A FRAMEWORK FOR RESOURCE MAINTENANCE AND ENHANCEMENT

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LIST OF ABBREVIATIONS

AEAM	Adaptive Environmental Assessment and Management
DANCED	Danish Co-operation for Environment and Development
EA	Environmental Assessment
EEU	Environmental Evaluation Unit
EIA	Environmental Impact Assessment
ENGEO	Environmental and Geographical Science Department
EPZ	Export Processing Zone
EPZMC	Export Processing Zone Management Company
ICZM	Integrated Coastal Zone Management
ICZMP	Integrated Coastal Zone Management Plan
IUCN	World Conservation Union
IRM	Integrated Resource Management
MET	Ministry of Environment and Tourism
NHAG	National Housing Action Group
NEPA	National Environmental Policy Act
NGO	Non-governmental Organisation
ODC	Offshore Development Company
OPEC	Organisation of Petroleum Exporting Countries
PPP	Policies, Programs and Plans
SADC	Southern African Development Community
SEA	Strategic Environmental Assessment
SIA	Social Impact Assessment
UCT	University of Cape Town
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environmental Program
WCED	The World Commission on Environment and Development
WCS	World Conservation Strategy

CHAPTER ONE

CHAPTER ONE

1. INTRODUCTION

Our understanding of how to integrate the goals of development and those of the environment, is our map or instruction manual on practically addressing the current global environmental crisis. Our knowledge provides us with the means by which we can "do things in the world or cope with events (Sayer, 1992:59)." In this dissertation, increasing this understanding is not only the guide to the development of a framework for resource maintenance and enhancement, but also the means by which we maintain and enhance resources.

To establish 'a map' for integrating environmental and developmental goals the concept of sustainable development, with its strategies for various resource sectors, was expanded and explained in the Brundtland Report (World Commission on Environment and Development (WCED), 1987). The Report defined sustainable development as aiming "to meet the needs of present generations, without compromising the ability of future generations to meet their own needs (Lebel and Kane, 1987)." It includes two components: the concept of needs, especially those of the world's poor; and the idea of limitations that are imposed by technology and society on the environment to meet those needs (Lebel and Kane, 1987).

Although the concept of sustainable development is often called the "catchphrase of the 1990's" (Reid, 1995; Barrow, 1995) it is also described as "a 'good idea' which cannot sensibly be put into practice (O'Riordan, 1988:48)." The 'good idea' will be critically analysed in this dissertation, in order to attain a greater understanding of how our concept of sustainable development, has lead to difficulties in practically integrating environmental and developmental goals. Thereafter, a new approach to this integration is developed, followed by an explanation of the institutional and procedural implications of such an approach. This development framework, is not so much a 'new' approach, as a common ground between a diverse range of contemporary views and practices.

The analysis begins (Chapter Two) with the assertion that the concept of sustainable development does not lead to an integration of the environment and development - its stated goal. This is attributed to a passive and uncritical acceptance of the dominant socio-economic and political ideology. In order to substantiate this view, the discursive formation of the concept of sustainable development (Chapter Three) is examined. This method is based on two assumptions namely:

- that social phenomena are concept-dependent and "what the practices, institutions, rules, roles or relationships *are* depends on what they mean in society to its members (Sayer, 1992:30)."
- that "the conditions and social relations of the production of knowledge influence its context (Sayer, 1992:6)."

This reflects a realist approach to social science methodology. The reader is referred to Sayer (1992) for a detailed explanation of realism and its implications for social theory and practice. Briefly, a realistic approach involves the view that the world exists independently of our knowledge of it and our knowledge of that world is fallible and theory laden (Sayer, 1992). Social phenomena are concept dependent and we therefore need, not only to explain their effects, but also understand and interpret what they mean (Sayer, 1992). To understand and explain these social phenomena, we need to critically evaluate them (Sayer, 1992).

Chapter Two, therefore, focuses on a critical analysis of the mainstream concept of sustainable development, leading to the conclusion that the socio-economic and political implications of the concept have been inadequately addressed. To develop a theory which will effectively inform practice, therefore, we need to question the socio-economic and political assumptions (ideology) upon which our contemporary discourse is based. In order to identify these assumptions, the discursive formation of the concept of sustainable development is traced (Chapter Three). This leads to the conclusion that current problems in implementing sustainable development reflect the direction and priorities of the dominant capitalist industrialising model (Reid, 1995). Within mainstream sustainable development discourse, there are no ideological conflicts with this model (Adams, 1995).

In Chapter Four, then, the assumptions upon which the current concept of sustainable development is based, are compared to other ideological alternatives. This comparison aids in the development of a socio-economic and political base for a new integration between environmental and developmental goals. As Cole (1994:230) states, considering alternative approaches to the development/environment relationship, is not about "choosing what is empirically right and empirically wrong, but of comparing the underlying assumptions."

Contributing to the discourse on a new ideological base for environment/development integration, responds to a challenge which has been set by many writers concerned with the relationship between the environment and development (Young, 1990; Mather and Chapman, 1995; Cole, 1994; Adams, 1995; Redclift, 1991). Redclift (1991:124) summarises this challenge when he states that there is a need to develop,

> "...a new discourse about sustainable development, which is more holistic, concentrates on sustainable resource use and identifies the satisfaction of human needs through mechanisms other than the market economy."

Cole (1994) identifies three approaches to the human/environment relationship which are briefly evaluated in Chapter Four. A view of individuals as interdependent (as opposed to independent or dependent).
Is selected as the foundation for the development of a new approach to integrating the environment and development. This leads to the following: the need to identify the socio-economic and political implications of a sustainable lifestyle; and the belief that through collective local action shared constraints to individual development may be identified, which form the basis for alterations in societal structure and behaviour (Cole, 1994). These alterations facilitate the transition to a sustainably developing society (Cole, 1994). The contemporary discourse on each of these aspects is examined in Chapter Five.

A view of individuals, society and the environment as intimately related, is supported in the renewed discourse on the Gaia Hypothesis (Barrow, 1995; O'Riordon, 1989; Young, 1990). After an examination of the dominant streams of thought (ecosocialism and ecofeminism) which link environmental issues and their socio-economic and political context,
a common thread is identified between Gaianism, ecosocialism and ecofeminism, which supports the view of a natural interrelation between individuals, society and the environment. This thread is represented in the concept and practice of bioregionalism (Young, 1990).

Bioregionalism calls for a participatory development strategy which is based in local socio-ecological resources and decentralised decision-making (Young, 1990). Such an approach is reflected in the contemporary discourse on 'green endogenous development' (Friberg and Hettne, 1985)', 'development from within' (Taylor and Mackenzie, 1992), 'self-reliance' (Galtung, 1980), and 'local direction' (Timberlake, 1985). Common to all of these includes

the following: reliance on local resources and knowledge; development which is rooted in the community's values and institutions; an awareness of local ecosystem potential and limitations; development which does not depend solely on the market; development which is tailored to the basic needs of a specific community but is not limited to meeting basic needs; and linkages (resources and knowledge) between the local, regional, national and international community in order to strengthen local institutions (Friberg and Hettne, 1985; Taylor and Mackenzie, 1992; Galtung, 1980; Timberlake, 1985).

The implied political program of development which is locally conceived and which is based on local socio-ecological resources, is a socialist one (Cole, 1994). However, it is not collective state socialism which is supported here, but rather what Young (1990) calls 'anarchist socialism.' This may be likened to Gorz's (1994) idea of 'transcending capitalism' in which capital is not abolished, but we move beyond a society dominated by economic values of efficiency and profitability, to one which makes use of the economy to fulfil its own goals and objectives - to overcome what Cole (1994) calls its 'shared constraints' (Gorz, 1994).

If society is to achieve this, the answer does not lie in an overthrow and elimination of the existing mode of development, but rather the preservation of the existing autonomy of the state, press and economy, while redirecting their goals towards the needs of local communities in the pursuit of sustainability (Gorz,1994). Development, then, involves the identification of shared socio-ecological constraints, which become its goals and the basis for cooperative alliances to address these goals. Economic activity is directed towards enhancing socio-ecological potential to address shared socio-ecological constraints to the fulfilment of individual potential (Gorz, 1994; Cole, 1994). Therefore in order to facilitate the transition to a sustainably developing society two movements are required. Firstly, those activities which presently threaten the socio-ecological environment (socio-ecological constraints) must diminish and disappear and secondly, the socio-ecological potential to address these socio-ecological constraints must be enhanced (Gorz, 1994). In this dissertation, these two simultaneous movements are called the maintenance (addressing socio-ecological constraints (e.g air pollution) and enhancement (increasing socio-ecological potential) of resources.

A means by which these two movements may be practically facilitated is explained in Chapter Five. 'The Natural Step' concept, which was developed by a group of Swedish scientists, forms the framework for resource maintenance and the application of an 'appraisal' view of resources facilitates resource enhancement. These concepts are explained in Chapter Five, which ends with a list of criteria for the institutional and procedural aspects of implementing locally based resource maintenance and enhancement. These institutional and procedural aspects, form the framework for resource maintenance and enhancement proposed in this dissertation

In Chapter Six, the institutional implications of the approach to development described in Chapters Four and Five, are discussed. The criteria listed in Chapter Five, which promote a locally-based, participatory and flexible view of development, reflect an approach commonly characteristic of the work of Non-Governmental Organisations world-wide (NGO's) (Pye-Smith et al, 1994; Brutus, 1996; Timberlake, 1985; Abugre, 1994). These characteristics may be summarised as: a participatory institutional environment, the use of participatory methods and approaches in the institutions and the facilitation of a participatory environment by the institutions. Each of these aspects is discussed in Chapter Five. The Chapter ends with a discussion on the need for partnerships at various scales to identify shared socio-ecological constraints. Coordinating institutions, whose area of jurisdiction should ideally be the bioregion, are proposed for the identification of socio-ecological

constraints in a participatory manner. For practical purposes, however, it is suggested that the local, regional and national governmental boundaries form the jurisdictional areas of the coordinating institutions.

