment
- 4.12 Inspection and test status
- 4.13 Control of nonconforming product
- 4.14 Corrective action
- 4.15 Handling, storage, packaging and delivery
- 4.19 Servicing
- 4.20 Statistical techniques

i) 4.9 Environmental management records

The requirement that records be kept to demonstrate compliance with the environmental management system is a counterpart to that of 4.16 of BS 5750, which requires demonstration or achievement of the required quality and the effective operation of the quality system. 4.8 of BS 5750 is also concerned with records, in this case relating to products.

j) 4.10 Environmental management audits

The auditing requirement of this standard is a counterpart to that of 4.17 of BS 5750. Whilst auditing of an environmental management system could be conducted as part of a broader audit, the auditors would need to be suitably qualified in terms of environmental knowledge.

k) 4.11 Environmental management reviews

The requirement for management reviews of the system is a counterpart to that stated in 4.1 of BS 5750. Important additional requirements are the review of environmental policy, objectives and targets.

APPENDIX 4



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Mr D T King, BSc (Econ), MSc, FBIM
Dean

ANDREW HUTCHINSON
EXT.255882

Dear Sir/Madam

This questionnaire will take you 5 minutes to fill in but will provide you with invaluable information in the rapidly evolving field of Business and the Environment.

Plymouth Business School, in association with Plymouth Area Groundwork Trust and Plymouth Chamber of Commerce, has committed research funds to investigate Corporate Environmental Performance in Devon and Cornwall. For this purpose I need your co-operation.

This survey will cover a large sample of the Small and Medium Enterprise sector of Devon and Cornwall and will be totally confidential. However if you take part in the survey the results can be made available to your company on request.

For the purpose of this survey, *Environmental Issues* are any issues that have an impact on nature, see Question 6 for examples of these issues.

Could I take this opportunity to thank you in advance for your participation. Please fill in the survey and return it in the *Freepost* envelope provided. If you experience any difficulties with the questionnaire or have any queries please do not hesitate to contact me on (0752) 255882 or Fax (0752) 232853).

Yours faithfully

A handwritten signature in black ink, appearing to read 'M. A. Hutchinson'.

M.A.HUTCHINSON

**SOUTH WEST "GREEN" BUSINESS
SURVEY FOR THE SMALL AND
MEDIUM SIZED ENTERPRISE
SECTOR**



BY: ANDREW HUTCHINSON M.A.

In association with:

Plymouth Area Groundwork Trust

Plymouth Chamber of Commerce

BUSINESS SCHOOL
UNIVERSITY OF PLYMOUTH
DRAKE CIRCUS
PLYMOUTH PL4 8AA

"Green" Business Survey

1) Is your business at the address overleaf
(Please tick one box)

- A single site business
A headquarters unit
A subsidiary or branch of a national enterprise
A subsidiary or branch of a foreign enterprise

2) How many employees are currently at your establishment?
(Please tick one box)

- 0-10
11-25
26-100
101-200
200+ (specify)



1998

3) Which is the main business sector your company operates in? (Please tick one box only)

- Agriculture, forestry & fishing
- Energy and water supplies
- Mineral extraction, mineral & chemical manufacture
- Engineering or vehicle manufacturing
- Other manufacturing
- Construction
- Distribution, retailing, hotel & catering
- Transportation and telecommunications
- Financial services
- Other services



4) Please indicate the location of all of your markets.

(Please tick as many as necessary)

		<u>E.C.</u>	
South West England	<input type="checkbox"/>	Belgium	<input type="checkbox"/>
England	<input type="checkbox"/>	Denmark	<input type="checkbox"/>
* EFTA	<input type="checkbox"/>	Germany	<input type="checkbox"/>
Eastern Europe	<input type="checkbox"/>	Greece	<input type="checkbox"/>
U.S.A.	<input type="checkbox"/>	France	<input type="checkbox"/>
Third World	<input type="checkbox"/>	Ireland	<input type="checkbox"/>
Japan	<input type="checkbox"/>	Italy	<input type="checkbox"/>
Australia	<input type="checkbox"/>	Luxembourg	<input type="checkbox"/>
South Africa	<input type="checkbox"/>	Netherlands	<input type="checkbox"/>
Elsewhere, (specify)	<input type="checkbox"/>	Portugal	<input type="checkbox"/>
<div style="border: 1px solid black; height: 20px; width: 100%;"></div>		Spain	<input type="checkbox"/>
		U.K.	<input type="checkbox"/>

* Austria, Finland, Iceland, Norway, Sweden, Switzerland.

