

CHAPTER 1 INTRODUCTION

1.1 The natural environment in general

Environmental issues have never before in the history of humankind as we know it, received so much attention than at present. Matters such as air and water pollution, the disposal of toxic waste, the use of natural resources, the extinction of species, the depletion of the ozone layer, the use of pesticides and the destruction and degradation of vast areas of land are some of the issues which have had, and continue to have, a negative effect on global ecology.

In commenting on the treatment that various types of wildlife have indiscriminately received at the hands of humans, for example, the slaughter of whales for oil and meat, the culling of seals, especially seal cubs, for their fur, the large-scale killing of birds and wild animals both in the name of "sport" and for commercial reasons, Ponting (1991, p192) states that the consequence of such actions *"has been a monument to human short-sightedness"* and *"has left an impoverished world"*.

The dominant way of thinking relevant to these issues which has been prevalent in most first-world, developed countries emphasizes human dominance over nature, and either ignores the latter to various degrees, or relies on the capability of science and technology to provide solutions to environmental problems. Commenting on this type of attitude, Smuts (1995, p12) states *"Throughout the world, trade-off decisions have been biased in favour of growth and against environment"*. Commoner (1990) emphasizes the extent of humankind's modification of the physical world, and suggests that human beings, plants and animals now live in two worlds, the natural "ecosphere", and the modified-by-humankind "technosphere". Further, Commoner (1990, p4) claims that these two worlds *"are governed by very different laws"* and are currently *"at war"*, while McMichael (1994) says that humankind's treatment of the physical environment is potentially leading the way to global catastrophe.

Given the above, it is reasonable to say that people's activities are detrimentally affecting this planet and its inhabitants like the activities of no other species. Consequently, environmental issues have become much-debated topics. The attention now granted them by the media, by governments and by commercial organizations and industries around the world, serves to confirm their priority. Whether or not this attention is genuine or merely a response to pressure from pro-environmentalists, such as mentioned in the following paragraph, or a combination of the two, it does indicate an increasing awareness of the importance of maintaining the ecological balance of planet Earth.

Concurrent with these happenings, and perhaps stimulated by a reaction to the apparent indifference shown towards the natural environment by much of humanity, the last two decades have also revealed an increasing awareness among some people of the importance of environmental issues, such as those mentioned above, to the well-being of this planet and its inhabitants. These people, acting either on an individual basis or in groups, have played a major role in raising the awareness of, and concern for, the natural environment at both national and international levels. The governments of several countries have also realised that environmental management is a matter of global governance, and, as stated by Lotter (1996, p15), *"treaties in effect or awaiting ratification now govern the atmosphere, the oceans, endangered species, trade in toxic waste and hazardous substances, and production of precursors for chemical weapons"*.

Media coverage of environmental matters seems to have followed two trends. Firstly, there is the emphasis on events with negative environmental impact which are reported on due to their high audience appeal and/or their "sensational" type properties, and which exploit the so-called "bad news sells" syndrome. Secondly there is the documentary type of article or program which deals with both negative, for example, the destruction of forests in South America, and positive topics, for example, attempts to preserve endangered species of animals (Few, 1993). Both types of coverage may serve to sensitize readers and viewers to the importance of environmental matters.

An increase in environment-related recreational activities and aesthetic appreciation at an individual level is also apparent, as evidenced by the increasing popularity of "back-to-nature" and "wilderness" type outdoor activities and ecotourism destinations, as well as the increasing number of environment-related books and magazines available to the public.

Pirages and Ehrlich (1974) claim that a collection of values, attitudes and beliefs form a framework through which individuals, groups of individuals, or even whole societies view the world, and call this framework the *Dominant Social Paradigm*, or DSP. They claimed further that the DSP of the time was anti-ecological, and new ways of thinking were needed for "*ecological catastrophe ... to be avoided*" (Dunlap & Van Liere, 1978, p10).

Dunlap and Van Liere (1978, p10) propose that "*despite the predominance of an anti-ecological DSP within our society, new ideas have emerged in recent years which represent a direct challenge to this DSP*", and suggest the name *New Environmental Paradigm*, or NEP, to represent this new way of thinking. The NEP paid attention to concepts such as maintaining the balance of nature, the limitations to Earth's natural resources, and a holistic, ecological perspective of the Earth and all life on it.