In Chapter Seven, the procedural aspects of the framework for resource maintenance and enhancement is explained. The process described is based on the criteria for locally-based, participatory development listed at the end of Chapter Five and on the discussion on institutional development presented in Chapter Six. The procedure centres on the testing of hypotheses, which responds to the view (explained in Chapter Six) of development as an interactive learning process. Rather then being an entirely new process, it draws from current practice in a way which reflects the criteria and the view of development established in the previous chapters. The procedure displays characteristics of the following:

- The procedure of Impact Hypothesis developed by the Environmental and Social Systems Analysis Ltd;
- Beanlands and Duinker's (1983) Ecological Framework for Environmental Impact Assessment (1983);
- Adaptive Environmental Assessment and Management (AEAM);
- Integrated Resource Management (IRM);
- Brown and Hill's (1995) decision-scoping process.

Finally, in Chapter Eight the framework for resource maintenance and enhancement is applied in an analysis of the Government of Namibia's Export Processing Zone (EPZ) Regime. This application is done within the context of the Danish Co-operation for Environment and Development's (DANCED) involvement in the development of an Integrated Coastal Zone Management Plan (ICZMP), for the coastal region of Namibia. Walvis Bay, as the first EPZ to be established in the country, forms the focus of the application of the framework for resource maintenance and enhancement. At present, there is no strategic framework within which *specific* industries, which maintain and enhance the resources of Namibia, are actively encouraged to be part of the EPZ (Tarr, Pers.Comm., 08/02/96). Furthermore, the need has been expressed for guidelines on environmental assessment of EPZ's in Namibia, which would aid in making such zones more sustainable, and in determining if the recommendations implemented were effective (Tarr, Pers.Comm.,08/02/96). In response to this the application of the framework proposed, aims to demonstrate the following:

- a manner in which the resource framework can be applied;
- a positive and proactive way in which the EPZ Regime in Namibia, can be strategically managed from a socio-ecological perspective.

This application of the framework for resource maintenance and enhancement is illustrative rather then comprehensive.

2. CONSTRAINTS TO THE STUDY

Constraints with regard to this dissertation relate primarily to Chapter Eight, in which assumptions regarding the prioritisation and quantitative evaluation of Walvis Bay's socio-ecological constraints and resources, are made. This is done in the absence of a prioritised list of Walvis Bay's socio-ecological constraints to development and specialist reports evaluating variations in these resources, due to the implementation of the EPZ.

Furthermore, a wide range of concepts and ideas in contemporary discourse have been mentioned in this dissertation. It has not always been possible, due to length and time constraints, to explain these concepts in detail. The aim has been to explain the concept in sufficient depth to show its influence on the framework for resource maintenance and enhancement developed. Most often, the reader has been referred to a source for further explanation.

CHAPTER TWO

CHAPTER TWO

THE CONCEPT OF SUSTAINABLE DEVELOPMENT

1. INTRODUCTION

> "Sustainable development - to meet the needs of present generations without compromising the ability of future generations to meet their own needs - has become a mandate not only for Third World nations, but for the industrialized world as well".

(Ruckelshaus, Member, World Commission on Environment and Development, 1987)

The concept of sustainable development has become the focus of contemporary discourse addressing the environmental and developmental challenges of our time. In this dissertation, the possibility of implementing the mainstream concept of sustainable development - meeting the needs of present generations without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development (WCED), 1987 : 43) - is questioned due to the assumptions upon which it rests. It is argued that the current ideological assumptions forming the basis of the Commission's concept severely retard its implementation and its goal of moving towards sustainability.

In this chapter a brief description of the concept of sustainable development, as defined in the Brundtland Report, is presented. This is followed by a critical analysis of the concept and an explanation of the need for a new ideology for sustainability. The discussion which follows is therefore divided into the following sections:

- The concept of 'sustainable development';
- A critical analysis of *Brundtland's* definition of 'sustainable development';
- The need for a new ideology for sustainability.

2. THE CONCEPT OF "SUSTAINABLE DEVELOPMENT"

The concept and term 'sustainable development', has its roots in reports such as the World Conservation Strategy, (IUCN, 1980), the North-South Commission (1981), the Proclamation of the U.N. World Charter for Nature (1982), World Industry Conference on Environmental Management (1984) and the World Conservation Strategy (1986) (Jacobs and Sadler, 1992). The ideal of sustainable development has become politically popular and gained widespread support (Kirkby et al, 1995; Murdoch, 1993; Mather and Chapman, 1995). Its meaning, however, has been described by various actors in the environment and development debate, as 'vague', 'weak and wimpish' and 'devalued' (Mather and Chapman, 1995). Although the concept's general and vague nature has led to its acceptance by a wide range of political groups, many writers believe it to be so widely and loosely used, so as to be rendered meaningless (Kirkby et al, 1995; Mather and Chapman, 1995).

Various definitions have been offered (by 1989 over 60 definitions had been identified); however, the Brundtland Commission's definition has been the point of departure for discussions on mainstream sustainable development (Mather and Chapman, 1995). As Mather and Chapman (1995 : 253) state, "Few if any definitions have become more widely

established than that of the Brundtland Commission ..."

In the Brundtland Report (1987), the U.N. World Commission on Environment and Development (WCED) not only expresses its concern about current environmental degradation and destruction, but also presents a definition of sustainable development. In this report entitled 'Our Common Future', the WCED defines sustainable development as "meet(ing) the needs of present generations without compromising the ability of future generations to meet their needs" (Lebel and Kane, 1987 : 43). This report reflects an aim of coming to terms with two elements which are seen by the Commission as the key components of sustainable development, namely: the concept of *needs* and the idea of *limitations* that are imposed by society on the ability of the environment to meet those *needs* (Lebel and Kane, 1987). Each of these components, as discussed in the Brundtland Report, will be outlined below.

Sustainable development, as defined by the Brundtland Commission, must first and foremost meet human needs (Reid, 1995). Although the Commission does not specifically state what is meant by 'needs', these are generally considered to be the basic needs of food, clothing and shelter (Lebal and Kane, 1987, Kirkby et al, 1995, Mather and Chapman, 1995).

2.1 NEEDS

The Brundtland Commission (1987 : 44) does, however, state that meeting human needs depends to a large degree on achieving "full growth potential (WCED, 1987 : 55)", while not degrading the environment (Reid, 1995). Furthermore, the report states that:

> "Perceived needs are culturally determined, and sustainable development requires the promotion of values that encourage consumption standards that are within the bounds of the ecological (sic) possible and to which all can reasonably aspire".
>
> (Mather and Chapman, 1987 : 253)

Mather and Chapman (1995) point out that what can be considered 'reasonable aspirations' is a subjective judgement, however, "implicit is the view that needs are greater than merely the biological minima required to maintain life (Mather and Chapman, 1995 : 253)". Kirkby et al (1995 : 2), however, are not as certain that this view is expressed by the Commission and state, "it is not clear how much more than survival is involved in 'needs'". Reid (1995 : 57) summarises the argument when he criticises the Commission for failing to consider the "nature of human need and its implications for development, despite its assertion of their importance".

2.2 LIMITATIONS

Limitations to meeting needs are defined in "Our Common Future" (1987 : 8) as being "imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities". Technology and societal organization, then, are seen to impose limitations over and above those which naturally occur in the environment. The Brundtland Commission calls for economic development within the limitations of the natural environment (natural or previously imposed by society and technology) or for development in which

"the use of resources, the direction of investments, the orientation of technological development, and institutional change all enhance the potential to meet human needs both today and tomorrow (Lebel and Kane, 1987)."

The components of 'needs' and 'limitations' are integrated and related to one another through the concept of sustainable development (Lebel and Kane, 1987). The context in which the Brundtland Commission envisages the integration of environment and development goals is sketched below. This is done through a brief examination of what the Commission meant by being sustainable (or sustainability) and what kind of 'development' they envisage.

2.3 SUSTAINABILITY

Although several authors (Jacobs and Sadler, 1992; Lebel and Kane, 1987; Goodland, 1995; Reid, 1995; Mather and Chapman, 1995) have addressed the idea of sustainable development from varying perspectives, the aim of this concept is to achieve sustainability in development, thereby avoiding the depletion of environmental goods and services (Reid, 1995). Sustainability can be defined as the "persistence of certain necessary and desired characteristics of the natural and the socio-political system (adapted from Robinson et al, 1989)" (cited Reed and Slaymaker, 1993). Goodland (1995) reflects this view of sustainability, when he defines it as "the ability of a system to endure". A clearer and more detailed definition of sustainability and its implications for development will evolve as this dissertation proceeds. The discussion will begin, however, with the definition of sustainability cited by Reed and Slaymaker (1993) and by Goodland (1995).

2.4 ENVIRONMENTAL GOODS AND SERVICES

Fuggle and Rabie's (1992 : 90) definition of the 'environment' - "the earth's natural resources, both renewable and non-renewable" - will be used. This is a compromise between the limited and extensive approaches to the definition of the 'environment' (See Fuggle and Rabie (1992) for an explanation of various approaches to defining the 'environment').

'Environmental goods' will refer to both renewable (eg. water) and non-renewable (eg. minerals) materials found in the environment (as defined above).

'Environmental services' will refer to the assimilative and regenerative capacities of environmental goods such as soils, air and water.

'Environmental services' will also refer to "the global life-supporting systems which maintain biochemical cycles, the composition of the atmosphere, the ozone layer, the earth's temperature and climatic zones and patterns (Reid, 1995 : 105)".

2.5 DEVELOPMENT

The development referred to is based on the currently dominant capitalist industrializing model (Adams, 1995). It extends beyond economics to the promotion of 'human progress' (not explicitly defined) (Lebel and Kane, 1997). Goodland (1995) uses a dictionary definition of development in his article entitled 'The Concept of Environmental Sustainability', which states that 'to develop' means "to expand or realize the potentialities of; to bring to a fuller, greater or better state." The Brundtland Report, in a reference to policies for meeting human needs, advocates increasing productive capacity and widening opportunities for equitable human advancement (Lebel and Kane, 1987). Through this approach, then, the Commission aimed to integrate the protection of the environment and the promotion of meeting needs, through economic development which increases productive capacity and results in human

advancement, within the bounds on environmental limitations (Lebel and Kane, 1987).

The Brundtland definition can therefore be interpreted as a call for meeting basic needs through economic development, within environmental limitations (those which occur naturally in the environment and those which are imposed on the environment by technology and society), or through a process in which economic development enhances the potential to meet human needs. Through policies to meet human needs, the productive capacity of society should be increased and the opportunities for equitable advancement widened.