5) How important are environmental issues to,

(Tick one box per line)

	Extremely important	Important	Neither unimportant or important	Not very important	Not important
Your company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You individually	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6) How important are the following environmental issues
to your company? (Please tick one box per line)

	Extremely important	Quite Important	Neither unimportant or important	Quite unimportant	Not at all important
Acid rain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CFC's/ozone layer depletion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Global warming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water pollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Energy usage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effluent waste disposal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deforestation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise pollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehical emissions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Solid waste disposal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Resource depletion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employee health and safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial support for environmental groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7) Is your company aware of the implications of the following to your existing business practices? (Tick one box per line)			
	Yes	Do not know	No
EC Eco-labelling scheme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EC Eco-audit scheme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forthcoming EC directives on the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(If, YES please state which)	<input type="text"/>		
BS 5750	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BS 7750	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1990 Environmental Protection Act	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Act 1989	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C.O.S.H.H. 1988	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8) What are the most effective ways of improving Environmental business practices? (Tick one box per line)					
	Strongly agree	Agree	Agree nor Disagree	Disagree	Strongly disagree
Legislation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Company self regulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Individual discipline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Market pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9) Has your company considered or implemented any of the following?
(Tick one box per line)

	Implemented	Considered	Not considered	Irrelevant
Recycling policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Energy efficiency programme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Waste management programme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Checking your suppliers environmental policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduction of packaging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental audit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pollution control policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental staff training programme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental transport policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental management system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10) Does your company have a written environmental policy statement?
(Please tick one box)

Yes, (Go to Question 11)

☐

No, (Go to Question 12)

☐

11) Have you implemented the written environmental policy yet?

(Please tick one box)

Yes, (Go to question 13)

☐

No, (Go to question 13)

☐

12) Why does your company not have a written environmental policy?

(Tick one box per line)

	Strongly agree	Agree	Agree nor Disagree	Disagree	Strongly disagree
Not cost effective	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of external pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Company inertia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not relevant to our business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not thought about it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Already an integral part of existing strategy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other reason (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="text"/>				

13) How important are the following issues as catalysts to make business practices more environmentally friendly?

(Please tick one box per line)

	Extremely important	Quite important	Neither important or unimportant	Quite unimportant	Not at all important
Legislation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customer pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Marketing image	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Investor pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insurance reasons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Company policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employees concerns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal conviction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EC Eco-labelling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pressure from buyers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pressure from suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Competitor behaviour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Media views	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Government grants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New market opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* Please fill in company details

Name of company:.....	
Address:.....	
.....	
Telephone:.....	Fax:.....
Name of Respondent:.....	
Position in Company:.....	

* All information will be treated in the strictest of confidence and no data will be published that could be identified with a specific company.

Thank you for your co-operation!





Plymouth Business School

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Drake Circus
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Devon PL4 8AA
United Kingdom

Telephone: 0752 232800
Fax: 0752 232853

Mr D T King, BSc (Econ), MSc, FBIM
Dean

Andrew Hutchinson
Ext. 2850

Dear Sir/Madam

The enclosed questionnaire will take you approximately **5 minutes** to complete and will provide you with invaluable information on the increasingly important subject area of business and the environment. Enclosed in the survey are details of the new British Standard for the environment BS7750.

With over 350 pieces of environmental legislation now published in the EC, the environment is now of central concern to your company. It is for this reason that Plymouth Business School, in association with the Groundwork Trust and the Chamber of Commerce, have allocated research funds to investigate Corporate Environmental Performance in Devon and Cornwall.

By completing and returning this survey in the *Freepost envelope* provided (by 31st January 1994) you could take an important step forward in understanding some of the environmental issues that face your company today.

All of the information in the survey will be treated in the strictest confidence and no information will be published that could be associated with any particular company. A copy of the report will be available on request.

Could I take this opportunity in thanking you in advance for your participation. Please do not hesitate to contact me should you have any questions.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'M.A. Hutchinson', written in a cursive style.

M.A. Hutchinson

A simple horizontal line drawn in ink, likely a decorative flourish or a placeholder for a stamp.

**A SURVEY OF DEVON AND CORNWALL'S
ENVIRONMENTAL PERFORMANCE IN THE
SMALL AND MEDIUM SIZED ENTERPRISE
SECTOR (SME)**



Compiled by Andrew Hutchinson M.A.