The apparent increase in interest in the natural environment as mentioned above would seem to be in accord with the hypothesized shift in ways of thinking from the anti-ecological DSP to the NEP proposed by the above researchers.

Nevertheless, the future of the natural environment, and indeed of planet Earth, from an ecological perspective, is still unclear. Although there may be evidence of increasing awareness of the importance of the well-being of Earth's ecological systems, serious environmental problems still exist. Human life (as well as all other life as we know it) is dependent upon the resources of this planet for its survival. Neglecting or abusing this planet and its resources may carry with it the consequences that the needs of present and future generations may not be met (Few, 1993).

1.1.1 Environmental psychology and a definition of the natural environment

While it may be reasonable to suppose that most people have some idea of what is meant by the "natural environment", it is, nevertheless, still appropriate at this time to propose some form of definition of the natural environment as it is conceptualized for this research, and its relationship to the field of environmental psychology.

Holahan (1982, p3) defines environmental psychology as *"an area of psychology whose focus of investigation is the interrelationship between the physical environment and human behavior and experience"*. While other authors may describe environmental psychology using slightly different terminology (Heimstra & McFarling, 1974; Proshansky, 1976; Viljoen, Van Staden, Grieve & Van Deventer, 1987; Bell, Greene, Fisher & Baum, 1996), their descriptions have much in common. "Environment", in general, encompasses both the natural and the built environments. The relationship between people and the environment is conceptualized as an interactionistic one, that is, people exert an influence on the environment, and vice versa.

Canter and Craik (1981) refer to the transactionistic nature of the relationship between human experience and the environment, and in so doing hint at concepts which derive their meaning purely from their co-existent relationship with other concepts.

Two other characteristics of environmental psychology are worthy of mention. Firstly, by its very nature, it is a discipline with practical applications. Therefore much environmental psychological research is performed in natural or real-life settings, rather than in a research laboratory (Bell et al., 1996). Secondly, as a science, environmental psychology does not stand in isolation (Holahan, 1982; Viljoen et al., 1987). The type of situations investigated by environmental psychologists are likely to be of interest to architects, town planners, nature conservation officials and others whose work or interest relates in some way to the environment.

According to Heberlein (cited in Gooch, 1995, p. 514), *"The environment is, technically speaking, anything that exists outside of the self"*. For the purpose of this research the above is further qualified and extended, and **the natural environment is defined as the external surrounding environment, animate and inanimate, which has not been directly modified by humankind**. It therefore includes physical and ambient dimensions of human and non-human life (including plant life), areas of land, mountains, rivers, lakes, seas and the atmosphere. It includes humans, but not the effect they have on the physical, ambient world, that is, it excludes human-made objects and structures such as buildings, cities and roads.

1.2 The natural environment in South Africa

South Africa is a country rich in biodiversity. It has a wealth of natural resources and is home to a wide variety of plant and animal life. The Cape Peninsula alone has more than 2600 varieties of indigenous flora - more than the whole of Great Britain (Paterson-Jones, 1991), while South Africa has, proportionate to area, the third largest variety of animal life in the world, after Indonesia and Brazil (Yeld, 1993), being home to 227 species of mammals, more than 700 species of birds, and more than 300 species of reptiles. South Africa is also a land of contrasts and uniqueness. Ten years after the implementation of democracy, it is still suffering from the effects of a largely dysfunctional socio-political system implemented over several decades. Altogether, these factors result in a set of conditions which affect, among other things, the natural environment of the country.

Examples of some areas which warrant attention are: desertification, soil erosion, pollution of air and water, acid rain, overpopulation, domestic and industrial waste disposal, the use of natural resources, and the conservation of flora and fauna. It is apparent that, historically, not enough emphasis has been placed on environmental matters in South Africa. Cock (1991, p5) states *"our natural resources are exceptionally diverse, ... These diverse resources are not adequately protected"*, while Yeld (1993, p18), commenting on the rate at which natural habitats are

disappearing in South Africa, adds "*Our natural wealth is slipping through our fingers*".

There are various estimates of the amount of hazardous waste material produced in South Africa, but, whatever the actual amount may be, it is clear that the country's ecological systems are seriously threatened. Koch, Cooper and Coetzee (1990) state that South Africa annually produces six million tons of hazardous waste, but lacks the facilities to handle this appropriately. Yeld (1993) reports that South Africa's industrial and mining waste, including emissions to air and substances discharged with waste water, is estimated at 419 million tons annually, and adds that less than half of the country's 550-odd landfill sites are subject to state control, raising serious concerns about soil and water contamination.