The critical analysis which follows, is based on this mainstream definition and interpretation of 'sustainable development.'

3. CRITICAL ANALYSIS OF THE CONCEPT OF "SUSTAINABLE DEVELOPMENT"

As shown in the explanation above, the Brundtland Commission bases its concept of sustainable development on two components:

- "the concept of *needs*, in particular the essential needs of the world's poor; and
- the idea of *limitations* that are imposed by technology and society on the ability of the environment to meet those needs".

(Lebel and Kane, 1987)

The WCED acknowledges the natural limitations of the environment's potential to meet human needs. Furthermore, it acknowledges the limitations which the present modes of society and technology impose on the potential of the environment to meet those needs (Lebel and Kane, 1987).

It is within this framework that the concepts of needs and limitations, expressed in the mainstream idea of sustainable development, are analysed below. Aspects of the Commission's concept of development within environmental limitations are discussed, followed by an examination of meeting human needs in this context.

3.1 LIMITATIONS

The Commission acknowledges those limitations imposed on the environment's ability/potential to meeting human needs by the current socio-economic system of society (Reid, 1995; Lebel and Kane, 1987). It points out that new economic growth could have dire ecological implications (Reid, 1995). However, the Commission calls for further economic development without questioning this socio-economic system, which it recognises is imposing the ecological limitations to meeting human needs (Reid, 1995; Cole, 1994; Adams, 1995). The Brundtland Report calls for a 'new era of growth' and states that industrial growth is required if "many essential human needs are met" (Reid, 1995 : 61). This growth should aim for "higher productivity, increased efficiency and decreased pollution" (Reid, 1995 : 62). How this growth is to be reconciled with ecological limits is not explained (Reid, 1995). This led Hueting (1990 : 112) to comment that the report is "either blind to present day realities or is speculating on as yet uninvented technologies, while putting at risk the basis of our existence" (Reid, 1995).

'Sustainable Development' therefore, as a process and as a goal to which we must move to achieve sustainability, is advocated in a socio-economic and political context, which the Commission itself recognises, imposes limitations on the environment's potential to meet human needs (Reid, 1995). Logically, then, by implementing the strategies for sustainable development proposed in the Brundtland Report, we will be exacerbating environmental degradation and depletion.

This is because the Brundtland Commission does not question the socio-economic and political context, (which the Commission itself acknowledges is harmful to the environment) within which it suggests we should attain the goal of sustainability (Young, 1990; Cole, 1994; Adams, 1995). "At issue here is how far environmental reform implies political, social and economic reforms" (Cole, 1994 : 227).

Young (1990) points out that while we seek a 'balance' between conservation and development, we continue to do it in a context of increasing value-free economic growth - "The green movement is in danger of ... losing the war against the ideology of humanity versus nature and the materialism and consumerism to which that way of thinking has led" (Young, 1990 : 117).

The Brundtland Commission and the mainstream concept of sustainable development may apply contemporary technology in a different way to achieve different goals (sustainability); however, we have not addressed that societal structure or mode of technology which caused the environmental degradation in the first place (Young, 1990; Cole, 1994; Adams, 1995).

As Adams (1995 : 90) states,

> "Within mainstream sustainable development discourse, therefore, there are no ideological conflicts with the dominant capitalist industrialising model, only debates about methods and priorities".
>
> (Adams, 1995 : 90)

3.2 MEETING HUMAN NEEDS

Secondly, the Brundtland Report describes sustainable development as a process of change in which resource use, investment, technological development and institutional change all enhance the potential of society to meet human needs both today and in the future (Lebel and Kane, 1987). This means that environmental goods and services must not be decreased when enhancing the potential of contemporary society to meet current human needs. The discussion which follows questions the possibility of implementing such a concept, or even moving towards its implementation, without questioning the current socio-economic and political context.

Sustainable development, as proposed by the Brundtland Commission, focuses on the meeting of human needs (Kirkby, 1995; Mather and Chapman, 1995). As Kirkby et al (1995 : 2) state "Clearly the Brundtland statement has a strong people-centred ethical stance, concentrating on the satisfaction of human needs .....".

This focus on meeting human needs is, however, placed in a context of respect for the ecological potential of the environment to meet those needs (i.e. meeting of needs without environmental degradation and depletion) -

> "Sustainable development means meeting the basic needs of all and extending to all the opportunity to satisfy their aspirations for a better life. (But) it also implies acceptance of consumption standards that are within the bounds of ecological possibility and to which all can aspire".
>
> (Lebel and Kane, 1987 : 2)

Sustainable development can therefore be described as a concept which focuses on meeting present human needs, without decreasing the potential of environmental goods and services to meet future needs.

However, meeting these needs and giving to all the "opportunity to satisfy their aspirations for a better life" (Lebel and Kane, 1987 : 2) usually generates new needs, which again have to be addressed within the limitations of the environment (Cole, 1994; Reid, 1995). As Reid (1995) states when commenting on addressing needs in industrial and industrialising countries, "Increased production in the economy creates disposable income (at least for some), which further stimulates the demand for material goods and so leads to new production targets (which create further depletion and more pollution)" (Reid, 1995 : 134). Furthermore, as material needs are met, continued economic growth enhances consumerism which "gratifies wants rather than meets needs - with obvious implications for sustainability" (Reid, 1995 : 137).

The Brundtland Commission, therefore, is asking what is limited (environmental goods and services) to satisfy unlimited demands (needs of a society).

Attempting to address *increasing* human demands within a *limited* base of environmental goods and services, leads to a *relative* decrease in the potential of the environmental goods and services to meet those demands.

Trying to use what is limited to address what is at present limitlessly increasing, in a context of decreasing environmental potential, is a demoralising task - made all the more difficult by an increase in limitations on environmental goods and services, as a result of the very act of trying to perform this task. This is because the enhancement of the potential of society to meet human needs now and in the future is proposed within the context of a society which already decreases environmental goods and services - a problem discussed in the paragraph above (Reid, 1995; Young, 1990; Cole, 1994).

Once again the conclusion is drawn that in order to correct the problem and implement sustainable development, we will be using tools (the structure of society and current forms of technology) which are widely recognised (not least of all by the Brundtland Commission) as decreasing the potential of the environment to meet human needs (Reid, 1995; Young, 1990).

It is the structure of society and the ideas upon which it rests, therefore, which need to be questioned in order to make a transition from the present unsustainable state of society to one of sustainability (Barrow, 1995; Cole, 1994; Young, 1995). As Young (1995 : 135) states "...the environmental crisis is not something which transcends existing political parties or ideologies". Young (1995 : 140) sets the argument in even stronger terms when he states, "Environmentalists, or 'greens' (a name they have mostly come to terms with) would be foolish to claim, as some scientists did in the 1950's, a moral or ideological neutrality for themselves".

The lack of analysis of the current ideology in the development of the concept of sustainable development has led to its applicability to wide and diverse contexts; however, it has also exacerbated problems in its implementation (Crush, 1995; Mather and Chapman, 1995; Reid, 1995; Kirkby et al, 1995; Cole 1994; Redclift, 1991).

4. CONCLUSION - THE NEED FOR A NEW IDEOLOGY

If we are to change to a sustainable society, the challenge is to question our present ideological basis of mainstream sustainable development - a challenge set by many contemporary writers on the relationship between the environment and development (Young, 1990; Mather and Chapman, 1995; Cole, 1994; Kirkby et al, 1995; Reid, 1995; Adams, 1995; Redclift, 1991).

Ideologies referred to here are the assumptions on which a particular political or economic system is founded - the Oxford Dictionary defines 'ideology' as "ideas at the basis of an economic or political theory or system." The fact that the Brundtland Commission did not question its ideological base left sustainable development open to many interpretations and applications (Adams, 1995; Cole, 1994; Kirkby et al, 1995).

This has lead to rapid acceptance and enthusiastic adoption of the concept (Kirkby et al, 1995; Adams, 1995). The flexibility of sustainable development does, however, pose serious problems for its implementation (Mather and Chapman, 1995; Adams, 1995; Kirkby et al, 1995; Redclift, 1991). As Mather and Chapman (1995 : 253) state, "This vagueness of definition strikes many as unsatisfactory, even if they accept that a trade-off may exist between the specificity and acceptability of the concept". Adams (1995 : 88, emphasis added), in pointing out the flexibility and adaptability of the sustainable development concept, incorporates an element of doubt and criticism of this apparent advantage when he states, "Part of its (sustainable development thinking)'s strength is in the way in which it links diverse (and sometimes divergent)ideas and blends them, *often uncritically*, into an *apparent synthesis*".

Mather and Chapman (1995 : 253) state that the flexibility of the Brundtland definition of sustainable development (and many others) renders the concept "difficult to operationalize, however useful it may be as a general guide to the nature and direction of development" (Cole, 1994) investigates the political and social nature of the environmental debate. "At issue here is how far environmental reform implies social and economic reforms" (Cole, 1994 : 227).

Kirkby et al (1995 : 1) point out that many writers "consider the term (sustainable development) so widely and loosely used that it has now been devalued", while Reid (1995) sees its uncritical acceptance of 'obvious' steps forward as politically unacceptable, and one of the constraints to implementation of the concept. Crush (1995 : 99) summarises the argument and its implications when he states, " ... the lack of a single coherent ideology, and the lack of understanding of the political economy of development process and the structures of the world economy, expose those seeking to implement the muddy concept of sustainable development to significant risk of failure, and those they involve in the Third World to yet more of the familiar risks of engagement with the development process".

If we are to address the current environmental crisis in a practical way, we need to develop what Redclift (1991 : 124) calls "a new discourse of sustainable development". There are already various strands of thought (Adams, 1995; Young, 1995; Cole, 1994; Redclift, 1991;

Bookchin, 1979; Lewis, 1992) within environmentalism which have taken up this challenge (Adams, 1995; Cole, 1994; Young, 1995).