The Business School, University of Plymouth, Drake
Circus, Devon, PL4 8AA.
Tel: 0752 232850; Fax 0752 232853

**In Association with:
Plymouth Area Groundwork Trust
PAYBACK
and Chamber of Commerce**

BUSINESS ENVIRONMENT SURVEY

1) Is your business at the address overleaf
(Please tick one box)

- A single site business
A headquarters unit
A subsidiary or branch of a national enterprise
A subsidiary or branch of a foreign enterprise

☐ 100%
☐ 90%
☐ 80%
☐ 70%

2) How many employees are currently at your establishment?
(Please tick one box)

- 0-10
11-25
26-100
101-200
200+ (specify)

☐ ☐ ☐ ☐

11/11/2016

3) Which is the main business sector your company operates in? (Please tick one box only)

- Agriculture, forestry & fishing
- Energy and water supplies
- Mineral extraction, mineral & chemical manufacture
- Engineering or vehicle manufacturing
- Other manufacturing
- Construction
- Distribution, retailing, hotel & catering
- Transportation and telecommunications
- Financial services
- Other services

4) How old is your company?
(please tick one box only)

Under 1 year

☐

1-5 years

☐

6-10 years

☐

11-50 years

☐

50+ years (specify)

☐

5) Does your company export?
(please tick one box only)

Yes

☐

No

☐

6) Does your company have a strategic environmental
policy? *
(please tick one box only)

Yes (if yes, go to Q8)

☐

No

☐

* A strategic environmental policy is a written statement of intent to consider environmental matters as an integral part of long term company policy.

7) Why does your company not have
a strategic environmental policy?
(Please tick as many boxes as required)

Operational environmental initiatives suffice

☐

Environmental issues are not relevant
to our business operations

☐

Lack of relevant information/educational
programmes

☐

Lack of in-house expertise to motivate change

☐

Lack of ability to assess future impact of
the environment on performance

☐

Constrained by financial resources

☐

Lack of time

☐

Company inertia and reluctance to change

☐

Lack of reasons or pressure to confront the issues

☐

Lack of legislative requirements to conform to standards

☐

Lack of incentives to change

☐

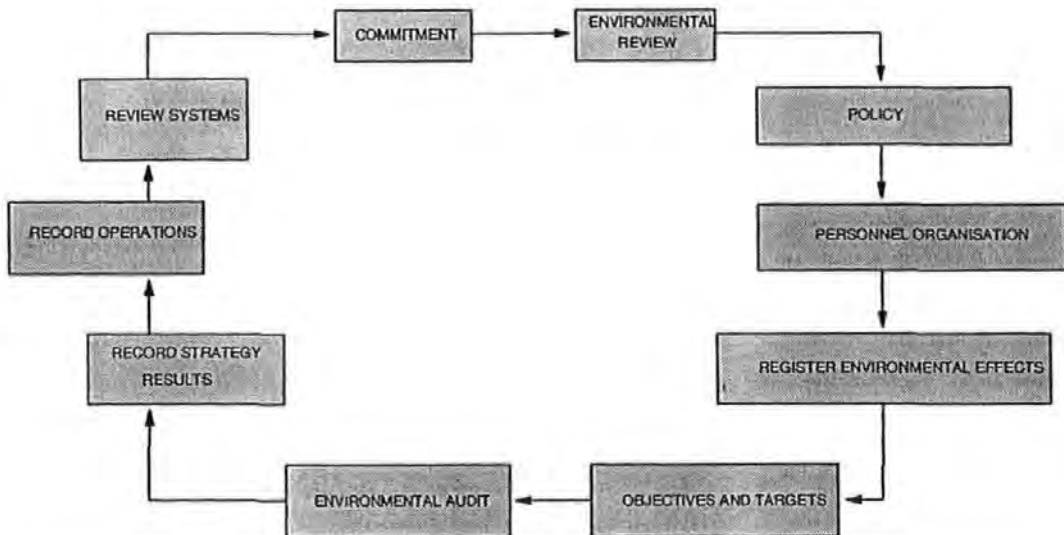
The environment is no longer an important business issue

☐

Any other reason (please specify below)

Please view the diagram below and answer the following questions

ENVIRONMENTAL MANAGEMENT SYSTEMS - (BS7750)



8) Has your company implemented this standard?

(please tick one box only)

Yes (if yes, go to Q13)

☐

No (if no go to Q9)

☐

9) Would your company be able to implement this standard?

(please tick one box only)

Yes (if yes, go to Q10)

☐

No (if no, go to Q11)

☐

10) Would your company be willing to implement this standard in the near future? (please tick one box only)

Yes (if yes, go to Q13)

☐

No (if no, go to Q12)

☐

11) Why would your company not be able to implement
the British Standard 7750?
(please tick as many boxes as required)

Lack of interest

☐

Lack of time

☐

Lack of financial resources

☐

Lack of commitment within the company

☐

Inappropriate nature of the standard

☐

Not cost effective

☐

Limited available staff to implement the change

☐

Not company policy

☐

Any other reason (please specify below)

12) Why would your company not be willing
to implement the British Standard?