According to the *IPM Human Resources Directory and Handbook* of 1997, of the estimated 1.8 million tons of hazardous waste which South African industries produce annually, 22000 tons contain significant amounts of highly toxic substances which are bio-accumulative and not disposed of adequately. A further concern is that 95 percent of South Africa's waste material is disposed of on land.

The use of coal as a fuel places South Africa as the world's third highest emitter of carbon dioxide on a per capita basis. This country mines some 180000 tons of coal per year. Roughly 50 percent of this is used to generate electricity; 25 percent is used by Sasol in the manufacture of synthetic fuels, waxes and other coal-based organic materials; and 25 percent is used to provide heat and energy for both industry and domestic purposes (Yeld, 1993). Not only has South African coal a high ash content, contributing to problems with disposal of the used product, but, typically, power stations and oil refineries are responsible for pouring tons of pollutants, for example, oxides of sulphur, into the atmosphere daily, a level far in excess of that which is acceptable in most first world countries. These high levels of atmospheric pollutants, together with climatic characteristics in some parts of the country, are, in turn, responsible for the formation of acid rain of a level estimated to be equivalent to the most serious in the world.

The South African population is the third largest on the African continent, after Nigeria and Ethiopia, and at a growth rate of 2.6 percent per year, barring major incidents, can be expected to double by the year 2020. Yeld (1993) comments that more people competing for, and consuming, more resources, making the provision of economic security and a healthy lifestyle a more challenging task for any proponent of sustainable living. Lutsch (1996) states that, according to 1995 estimates, South Africa had a shortage of 1.5 million housing units, and that this figure is increasing by 200000 annually.

Smuts (1995), commenting specifically on the South African situation, draws attention to the fact that the natural environment is part of the total environment in which humankind exists, and this total environment is affected by biological, physical, social, economic and political factors. Environmental issues, therefore, cannot be examined in isolation. Smuts (1995) adds that, as the total environment is constantly changing, it is essential to maintain a balance and to monitor a continuity amongst these factors if the entire system is to remain sustainable.

While the new South Africa has brought with it a new political dispensation in the form of a participative democracy, Smuts (1995, p7) warns that *"It is important to realise that while it may be possible to stabilise and improve disrupted socio-political and socio-economic systems by achieving some sort of political settlement, the same solution does not necessarily apply to a degraded bio-physical environment"*. The attention given to the natural environment as evidenced by Section 24 of the Constitution (see Section 1.3) represents official acknowledgement of the importance of environmental issues to this country and all of its inhabitants. However, ten years after the introduction of the new political dispensation, it remains unrealistic to suppose that socio-political and socio-economic problems, which have been established over decades, will vanish overnight. The diversity of the South African population is indicated in Tables 1.1 and 1.2.

Table 1.1 South African Population by Ethnic Group

ETHNIC GROUP	PERCENTAGE
African	76.7
Coloured	8.9
Indian/Asian	2.6
White	10.9
other	0.9

Source: South African Statistics, 2002 (1996 figures)

Table 1.2 South African Population by Language Group

LANGUAGE	NUMBER OF PEOPLE
Afrikaans	5811547
English	3457467
IsiNdebele	586961
IsiXhosa	7196188
IsiZulu	9200144
Sepedi	3695846
Sesotho	3104197
Siswati	1013193
Setswana	3301774
Tshivenda	876409
Xitsonga	1756105
other	228275
unspecified	355538
TOTAL	40583644

Source: South African Statistics, 2002 (1996 figures)

South Africa is a country with a mixed first world and third world population, and factors such as a lack of housing, basic facilities and domestic waste disposal, a low level of education and literacy, and rapid urbanization directly affect roughly thirty million people, indirectly affect the remainder of the population, and also continue to change the country's physical environment. More than 40 percent of South Africa's population now lives in urban areas. Many of the more recent urban dwellers occupy

informal dwellings with little, if any, municipal services. As stated by Craffert and Willers (1994, p42), *"one of the problems identified with rapid urbanisation is the impact of over-exploitation of land and natural resources on the biophysical environment"*.