In order to understand and contribute to this new discourse, it is necessary to investigate "where things went wrong". As Young (1995 : 140) states, the Remedies for environmental problems are likely to be consistent not only with the personal taste and circumstances of those who promote them but also with their historical analysis of where things went wrong". Adams (1995 : 88) supports this and sees the evolution of the discourse of sustainable development as, not only the cause of the problems described above, but also as having important implications for an understanding of current debates in the development field and of those concerning the 'new environmental thinking.' In the chapter which follows, therefore, the discursive formation and various ideas which influenced the evolution of the mainstream concept of sustainable development are investigated.

CHAPTER THREE

CHAPTER THREE

DISCURSIVE FORMATION OF THE CONCEPT OF SUSTAINABLE DEVELOPMENT

1. INTRODUCTION

In this chapter the discourse of sustainable development is examined. This is not for the purposes of a comprehensive historical account *per se*. It is to facilitate an understanding, by means of an examination of the origins of the Brundtland Report, of how the problems described in Chapter One arose. As Reid (1995 : 62) states, "Rather like the idea of sustainable development itself, the Brundtland report can be seen as eclectic, drawing on a range of earlier insights and approaches." In this chapter these approaches are identified and briefly analysed. Furthermore, and perhaps more importantly, this examination of the evolution of the concept aims to facilitate an understanding of the strand of contemporary environmental thinking, which forms the ideological base for the implementation system (resource framework) described in Chapter Seven of this dissertation.

The section which follows traces a shift in environmental thinking from a belief that the environmental crisis was a scientific responsibility, to be solved by progress in science alone, to an increasing recognition of the political and ideological *causes* of this crisis (Young, 1995). Finally the need is expressed for an intellectually coherent ideology, which unites contemporary discourse and allows us to benefit from what Young (1995 : 117) describes as the "political fruit of three decades of activity".

2. THE DISCURSIVE FORMATION OF SUSTAINABLE DEVELOPMENT

Adams (1995 : 88) notes that "a remarkable feature of this powerful current of ideas (mainstream sustainable development) is its lack of engagement with development theory". This has lead to the concept's inadequate engagement in the definition of needs, distribution of resources, the mode of production, forms of ownership and social order (Adams, 1995). By inadequately addressing issues of social and economic structure, mainstream sustainable development discourse is inadequately questioning its ideological base.

It is argued below that the reason for this inadequacy is the fact that the mainstream concept of sustainable development has its roots in technocentrist environmentalism, and did not evolve from within the development discourse (Adams, 1995).

Environmentalism is as O'Riordon (1989 : 80) puts it, "an awkward word". However, his definition will be used in this dissertation as it was he who coined the term 'technocentrist environmentalism'.

"Environmentalism is a collage of values and views of the world, a general patterning of predispositions, being first and foremost a social movement, though one with political overtones. Being green is a subset of environmentalism (O'Riordon, 1989 : 80)". Technocentrism is also a subset of environmentalism which, it is argued here, is where things went wrong for sustainable development.

O'Riordon (1989 : 86) explains that technocentrism "is a pattern of beliefs supporting the limitless capacity of people, when freed to seek their full potential, to exploit the Earth to improve public well-being and transform ecosystems". The belief is that the nature of the physical world allows

> "continued improvement in humankind's economic lot in the long run, indefinitely..... Of course, there are always newly arising local problems [but] the resilience in a well-functioning economic and social system enables us to overcome such problems, and the solutions usually leave us better off than if the problem had never arisen (Simon and Kahn, 1984 : 3)" (O'Riordon, 1989 : 86).

As a result of this belief, technocentrist environmentalism promotes technocratic management and rational use of the environment, and generally aims at achieving economic development without unnecessary environmental degradation (Adams, 1995). Strategies to implement such an approach aim to technically reform or alter the status quo in such a way as to improve planning and thereby decrease environmental degradation (Adams, 1995). It is important to note that technocentrists see themselves as environmentalists and have therefore had a profound influence on the environmental discourse (O'Riordon, 1989). It is from this perspective of environmentalism that the concept of sustainable development arose.

Technocentrist strategies aim to apply various scientific methods to human problems in order to reach a 'solution' (Adams, 1995). This type of environmentalist thinking is evident not only in the IUCN's World Conservation Strategy (WCS) (1980) but also in Our Common Future (Brundtland, 1987) (Adams, 1995). This discussion will, however begin with a brief examination of the roots of technocentrist thinking in the early 1960's.

2.1 1960'S AND 70'S ENVIRONMENTALISM

Questions about the continued availability of resources were revived in the 1960's in the context of technological advancement, expanding economies, increasing trade and improved communication systems (Reid, 1995). Environmental degradation was initially seen as the result of technological excess, a scientific problem to be solved by scientists who claimed ideological neutrality (Young, 1995; Young, 1995 : 2) uses a vivid analogy to explain the perspective on the impending global catastrophe held at this time:

"Most of the chambers of the revolver (development which degraded the environment) are crammed with twenty-dollar bills, but one of them has a bullet in it. If you are unlucky enough to find the bullet, you never get to spend the money you have accumulated while your luck lasted, and your good luck, most of the time, is totally negated by one unlucky event (Martin, 1975). The so-called 'deaths of Lake Erie and Lake Baikal were bullets, as was the evidence produced by Rachel Carson on the ecological effects of pesticides and herbicides in her book, Silent Spring, of 1962. There was no doubt, however, that there were plenty of twenty-dollar bills, and if only the bullets could be avoided by understanding how the mechanism worked, then everyone could share the proceeds of economic growth".

2.1.1 DR CARSON

Dr Rachel Carson argued that the ecological effects of pesticides and herbicides were poisoning man's food and ultimately increasing the incidence of cancer (Young, 1993). Young (1995) argues, however, that although Carson identified certain actors (chemical companies, local government and farmers) who contributed to this problem, she did not draw general

political conclusions. The solutions Carson proposed were based on various means of biological control, and although she questioned the right and ability of humanity to manipulate nature, generally the problems which Dr Carson described were seen as the result of the incorrect use of an aspect of scientific technology (Young, 1995). Young (1995) notes that it was assumed that scientists could rectify these mistakes through a greater understanding of the problems, within the realm of science.

This did, however, mark a change in the thinking of scientists, as the need to understand the problem broadened their focus from solely the search for scientific solutions to environmental problems, to the social and political issues which in some way influenced them (Young, 1995).

2.1.2. 'THE DOMESDAY MEN'

In 1968 Paul Ehrlich published 'The Population Bomb', which used various scenarios to predict the dire consequences of population growth - consequences which ranged from nuclear war to what Young (1995 : 4) calls "a fantasy 900 years hence when the world's population of 60 million billion people will need to be housed in a continuous 2000-storey building covering the entire planet". Ehrlich (1968) therefore saw a global catastrophe as inevitable, unless immediate action to halt population growth was taken (Young, 1968).

In 1972, a multidisciplinary group of scientists compiled 'The Blueprint for Survival' which also warned against an impending environmental disaster and a consequent breakdown of society (Reid, 1995). Like Ehrlich, this group of scientists, headed by Donella Meadows, saw population growth as the cause of the environmental crisis (Young, 1995).

Furthermore, it was argued in 'Blueprint for Survival' that continuous economic growth in a world of finite resources would lead to "the breakdown of society and the irreversible disruption of life support systems on this planet, possibly by the end of this century (Meadows, 1972)" (Reid, 1995). According to Meadows (1972), a stable society would depend on: minimum ecological disruption; maximum conservation of materials and energy; zero population growth; and a social system in which people enjoyed rather than endured the conditions in which they lived (Reid, 1995). Various proposals to achieve this were presented which "might cause even the most determined of dictators to hesitate" (Young, 1995 : 7). These proposals included a growth freeze achieved through a tax on the use of raw materials, as well as various other strategies such as biotic rights, and a decentralised society (Reid, 1995; Young, 1995).

Although 'Blueprint for Survival' was supported by many eminent scientists, they questioned its scientific rigour and "highly debatable short term and long term policy statements" (The Times, 25 January, 1972) (Young, 1995).

Shortly after the publication of 'Blueprint for Survival', the report 'Limits to Growth' was published by the same group, headed by Meadows (Reid, 1995). This report focused on a study of five trends which would lead to the "limits to growth on this planet (being) reached sometime within the next hundred years (Meadows et al, 1972 : 23)" according to the research team (Reid, 1995). This would result in resource shortages, a decrease in economic output and a rapid decline in population numbers (Reid, 1995). The five trends investigated were: industrialisation; population growth; widespread malnutrition; depletion of non-renewable resources, and ecological damage (Reid, 1995).

It was stated in the report that to avoid the disaster described above, growth trends would need to be altered and it would be necessary to "establish a condition of ecological and economic stability that is sustainable far into the future (Meadows et al, 1972 : 24)". 'Limits to Growth' did not, however, make any suggestions on how this was to be achieved (Reid, 1995).

The validity of the computer-based growth models on which the hypothesis of the report was based was severely criticised from various quarters (Reid, 1995). Criticisms focused on the adequacy of data, the appropriateness of using global averages, the choice of deterministic projections and the failure to take social and economic factors into account (Reid, 1995).

2.1.3 CRITICISMS

John Maddox, for example, published a book entitled 'The Domesday Syndrome' (1972), which criticised the 'Domesday Men' (Ehrlich, Meadows et al and Commoner) for discounting the ability of science to address and solve the problems it had caused (Young, 1995). Maddox, for example, would argue that the solution to famine was to make better use of unproductive land and to develop new technologies to mitigate against the various consequences of environmental degradation (Young, 1995). Although he acknowledged that there were political, social and economic aspects to the problem, Maddox still saw environmental degradation as an issue to be solved within the realm of science (Young, 1995). Young (1995 : 11) vividly illustrates his criticism of this when he applies Maddox's proposals in the following way, "New strains of high-yielding rice could feed the world and at the same time raise living standards and reduce international tension by introducing incentives for capital accumulation". Barry Commoner (1972) broadened the view of 'the problem of the environment' in his book 'The Closing Circle' (Young, 1995). He accused scientists of making a so-called 'category mistake', by addressing issues related to the environment in the same way as they solved purely scientific problems (Young, 1995). Commoner (1972) argued that it was not population and economic growth which caused environmental problems, but rather the activities of people, particularly those based on the new technologies developed in the 1950's and 1960's, which were responsible for the problem (Young, 1995). He explained that although science was progressing through reductionist methodologies, in which problems and processes were isolated and reduced to *separate* compartments, addressing environmental issues called for an approach which was more integrated and generalist in nature (Young, 1995). The social issue, according to Commoner, was the failure to differentiate between decisions about technical means and moral decisions about ends (Young, 1995).