(please specify below)

13) A Regional Environmental Management System (REMS) is a partnership between individuals, businesses, public sector institutions and other agencies, designed to systematically improve the local environment.

How interested would your company be in this concept?

(please tick one box only)

Extremely interested

☐

Quite interested

☐

Neither interested nor uninterested

☐

Quite uninterested

☐

Not at all interested

☐

14) Energy Performance Contracting (EPC) is where an external consultancy implements and pays for energy efficiency improvements in your company, charging for the service only from the cost savings that would accrue.

How interested would your company be in this concept?

(please tick one box only)

Extremely interested

☐

Quite interested

☐

Neither interested nor uninterested

☐

Quite uninterested

☐

Not at all interested

☐

The following questions relate to a "Green" Business Club based in the Plymouth Area called PAYBACK. PAYBACK operates under the auspice of the Groundwork Trust and costs one pound per employee to join. (minimum subscription of fifty pounds)

15) Is your company a member of PAYBACK?

(please tick one box only)

Yes

☐

(if yes, go to Q19)

No

☐

(if no go to Q16)

16) The following services are offered free to all members.

How interested would your company be in the following services?

(please tick one box per line)

	Extremely interested	Quite interested	Neither interested nor uninterested	Quite uninterested	Not at all interested
Environmental telephone helpline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to one hour's confidential advice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Newsletter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Handbook and up to date briefings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PR for environmental success stories	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PAYBACK membership also offers a 10% discount on Groundwork's commercial services like consultancy, environmental reviews and landscaping services. Training in environmental management; seminars, conferences and environmental Forums for formal and informal exchange of information, amongst other services, are also available.

17) How interested would your company be in a concept like PAYBACK?

(please tick one box only)

Extremely
Interested

☐

(go to end of questionnaire)

Quite
Interested

☐

Neither interested
nor interested

☐

(go to Q17)

Quite
Uninterested

☐

(go to Q17)

Not at all
Interested

☐

(go to Q17)

18) If your company is neither interested nor uninterested, quite uninterested or not at all interested; please state below why this is the case.

ONLY ANSWER Q19 IF YOUR COMPANY IS A MEMBER OF PAYBACK

19) How useful have the following PAYBACK services been to your company?
(please tick one box per line)

	Extremely useful	Quite useful	Neither useful nor not useful	Not useful	Not at all useful
Environmental telephone helpline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to one hour's confidential advice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Newsletter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Handbook and up to date briefings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PR for environmental success stories	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
consultancy service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
staff training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
seminars and conferences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* Please fill in company details.

Name of Company:	
Address:	
Telephone:	Fax:
Name of Respondent:	
Position in Company:	

* All information will be treated in the strictest of confidence and no data will be published that could be identified with a specific company.

Thank you for your co-operation!

AUTHOR'S DECLARATION

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award.

This study was financed with the aid of a studentship from the Plymouth Business School, University of Plymouth.

Relevant MBA lectures, seminars and conferences were regularly attended at which work was often presented. External institutions were consulted in the preparation of this thesis and a number of papers have been prepared relating to the research.

Publications: Hutchinson, A. and Chaston, I. (1993), Perceptions, Policies and Practices in the SME Sector: A Case Study. Proceedings of the Second Annual Business Strategy and the Environment Conference, Bradford, September, 23-24th, 1993.

Hutchinson, A. and Chaston, I. (1994), Environmental Management in Devon and Cornwall's SME Sector. Business Strategy and the Environment, Vol. 3, pt.1. pp 15-22.

Hutchinson, A. (1994), Environmental Management in the UK SME Sector - Towards a Sustainable Bioregional Re-generation Model. Proceedings of the Third International Greening of Industry Conference, November, 13-15th, 1994.

External Contacts: Douglas Peedle (Confederation of British Industry - Economic and Development); Adrian Watts (Plymouth Chamber of Commerce); Peter Seldon (Groundwork Trust); Kate Evans (Plymouth City Council - Recycling Officer); Chris Trevan (Cornwall County Council - Economic and Development Unit); Ian Hutchcroft (Devon County Council - Education Officer); Chris Redding (Training and Enterprise Council).

Signed:

M. A. Hutchinson

Date:

December 1994.

To my Mother and Father for my education

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This copy of the thesis has been supplied on condition that anyone who consults it is understood to recognise that its copyright rests with its author and that no quotation from the thesis and no information derived from it may be published without the author's written consent.

Signed:

M.A. Hutchinson
.....

Date:

December
..... 1994.