Glazewski (1994) points out that, while South Africa has a background of diverse environmental problems, events such as oil pollution on the Western Cape beaches, the ethics surrounding the culling of elephants, and the possible extinction of the rhinoceros, merely stress that the country's environmental problems have both first world and third world components.

Anderson (1999, p18), commenting on forestry operations in this country claims that *"it is unfortunate that the South African government and community at large tend to ignore world trends when it comes to the environment and tend to advocate economic gains with no thought of the consequences"*. Nevertheless, this researcher adds that most companies that have adopted the Forestry Stewardship Council/Chain of Custody certification initially did so mainly for commercial reasons, and subsequently have come to realise both the business and the environmental benefits of this action.

Solutions to these problems lie not only with science and technology, but also with the re-framing of people's attitudes and beliefs, in such a way as to facilitate environmentally friendly behaviour.

Levy-Leboyer, Bonnes, Chase, Ferreira-Marques and Pawlik (1996, p123) note that *"behaviors, attitudes, values, beliefs and perceptions of human beings differ from country to country"*. As important as it is to take into consideration and to gain experience from research carried out in other countries, it is equally important to ensure that proposed solutions to South Africa's environmental problems are both practical and applicable to this country's context.

However, there is also a positive side, for example, South Africa became a member country of the Convention of Biological Diversity in 1995. Lotter (1996) states that

the new participative democracy paves the way for a holistic environmental management approach to replace a system which permitted the occurrence of serious environmental degradation. Nevertheless, actions to conserve the natural environment are not dependent entirely on South Africa's new political dispensation. The establishment of the Tswaing Crater Museum in 1992 in an area north of Pretoria which was once used by the South African Defence Force for target practice is a case in point (Gcadinja, 1996). Cameron (1996) makes the following editorial comment: *"there are plenty of ordinary folk out there, going about their business, doing good things for nature, animals and mankind"*.

What is clear, though, is that, if the well-being of the natural environment is to be secured, humankind's relationship with nature needs to be refined, and a policy of sustainable development and responsible care needs to be encouraged (Lotter, 1996).

The part that corporate South Africa can play towards a "green" environment is reflected in the comments of Slater and Angel (2000). In a study of Malaysian companies, these researchers state that it *"can be argued that the ideal solution to environmental problems is for companies to include green policies in their long-term strategies. Ultimately it is companies that will improve or degrade the environment ... "* (p77). Slater and Angel (2000) categorize companies into "environmentally proactive" and "environmentally reactive" with regard to regulatory changes dealing with environmental matters, and further mention the importance of raising issues which effect the environment from the operational to the corporate level within a company.

Dockel (2003) adds that environmental concerns are no longer confined to relatively small marginalised groups of people around the world, and that, if sustainable development is to be realised in South Africa, it is imperative to have environmental concerns incorporated into the country's development plans.

Commenting on the potential role that systems theory might play in addressing environmental issues, Casey (2002, p140) says that linear thinking has, detrimentally, been the dominant way of thinking in relation to Western economic

and industrial development, and despite groups of people raising their concerns, *"an understanding of the impact of this on environmental damage has only recently gained momentum"*. Systems theory, with its emphasis on circular interaction and functional patterns of behaviour, may be a useful facilitator to help not only the peoples of South Africa, but also those of other nations adapt their behaviour in a manner that enables a stable, harmonious and respectful relationship with the natural world to be maintained.

1.3 The South African government's policies towards the natural environment

In September 1994, four months after ex-President Nelson Mandela's inaugural address to Parliament, South Africa's Government of National Unity released a White Paper outlining its Reconstruction and Development Programme (RDP) for the country. This paper acknowledged that South African society faces serious problems at economic, social, legal, political, moral, cultural and environmental levels. It stated further that the proposed *"integrated process of transformation must ensure that the country ... becomes a prosperous society, having embarked upon a sustainable and environmentally friendly growth and development path ... "* (GNU, 1994, p3).

This set the scene for a new focus on the environment, and Section 24 of The Constitution of the Republic of South Africa (Constitutional Assembly, 1996) states that:

Everyone has the right -

- (a) to an environment that is not harmful to their health or*
- (b) to have the environment protected, for the benefit of*
 - (i) prevent pollution and ecological degradation;*
 - (ii) promote conservation; and*
 - (iii) secure ecologically sustainable development and*

Given the above, the South African natural environment now enjoys a form of official recognition.