2.2 THE 1970'S AND 80'S

2.2.1. THE HUMANIST LEFT

Young (1995) identifies various writers (Clarke, 1975; Stretton, 1976; Sandbach, 1980; Schnaiberg, 1980) of the late 70's and early 80's, who subscribed to a similar view of the problems of the environment - these he names the 'humanist left'. Humanists argued that scientific methods could not merely be applied to the political, economic and social aspects of the problem - aspects which were now generally acknowledged - but that radical social change was needed to induce environmental reform and reduce social and economic inequalities (Young, 1995). Young (1995) points out that this kind of reform was difficult to achieve, as majorities were generally prepared to live with inequalities for the sake of economic growth.

Nevertheless, there existed in the form of the humanist left, the school of thought that the morality on which industrial society was based was unsound (Young, 1995). Although this is a divergence from the technocentrist thinking of the time, humanists were not in the majority (Young, 1995). However, fundamentalist humanism, which supported an abandonment of economic growth in support of a way of life based on that enjoyed by tribal societies, was experimented with in 'back to nature' movements (Young, 1995). However, in response to the fundamentalist call to abandon economic growth, Young (1995 : 52) argues that industrial society is unlikely to

> "accept death as the precondition of fertility and renewal, and is apt to take whatever steps modern technology can offer to avoid it.... If such a return occurs, and it may, it will be the consequence of catastrophe rather than democratic decision-making".

Despite this stream of humanist thought, the majority of those involved in addressing environmental problems still placed their trust in science and the 'solutions' it had to offer (Young, 1995). However, the links Commoner drew between modern society and its environment and his identification of the need for a solution which was not merely scientific, led to an interest in a more 'interdisciplinary' approach to environmental issues (Young, 1995).

2.2.2 THE INTERDISCIPLINARY APPROACH

Initially this 'interdisciplinary' approach merely implied that a more diverse range of scientists would be looking at the environmental problem (Young, 1995). This reflected the reductionist methodology (dividing a complex problem into its component parts and reco-ordinating the parts after each has been addressed separately) prevalent at the time (Young, 1995). However, as the complexity of the 'environmental problem' began to be recognised and students from the humanities, law and economic disciplines were admitted into environmental research programmes, the scope of environmental studies was broadened (Young, 1995).

This resulted in a shift in thinking, from the view that although environmental problems may have political and social aspects to them, these could be dealt with by scientific method (there was no need to change society), to the belief that environmental degradation was symptomatic of an underlying problem which could not be solved by scientific analysis alone (Young, 1995). The need to understand the *cause* of environmental problems in social, historical, economic as well as in scientific terms, before remedies were sought, was increasingly acknowledged (Young, 1995). "Cures would be found only as a result of asking the political and moral questions of diagnosis (Young, 1995 : 92)".

The shift in thinking described above was accompanied by a realisation of the cross-boundary and international nature of environmental problems (Reid, 1995). This acknowledgement was congruent with Meadows' hypothesis that global pollution would cause a world-wide collapse of industrial growth (Reid, 1995). The renewed realisation of the impacts of cross-boundary pollution played a significant role in bringing about the United Nations Conference on the Human Environment (UNCHE) in Stockholm in 1972 (Mather and Chapman, 1995).

2.2.2 THE STOCKHOLM CONFERENCE

The Stockholm Conference was the first major effort to bring the nations of the world together to address environmental problems, which were now recognised to be international

in scale (Reid, 1995). For this reason the conference is usually seen as a landmark in global environmentalism and the 'coming of age' of the environmental movement (Mather and Chapman, 1995).

The issue for the Northern nations was clear, revolving around the effects of industrialisation and the problem of pollution (Reid, 1995). Although many of these problems have social and economic causes and effects,

> "they did not focus primarily on development issues. Indeed at the time environmental problems and development problems were usually regarded separately, often with the tacit or expressed assumption that environmental conservation and development were mutually opposed (Mather and Chapman, 1995 : 246)".

The countries of the South saw measures against pollution as secondary to promoting industrial development and raising living standards (Reid, 1995). Global solutions were seen as a threat to the industrialisation of the South, which generally believed that the North should solve the pollution problems they created (Reid, 1995). A potential split between the North and South was averted when, in a preparatory meeting in 1971, the North accepted that lack of development could cause as much environmental degradation as pollution resulting from industrialisation (Reid, 1995).

The Stockholm Conference itself was attended by 119 countries, 400 non-governmental organisations (NGO's) and 19 intergovernmental agencies (Reid, 1995; Mather and Chapman, 1995). Two documents were published as a result of the conference, entitled The Stockholm Declaration on the Human Environment and the Action Plan for the Human Environment (Reid, 1995). The former consists of 26 principles and identifies those activities which cause the most environmental degradation (Reid, 1995). The Action Plan for the Human Environment made 109 recommendations concerning global assessment, environmental management and related measures (Reid, 1995). Reid (1995 : 37) notes

> "only eight of the recommendations, however, dealt with the relationship between the environment and development. These focused principally on ways of reducing the costs of protecting the environment and have been described as 'extraordinarily negative'".

Generally the Conference was criticised for having a 'remedial focus', and for not giving precise indications on how its proposals should be implemented (Colby, 1991; Reid, 1995). Adams (1990 : 39) states that "the suggested solutions, 'rational planning' or 'integrated development' were words without substance", while Colby (1991) commented that the Conference was a means to "legalise the environment as an economic externality" (Reid, 1995 : 37). However, there were successes, not least of which was the placing of environmental problems onto the political agenda (Reid, 1995). Furthermore, the Conference led to the establishment of the United Nations Environment Programme (UNEP) (Mather and Chapman, 1995; Reid, 1995). UNEP was given the tasks of: acting as the governing council for UN environmental programmes; creating a greater awareness of the environment as well as administering a fund for environmental programmes (Reid, 1995). Furthermore, UNEP commissioned the IUCN to prepare what to be known as the World Conservation Strategy (WCS) (Mather and Chapman, 1995).

The IUCN had its roots in a preservationist ideology that narrowly focused its conservation activities on nature protection (Mather and Chapman, 1995). By the end of the 1960's,

however, the organisation had become less preservationist (Mather and Chapman, 1995). This was in the face of failures to achieve nature protection across the globe, but especially in post-colonial Africa (Adams, 1995; Mather and Chapman, 1995). The IUCN began to widen its concerns to incorporate economic and development issues (Mather and Chapman, 1995). Furthermore, it began to look at a strategic approach to conservation, and in 1977 was commissioned to prepare the World Conservation Strategy (Mather and Chapman, 1995).

2.2.4 THE WORLD CONSERVATION STRATEGY (WCS)

Although the term 'sustainable development' was not officially defined at the Stockholm Conference, it had already become apparent that a synthesis was necessary between conservation and development (Mather and Chapman, 1995; Reid, 1995). In 1980, the term was coined with the publication of the World Conservation Strategy (WCS) (Reid, 1995). The Strategy defined its goal, in terms of Section 1.3, as "the integration of conservation and development to ensure that modifications to the planet do indeed secure the survival and well-being of all people." (Reid, 1995 : 38).

Development is defined in Section 1.3 as "the modification of the biosphere and the application of human, financial, living and non-living resources to satisfy human needs and improve the quality of human life" (Reid, 1995). The IUCN acknowledged that one of the limitations of the WCS was its simplification and generalisation of complex developmental issues (Mather and Chapman, 1995).

The focus of the report, however, was the establishment of conservation priorities (Mather and Chapman, 1995; Reid, 1995). Conservation is defined in Section 1.4 of the WCS as

> "the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations" (Reid, 1995 : 38).

The three main objectives of conservation were identified as follows:

- To maintain essential ecological processes and life support systems;
- To preserve genetic diversity; and
- To ensure the sustainable utilization of species and ecosystems

(Mather and Chapman, 1995 : 247)

The IUCN goes on to explain what actions should be taken by the various countries. Although it concludes with a chapter entitled 'Towards Sustainable Development', the Strategy does not define the concept in detail (Reid, 1995; Mather and Chapman, 1995). The IUCN merely states in Section 1.10 that sustainable development is based on the idea that conservation and development are 'mutually dependent' (Reid, 1995).

The WCS reflects the technocentrist thinking of the 1960's and 70's, with its utilitarian application of science to 'solve' human problems (Adams, 1995). The WCS had its roots in the IUCN, a body which was traditionally concerned with preservationist nature conservation (Adams, 1995; Mather and Chapman, 1995). However, the focus of the WCS is not on preservation, but on maximising human benefits while preventing any significant environmental costs (Adams, 1995; Mather and Chapman, 1995). The WCS, then, looks at the effective utilisation of the economic potential of ecosystems from a conservationist

perspective (Reid, 1995). This led to the Strategy being accused of being "repackaged 1970's environmentalism" - in other words, merely setting environmental limits to development and not fully integrating environmental and developmental goals (Reid, 1995).

Although the WCS aimed to synthesise ideas of conservation and development, it did this from a negative point of view, insisting that human beings, in their quest for economic development, come to terms with environmental limits (Reid, 1995). The opportunities for integration of environment and development goals, through the sustainable utilisation of resources, was not investigated (Reid, 1995).

Furthermore, the economic and social changes which may be necessary to implement an integrated development strategy were not investigated (Reid, 1995). As Reid (1995 : 42) states, "It [WCS] shows little awareness that, far from being 'above ideology', conservation values reflect cultural and social views of nature and natural resources".

In summary, therefore, the WCS tried to synthesise conservation and development goals by incorporating conservation criteria into development (Mather and Chapman, 1995). The Chairman of what was then the World Wildlife Fund, Sir Peter Scott, stated that the WCS intended to demonstrate "how conservation can contribute to the development objectives of governments, industry and commerce, organised labour and the professions" (Adams, 1995 : 89). However, as Adams (1990 : 51) states, ".... in the context of development and social theory, it (WCS) is disastrously naive" (Reid, 1995 : 42). This naivety relates to the presentation of principles, such as "population increase must be halted" and "carrying capacities (of ecosystems) must be respected", without questioning the political and social realities in which it is proposed these principles should be implemented (Reid, 1995). Furthermore, the assumption that the principles are 'self-evident', again without considering their social and economic context, fuels further criticisms of the lack of understanding of development theory shown in the WCS. "Plainly environmental responses to the global crisis need to be informed by an awareness of development issues (Reid, 1995 : 43)".

2.2.5 THE BRANDT REPORTS

The concept of sustainable development, as it evolved, was to embrace the underlying issues of development. However, as Adams (1995 : 88) points out, this was done "rather late and rather selectively." The Brundtland Report was the successor to the Brandt Reports (1980, 1983) and therefore incorporated the latter's ideas about, *inter alia*, mutuality and 'environmentally sustainable' growth within the current industrial model of economic development (Adams, 1995).

The Brandt Reports were commissioned by the United Nations in response to the developmental problems of the 1970's (Reid, 1995). The Organisation of Petroleum Exporting Countries (OPEC) increased their oil prices after decades of declining commodity and energy prices (Barrow, 1995). This exacerbated the seriousness of the poor economic situation in which many of the countries in the South found themselves (Barrow, 1995; Reid, 1995). Furthermore, the need to meet rising fuel prices and service heavy debt burdens significantly contributed to an increase in the degradation of the environment in many countries of the South (Barrow, 1995). Little money was available for environmental management and social programmes (Barrow, 1995).

In 1977 the increasing poverty and consequent suffering of the poorer countries, led the UN to appoint the Brandt Commission to report on the crisis (Reid, 1995). This was an independent commission which was made up of "elder statesmen and men and women of

stature" (Reid, 1995). The first report it published was entitled, 'North-South: A Programme for survival' (1980) and the second, 'Common Crisis' (1983) (Reid, 1995). The former accepted that development based on economic growth had failed, resulting in starvation and suffering for hundreds of millions of people (Reid, 1995). The report stated that development had paid too little attention to the quality of growth and issues such as human dignity, basic human rights, equity, freedom and peace (Reid, 1995). No mention was made of how future development was to address these issues (Reid, 1995). The authors merely insisted that further economic growth was essential if the standard of living of the poor was to improve (Reid, 1995).

Furthermore, the Brandt Commission saw the cause of the failure of development to be forces external to the economies of the South - these included a world recession, high interest rates on loans, the falling prices of exports from the South and protectionism in the North (Reid, 1995). These external forces, the Brandt Commission argued, not only caused poverty in the South, but contributed to the stagnation of the North's industrialised economies (Reid, 1995). The 'solution' Brandt offered was to revive the world economy, by increasing aid to the South and reducing the economic advantages which the North possessed over the South (Reid, 1995). A number of proposals were offered to achieve this and facilitate financial flows from the North to the South (Reid, 1995).

Although these proposals were impressive

> "the international community made little effective response to the Brandt proposals, very few additional transfers of funds were made, and the Brandt Commission was disbanded shortly after the submission of its second report to the UN General Assembly".
>
> (Reid, 1995 : 50)

There were several reasons for the failure of the Brandt Commission proposals (Reid, 1995). These included publication at a time when the North was not prepared to increase aid and assumptions about the relationship between North and South which were not necessarily correct (Reid, 1995). These assumptions were based on a concept of 'mutuality of interests' where, for example, the North's exports to the South would increase as the South became more prosperous, or that the world's financial system might collapse without some economic reform in the South (Reid, 1995 : 50)". Poverty in the South was cited as a contributing factor to the stagnation of industrial economies on the North (Reid, 1995). But this made little impact, however, on the North, which was benefitting from interest repayments and low commodity prices (Reid, 1995). Furthermore, it can be questioned whether the Northern industrial economies needed growth in the South to prevent stagnation (Reid, 1995).

The Brandt Reports did, however, draw the world's attention to ideas such as self-reliance in development, increasing participation in projects, respecting local cultures and identifying human needs (Reid, 1995). The reports did not, however, consider ways to implement such ideas and they perpetuate the 60's and 70's emphasis on economic growth, without questioning the prevalent economic ideology in terms of achieving sustainable development (Reid, 1995). In 1984, the UN General Assembly appointed the Brundtland Commission to readdress integration between the environment and development and formulate proposals for implementation of a new synthesis (Reid, 1995).

2.2.6 THE CONFERENCE IN OTTAWA

A year before the Brundtland Commission published its report 'Our Common Future', the IUCN followed up on the WCS with a conference in Ottawa on environment and development (Reid, 1995). The Conference stressed the need for a radical change in the model of development. It was stated that:

> "we need an alternative society, another type of development that is linked to structural transformation; the ability to practise design and management for sustainable development will require substantially different paradigms, institutional structures and methodological tools than have been considered adequate before (Jacobs et al, 1987 : 19)".
>
> (Reid, 1995 : 53)

The Conference listed five requirements for an emerging paradigm:

- integration of conservation and development;
- satisfaction of basic human needs;
- achievement of equity and social justice;
- provision of social self-determination and cultural diversity; and
- maintenance of ecological integrity.

(Reid, 1995 : 53)

2.2.7 'OUR COMMON FUTURE'

A year after the Ottawa Conference, the Brundtland Commission published 'Our Common Future' (1987) which was the response to the UN General Assembly's call for the Commission to "propose long-term environmental strategies for achieving sustainable development by the year 2000 and beyond", and to formulate 'a global agenda for change' (WCED, 1987, pix). (Reid, 1995 : 55). The details of the Conference and content of 'Our Common Future' are outlined in the previous chapter. It was argued in Chapter One, that the major flaw of the Brundtland Report, is its inadequate analysis of the ideological (socio-economic and political) implications of the concept of Sustainable Development. This results in the goal of the Brundtland Commission of integrating environmental and developmental issues being inadequately fulfilled. This lack of a full synthesis of environment and development goals is due to the concept of sustainable development having its roots in technocentrist environmentalism, and its embracement of development theory "rather late and rather selectively" (Adams, 1995 : 88). A brief outline of 1960's and 70's technocentrism, leading to its incorporation in the WCS, has been presented, and the manner in which development goals were embraced in the WCS, Ottawa Conference and Brandt Reports has been reviewed.

Therefore, in reflecting the discourse of the time, 'Our Common Future' tries to integrate previously stated environment and development goals (Stockholm Conference, WCS, Ottawa Conference) but inherits the weaknesses of the contemporary discourse on both. On the environmental side, it is the weaknesses of the WCS (IUCN, 1980) which directly filtered into the concept of sustainable development; and on the developmental side, it is the limitations of the Brandt reports (Brandt, 1980, 1983) which directly retard effective implementation of the concept.

The Brundtland Report inherited from the WCS the technocratic thinking of the 1960's and 70's, with its utilitarian view of science. This led to a focus on using science and technology to maximise human benefits within environmental limits (Reid, 1995). Furthermore, the Brundtland Report, like the WCS, inadequately analysed the socio-economic and political conditions required to implement a practical integration of environmental and developmental goals.

> "In both the World Conservation Strategy (IUCN, 1980) and Our Common Future (Brundtland, 1987), sustainable development is identified as a realistic means of maximising human benefit without significant environmental costs, and without threatening economic growth".
>
> (Adams, 1995 : 89)

The implications and influence of modern industrial economic growth on achieving sustainable development are not investigated in the Brundtland Report.

'Our Common Future' inherited from the Brandt Reports concepts of 'mutuality of interest' between the North and South, and most importantly a perpetuation of the 60's and 70's emphasis of economic growth. Again, underpinning both of these weaknesses, is an uncritical acceptance of the dominant political and socio-economic structures. Adams (1995 : 89) succinctly expresses the core of the problem and states, 'Our Common Future' was a successor to the Brandt Reports (1980, 1983), and picks up the same arguments about mutuality, multilateralism, and 'environmentally sustainable' growth within the Keynesian-managed world economy. This is entirely consistent with the existing economic paradigms of the industrialized North ..... Again, the desirability of these economic paradigms within which the environmental crisis is presently being experienced, is not questioned.

In summary, therefore, within mainstream sustainable development discourse, there are no ideological conflicts with the dominant capitalist industrializing model. Thus:

> "'Our Common Future' (Brundtland, 1987) focuses on the potential for fairly minor reforms of the existing economic system involving new approaches (For example rational planning of land use and ecosystem exploitation and people-orientated and 'bottom-up' development planning). The focus is on better planning techniques, on more careful use of state capital, on more careful use of economic appraisal to reduce development that causes ecological disruption. The agenda is highly reformist and technocentrist".
>
> (Adams, 1995 : 90)

Current problems in implementing sustainable development reflect the direction and priorities of development within the dominant capitalist industrialising model (Reid, 1995). The failure to address the ideological conflicts between sustainable development and the dominant capitalist industrializing model has created various obstacles to integrating environment and development goals (Reid, 1995). Recent problems in implementing sustainable development, such as the inadequacy of institutional arrangements to facilitate integration of the environment and development, and the difficulties experienced in dealing with environmental externalities (environmental goods which cannot be given a monetary value in the capitalist pricing system), reflect the "direction and priorities of the development path followed by Western societies for many generations (Reid, 1995 : 129)". The problems in implementing sustainable development can therefore be traced to its ideological base, which was assumed

and not questioned. Many authors (Adams, 1995; Reid, 1995; Barrow, 1995; Cole, 1994; Young, 1995; Redclift, 1991; Mather and Chapman, 1995; Crush, 1995) have expressed the view that the environmental crisis and the achievement of sustainable development does not transcend ideologies. The ideological base of the concept therefore needs to be questioned in a new discourse of sustainable development.

Redclift (1991 : 124), for example, states that there is a need to develop, "..... a new discourse about sustainable development, which is more holistic, concentrates on sustainable resources use, and identifies the satisfaction of human needs through mechanisms other than the market economy". However, before the development of a new ideology is addressed, it is necessary to examine where the current one has failed to lead us to a practical integration of environmental and developmental goals.