The above environmental clause, in addition to other clauses which may be invoked with respect to environmental issues, in a sense defines the rights (and duties) of private individuals and environmental organizations, as well as defining the responsibilities of the public sector. Glazewski (1994) states that most significant is the fact that individuals and organizations now have considerable flexibility in contesting environmental matters in court. Further, an access to information clause and an administrative justice clause provide for the obtaining of information from government, and the compulsory furnishing of reasons for administrative decision-making in certain circumstances, respectively.

The benefit derived from this recognition in the form of environmental protection is, however, not a given, and will depend on the extent to which these measures are implemented and adhered to in practice.

1.4 The rationale and aims of the research

The rationale for this research has its roots centred around concern for the sustained maintenance of the South African natural environment, the welfare of the country's peoples, its flora and fauna, and its natural resources.

In recent years several incidents have occurred in this country which have had potentially severe environmental consequences. For example, it was discovered in 1989 that the Thor Chemicals plant at Cato Ridge was the source of mercury pollution in the Umgweni River. This river feeds the Inanda Dam, which in turn provides much of Durban's water requirements. Mercury waste, imported from the United States, was found to have an organic content seven-and-a-half times the maximum permitted in that country. Protests led to operations being suspended, and after design and construction faults in the plant were corrected, the then Departments of Health, Environment Affairs and Water Affairs *"indicated that they*

had no objection to the continued importation of mercury by Thor" (Koch, Cooper & Coetzee, 1990, p46).

Other examples of developments which could have a potentially negative impact on the natural environment of the country are the Iscor steel mill at Saldanha (Robinson, 1995; Heydorn, 1996), the strip-mining of the Rietspruit wetland on the south bank of the Vaal River by Sasol (Du Toit, 1997), and the pollution of the Blesbokspruit wetland, an internationally protected area, with red oxide pumped from the Grootvlei gold mine (Curzon, 1997).

According to Newhouse (1990), the root of environmental problems lies in human behaviour. In general, how people behave with respect to an "object" is influenced by their attitudes towards this "object". A natural starting point for any attempt at redefining or improving the interaction between humankind and the environment is therefore an investigation of people's attitudes towards the natural environment, and must subsequently look at optimal ways of changing or influencing people's attitudes and/or behaviour, where change is indicated, with respect to the natural environment. Psychology has done much work in the attitude-behaviour area and perhaps has an important role to play in this regard. A country with peoples of differing cultures and value systems, South Africa is now in the process of rapid change. Widely differing living standards and cultural norms mean that concern for the natural environment is likely to vary greatly between South Africa's peoples. As mentioned by Koch, Cooper and Coetzee (1990, p57) *"the general argument that life on earth will cease to exist unless we change our ecological lifestyles has little appeal for the rural person desperate for firewood, for the worker whose job is threatened or the industrialist faced with diminishing profits"*. Also, as can be deduced from this example, it is reasonable to conclude that a relatively large proportion of this country's population has needs or concerns which do not include environmental issues. Further, the level of environmental awareness, as well as the perceived ability to improve or change the situation, may be low.

However, these statements need to be verified. Research conducted by Sheppard (1995) in the United States supported the "basic needs" perspective, which holds that peoples' needs can be represented as a hierarchy. For example, people of

lower socio-economic status (SES), are more likely to be concerned about immediate basic needs than about higher level ones. This research also indicated that differences in levels of environmental concern between population groups may be attributed to a complex interplay of factors, and not necessarily to lack of concern about the environment.

Nevertheless, the challenge for South African society is to implement practical policies which are geared to positive economic, political and social growth, and which at the same time promote environmental friendliness and sustainability. To supplement other work done in this area, the intention of the present study is to develop a measuring instrument for specific use in South Africa which will provide some idea of the degree of environmental concern of its people. Information obtained from this research may perhaps suggest or contribute towards future intervention strategies designed to improve population/environment interaction. Specifically, it is reasonable to conclude that taking measures such as increasing the general level of environmental awareness, involving the population in the solution of environmental problems, and attempting to alleviate social problems that discourage people from acting in an environmentally friendly manner, are steps in a positive direction.

In summary, the objective of this research is perhaps to facilitate what is embodied by a modified extract from the mission and vision statements of the Wildlife and Environment Society of South Africa (WESSA, 1996). It reads as follows:

To achieve a South Africa which is wisely managed by all to ensure environmental values, sustainable lifestyles, public