3. CONCLUSION

In Chapter One it was argued that the concept of sustainable development, as proposed by the Brundtland Commission, does not fulfil its own goal of integrating environmental and developmental issues. It has been demonstrated, through an analysis of the discursive formation of sustainable development, that this inadequate integration of environment and development goals is due to the manner in which the concept drew on a range of earlier approaches and inherited their weaknesses. The primary cause underpinning attempts (including that of the Brundtland Commission) to integrate environmental and developmental goals, is a passive and uncritical acceptance of the dominant socio-economic and political ideology - the ideology under which present environmental degradation is occurring. It has been shown that contemporary discourse reflects the need to develop a new ideological base, and that this should begin with an examination of the assumptions (ideological base) underpinning the present socio-economic system. This could indicate what changes are necessary in order to integrate environmental and developmental goals, and lead us to a new ideological base for sustainability.

CHAPTER FOUR

CHAPTER FOUR

THE ASSUMPTIONS OF SUSTAINABLE DEVELOPMENT

> "As the sustainable societies of the past demonstrate, a common ethical denominator is an essential ingredient. It is something towards which most cultures can contribute".
>
> (Young, 1995 : 117)

1. INTRODUCTION

In this chapter the ideological base of the Brundtland Commission's definition of sustainable development will be broadly analysed. The intention of this analysis is to make explicit the socio-economic assumptions (the ideology) upon which this definition rests. This is done in order to compare them with alternative contemporary ideologies for sustainable development. Responding to the call in the current discourse for a new ideology and considering alternative approaches to the environment/development relationship, is not about "choosing what is empirically right and which is empirically wrong, but of *comparing* the underlying assumptions (Cole, 1994 : 230)". This examination and comparison of the ideological base (underlying assumptions) of alternative views for a sustainable society, form the focus of this chapter.

2. EXAMINING THE ASSUMPTIONS OF SUSTAINABLE DEVELOPMENT

It has been shown in the previous chapter that mainstream sustainable development has its roots in technocratic environmentalism, which reflects a certain perspective of human nature and its relationship to the environment (Cole, 1994). As shown in Chapter One, such a perspective of the environment has lead to an inadequate synthesis of developmental and environmental goals. Therefore, the view of the human/environment relationship propagated by the mainstream concept of sustainable development, must be made explicit and compared with alternative views.

Cole (1994) explains that the assumptions which underpin various understandings of sustainable development are assumptions about human nature. This is because development of any kind implies a change in human behaviour. Changes in human behaviour are in turn influenced by human motivations, the source of which is human nature (Cole, 1994). Harbour (1982 : 52) supports this view when he states:

> "Questions about what man should strive to be, the structure of the good society, the meaning of justice, the distinction between political right and wrong, and how to bring about a better society, can have no adequate answers until one has some idea about what man is in the first place".
>
> (Cole, 1994)

This analysis, then, begins with some conceptions of human nature (Cole, 1994). These conceptions lead to alternative forms of social and economic organisation (ideologies) which have political implications (Cole, 1994). An analysis of various ideologies of sustainable development, therefore, involves a comparison and choice between differing *conceptions* human nature. In this analysis a particular perspective is favoured; however, it is acknowledged that this is not as Redclift (1989, 201) states "more or less rational", but merely reflects a way of looking at the world (Cole, 1994).

Three different *perceptions* of human nature, as presented by Cole (1994), will be used as a framework for comparing the ideological base (Redclift, 1989 : 37) of various contemporary discourses concerning a sustainable society. The first conception views human nature as biologically determined and therefore sees individuals, in their motivation, as *independent* of society (Cole, 1994). The second sees people to be malleable beings, shaped by culture and society, and individual motivation as *dependent* on society (Cole, 1994). The third belief, views human beings as active participants in their lives, not as passively controlled by external forces (biological or cultural). In this view, people are *interdependent* and *creative* beings (Cole, 1994).

2.1 HUMAN BEINGS AS INDEPENDENT FROM SOCIETY

Individuals are seen to be independent of society, if it is believed that the dominant forces driving their motivations are biological forces, over which they have no control (Cole, 1994). These biological forces are their innate capacities and ambitions, which are essentially genetically determined (Cole, 1994). The *form* of social organisation and the relationship between culture and the environment are irrelevant to supporters of such a view (Cole, 1994). Society is seen as the sum of individuals, each possessing their individual capabilities and ambitions (Cole, 1994).

According to this view of society, social change is explained by the Darwinian theory of survival of the fittest, as individuals attempt to express their independent talents (Cole, 1994). Alternatively social change comes about due to an increase in the population numbers,in which case society can only be sustainable if the 'carrying capacity' of the natural environment is respected (Cole, 1994).

(Definitions of 'carrying capacity' are diverse and include:

> "the maximum number of individuals which can be supported in a given environment; the amount of biological matter a system can yield for the consumption of organisms, over a given time, without decreasing its ability to continue producing; the maximum population of a given species that can be supported indefinitely in a particular region by a system, allowing for seasonal and random changes, without any degradation of the natural resource base".
>
> (Barrow, 1995 : 58)

This view of development as a process driven by independent individuals, is reflected in the 'mainstream' or 'neoclassical' approach to sustainable development (Cole, 1994). Sustainable development, in this context, exhibits characteristics of both technocentrism and preservationism (Adams, 1995; Cole, 1994).

2.1.1 TECHNOCENTRISM

Technocentric environmentalism was explained in Chapter Two. However, a more detailed analysis is presented below, indicating the socio-economic and political implications of such an approach. This is to aid the ideological comparison presented in this chapter.

From technocentrism comes a utilitarian view of development, in which science can be applied to 'solve' human problems and in a scientific and rational way, humans can 'manage' the environment (Barrow, 1995; Adams, 1995; Cole, 1994). A feature of this way of thinking is the belief that technical ingenuity is almost limitless (what Barrow (1995) calls 'technological optimism') and that the expansion of production will meet increasing consumption demands (Cole, 1994). The basic thesis is that:

> "the nature of the physical world permits continued improvement in humankind's economic lot in the long run, indefinitely ... Of course, there are always newly arising local problems [but] the resilience in a well-functioning economic and social system enables us to overcome such problems, and the solutions usually leave us better off than if the problem had never arisen".
>
> (Simon and Kahn, 1984 : 3) (O'Riordon, 1989)

The reliance on the economic system motivates exponents of this view to attempt to give the environment a monetary value (Cole, 1994). This leads to the assumption that as the environment is degraded, people will be willing to pay for measures to improve its condition (Cole, 1994). Supporters of this view "will be found among the core of the capitalist class" (O'Riordon, 1989 : 86).

The type of technocentrism described above is its most extreme form. O'Riordon (1989) identifies another form of technocentrism which he names 'accommodation'. This is a more common form of technocentrism, which O'Riordon (1989) calls the "arena of modest reform, tinkering at the margins, adjusting to the demands of environmental groups (O'Riordon, 1989 : 87)". Various forms of cost-benefit analysis characterise accommodation and, as O'Riordon (1989 : 88) states:

> "It nourishes the environmental impact community within and outside government and industry. It has stimulated a new breed of ecological planner, armed with an environmental science training, and with an eye for beauty and heritage value....Hence accommodation is the whirlpool of contemporary environmentalism...(it) accounts for the environmental worldview of about half the populations of the developed nations".

Accommodation, O'Riordon (1989) points out, is a dynamic and moving position. Techniques of project appraisal have evolved, as have pollution abatement and mediation strategies (O'Riordon, 1989). "Accommodation is the good part of the paradox within which environmentalism appears successful (O'Riordon, 1989 : 88)".

2.1.2 PRESERVATIONISM

Another characteristic of sustainable development in this context (where individuals are seen as separate from society) is what Adams (1995) calls a 'preservationist ideology' - the conservation of the natural environment in the face of the increasing consumption demands

made on the environment by individuals (Adams, 1995; Cole, 1994). Adams(1995 : 92) states that this has been a "powerful emotive, ideological and practical source of ideas for mainstream sustainable development."

The dichotomy which appears to exist between technocratic environmentalism and preservationist environmentalism was embedded in the World Conservation Strategy (WCS) (IUCN, 1980) and inherited by the Brundtland Report (1987).

The WCS promotes the economic potential of ecosystems for use by humans (utilitarian view) and the application of science to manage them (Reid, 1995). It also acknowledges, however, an ethic of conservation in which the intrinsic value of the environment is respected, and humans' moral responsibility to protect it is expounded (Reid, 1995). This dualism leads to contradictions and difficulties in implementing the Brundtland Commission's concept of sustainable development, which inherited this same dualism from the WCS (Adams, 1995; Reid, 1995). Adams (1990 : 48) points out what he calls a 'practical advantage' in asserting both lines of thought:

> "This dualism is extremely useful. On the one hand, the utilitarian argument allows conservation to be packaged in a way which is expected to be attractive to the materialism which is seen to underlie thinking about development. On the other, moral arguments can be employed where they are most effective, for example, among environmentalists in industrialized countries".
>
> (Reid, 1995 : 42)

2.2 PEOPLE AS DEPENDENT ON SOCIETY

Alternatively to individuals being controlled and driven by innate, biologically (genetically) determined desires, people can be viewed as beings that are malleable and whose motives can be 'moulded' to the needs of society (Cole, 1994). In this approach people are no longer independent from society, but rather depend on it in order to meet their needs (Cole, 1994). To make their livelihood, people cooperate in a technical division of labour and society is managed through political institutions (Cole, 1994). People are consulted in order to attain a cooperative society in order to produce, rather than to consume (as in the technocratic view explained above) (Cole, 1994). Social cooperation has importance in and of itself and society is more than the sum of its parts (Cole, 1994). This approach rests on the identification of a 'common interest' towards which all strive, through the technical division of labour (Cole, 1994). Compromise between conflicting interests is based on individual's dependency on the technical division of labour (Cole, 1994).

Extremes of poverty and wealth threaten social cooperation and a degree of distributional equity is required in the pursuance of a common interest (Cole, 1994). This linkage between the individual, society as a whole and the need for equality is illustrated by Howe and le Roux (1992 : 15) when they write on their perspective on the economic crisis in South Africa,

> "The economic crisis that faces South Africa calls for a fundamental restructuring of both the political and the economic system ... the apartheid policy, which was originally intended to benefit white South Africans, eventually harmed us all"
>
> (Cole, 1994)

According to this view, sustainable development means reducing the incompatibility between the structure of the social institutions in place and the technology of production (Cole, 1994).

Reducing this gap for some means increasing economic growth to relieve poverty and decreasing the pressure on lower income groups to degrade the environment in order to survive (Cole, 1994). This way of thinking is evident in the Brundtland Report (1987 : 59) when it states,

> "economic growth is ... the only way to tackle poverty, and hence achieve environment-development objectives. It must, however, be a new form of growth, sustainable, environmentally aware, egalitarian, integrating economic and social development"
>
> (Cole, 1994)

However, as Reid (1995) points out, once material needs are met, consumerism is increased and new 'needs' are generated. Increasing economic growth leads to consumerism, which "gratifies wants rather than meets needs - with obvious implications for sustainability (Reid, 1995 : 137)".

Alternatively, reducing the gap between the institutional structure of society and the technology of production can mean the scaling down of the technology (industrialisation) to systems which are more appropriate to the cultural context (Cole, 1994). This idea is reflected in Schumacher's 'Small is Beautiful' (1973). In this book Schumacher focuses his criticism, not on capitalism, but on industrialisation (Young, 1995). He explored the "dehumanising effects of industrialisation" and its other harmful effects in both rich and poor countries (Young, 1995). Schumacher explained that he is not opposed to technology and technological advance *per se*, but is opposed to individuals and society being controlled by technology (technological determinism) (Young, 1995).

Schumacher proposed a scaledown of technology in order to make it more appropriate to various cultural contexts (Young, 1995). By relating the technology to the cultural context, production is set within an ethical framework (Young, 1995).

As Young (1995 : 100) states

> "he did not want to abandon the achievements of modern technology, but to see them evaluated and utilised within an ethical rather than a materialist framework. The best modern knowledge and experience would be the kind which succeeded in raising productivity by providing as many people as possible with both productive and satisfying jobs. It would also be conducive to decentralisation."

In this approach, therefore, decentralisation is the way to sustainable development (Cole, 1994). The scale of economic organisation has to relate to the nature of the society in which it is implemented (Cole, 1994).

Implementation of such an approach would require the political will to scale down technology to a scale which is more appropriate to existing cultural contexts - to a "scale which can be grasped by the majority of people" (Cole, 1994 : 233). This political will, Young (1995 : 115) argues, is unlikely to exist unless a catastrophe forces it upon us, or a gradual change in our philosophies occurs "of the kind which took Schumacher most of his life ..."

2.3 PEOPLE AS INTERDEPENDENT AND CREATIVE HUMAN BEINGS

When interdependence between people and society is assumed, humans are seen as being born with potential and capabilities which are realised through an interaction with society (Cole, 1994). Individuals are proactive, creative human beings that are not controlled by biological/genetic forces, or the type and scale of technological production, but rather actively participate in the nature and form of their own lives (Cole, 1994).

As the view that individuals are interdependent with society is adopted in this dissertation, individuals are seen to interact *socially* with the environment (Cole, 1994). This means that they do not merely, in their individual capacities consume resources through free-market mechanisms, or through a technically divided labour force (Cole, 1994). Rather the societal context influences individual interaction with the environment. Therefore the *nature* of the interaction is determined by the *nature* of the society in which the interaction occurs.

Therefore, to attain development which is sustainable, we need to change the existing patterns of social behaviour (Cole, 1994). As individuals are seen as interdependent with society, the nature of the society and thereby the nature of the interaction with the environment is determined by *participation* of individuals in the shaping of that society. This leads to the conclusion that changing to sustainable lifestyles call for action by individuals through their creative participation in existing society.

To illustrate this, Cole (1994) explains how individuals can become aware of 'shared constraints', which become the basis for collective action, which in turn alters societal behaviour in some way. For example, cooperation between the Swakopmund Wildlife Society and the Swakopmund Municipality, in order to reduce waste generation and improve its management, lead to an effective glass recycling program (approximately 10 tons of glass are collected each month in this town of 16 000 people) (Barbour, 1993). The Wildlife Society ensured that recycling had a high profile in the local and national press, while the Municipality gave the project its backing, playing an essential role in lending the project respectability and credibility as an initiative with public support (Barbour, 1993).

The new ideology should therefore be informed by socio-economic and political dimensions which are: participatory, (based on local initiative to influence societal behaviour in some way); research-based (to identify common needs and constraints, thereby ensuring the applicability of collective action) and promotive of alliances between various social interest groups (to co-ordinate this collective action) (Cole, 1994). This facilitates innovative local development, in which people are empowered to play a creative and active role (Cole, 1994).

In summary, therefore, through interaction with society, people begin to fulfil their potential, which is not a static and defined entity, but rather something which evolves over a lifetime (Cole, 1994).

Societal structure, however, not only resists change, tending towards the status quo, but facilitates the domination of social activity and the use of the natural environment,by the ruling class (Cole, 1994). Cole (1994) argues that an existing societal structure cannot ultimately accommodate the changing needs and potentials of individuals, as fulfilment of these would call for a change in the division of labour and therefore in the societal structure itself (Cole, 1994). In other words, as an individual's potential and needs change, the type of work he/she would want to be doing in order to fulfil the changing potential and meet the new needs also changes. This calls for a shift in societal structure (the division of labour) and therefore challenges 'entrenched political interests' (Cole, 1994 : 235). Frustration

occurs when the existing societal structure constraints the fulfilment of individual potential (Cole, 1994). This frustration is generated when, for example, people are unemployed or are denied access to social services such as education of health provisions (Cole, 1994).

If, however, people are seen as interdependent and creative human beings, then it is possible for them to become aware of shared constraints to the fulfilment of individual potential (Cole, 1994). This, then becomes the starting point for collective action to actively change the society in a participatory manner (Cole, 1994). Cole (1994) extends this interactive link between individuals and society to a social interaction with the natural environment.

> "People interact socially with the natural environment (ie not merely as individual consumers, or rationally according to technically defined priorities). And if we are to change the way we relate to the environment to realize sustainable lifestyles, then patterns of social behaviour have to change ..."
>
> (Cole, 1994 : 235)

People, as explained above, need to become aware of shared constraints and use this awareness for collective action to change society (Cole, 1994). Earthlife, for example, has mobilized researchers, doctors and academics to help township residents in various parts of South Africa fight against water, noise and air pollution and strengthen their cases against the authorities (Cole, 1994).

Sustainable development in this context would mean facilitating the realisation of 'shared constraints', by building alliances between various social interest groups. Actively, then, societal structure should be altered to overcome the constraints which are collectively faced (Cole, 1994). This requires the empowerment of people to change their own lives and the society in which they live (Cole, 1994). Chambers (1988 : 3) states:

> "Development below is an approach, not a package. The approach suggests that for success, development must be not only innovative, and research-based, but locally conceived and initiated, flexible, participatory and based on a clear understanding of local economics and politics ...The poor are not the problem, they are the solution"
>
> (Cole, 1994)

3. SYNOPSIS

The mainstream conception of sustainable development reflects a view of human beings as independent from society (Cole, 1994). This view exhibits the socio-economic characteristics of technocentrism discussed above. In summary, management of the environmental goods and services depends, to a large extent, on the operation of the free market, and the implied political context is generally a conservative one (Cole, 1994). The problems resulting from such a view have been addressed in Chapters One and Two of this dissertation.

If humans are seen as dependent on society, it is essential that there is a defined common interest towards which all strive through a technical division of labour (Cole, 1994). This allows for coordination and cooperative action between individuals, whose actions are then motivated by the need to further the common interest of their society (Cole, 1994). In this context, the common interest is defined by the demands of technical progress (Cole, 1994).

Proponents of this view generally support decentralisation as the way to sustainable development, thereby promoting a more intimate reflection of the needs of local communities (Cole, 1994). However, any advantages from such an approach rest on the political will to decentralise the economy and compromise between conflicting interests in order to identify a 'common interest' (Cole, 1994). This approach has therefore been criticised as utopian in its assumption that society is able to compromise between conflicting interests, and identify a 'common interest' (Cole, 1994).

The approach in which humans are seen as interdependent with society is chosen as the basis for the development of a new ideology. This is particularly for its view of an interactive relationship between human beings and the environment. In summary, according to this approach, humans are seen to have an intimate relationship with the environment (Cole, 1994). They interact socially with it, as opposed to merely consuming its goods and services as an individual consumer, or part of a technically divided labour force (Cole, 1994). Therefore, it is this approach (of the three presented) which facilitates the closest relationship between human action (development) and the environment. It is therefore argued in this dissertation that it is through the implementation of the socio-economic and political implications of such an approach, that a stronger link between the environment and development can be attained.

Reid (1995 : 158) supports this interdependent view of society and the natural world, when he states:

> "Scientists will accept that their relationship with the natural world is inevitably an interactive one ...A new awareness of the interdependence of phenomena and the complexity of reality will lead to a reassessment of the understanding which scientific knowledge provides".

4. CONCLUSION

In the examination of the concept of sustainable development and its discursive formation, (presented in Chapters One and Two of this dissertation), it was argued that the mainstream discourse (articulated in the Brundtland Report, 1987) does not effectively link development and the environment - its stated goal. Furthermore, this limitation was attributed to the a lack of analysis of the socio-economic and political implications of "meet(ing) the needs of present generations without compromising the ability of future generations to meet their own needs (WCED, 1987 : 43)" (Jacobs and Sadler, 1992).

Therefore the challenge is to facilitate a more effective link between the environment and development (increasing potentialities) to ensure the persistence of desired socio-political and environmental systems (sustainability) (Reed and Slaymaker, 1993). Development of such an ideology begins with some view of human nature and how it relates to the environment (Cole, 1994). Cole (1994) presents three categories for comparison between alternative views. To achieve development which is sustainable, an intimate link between the environment and human development needs to be formed as shown in Chapter One of this dissertation. Therefore Cole's (1994) category of human/environment relationships, which propagates an intimate relationship between the individual, society and the environment, is supported. This implies that it is possible to identify shared socio-political constraints to achieving development (fulfilment of individual potential) due to society's structure and its interaction with the natural environment (Cole, 1994). However, the aim of development is to ensure the persistence of desired socio-political and environmental elements (sustainability).

Therefore it is possible to identify shared constraints to the persistence of socio-political and environmental elements (shared socio-ecological constraints to sustainability). The identification of shared constraints should form the basis of alliances between conflicting groups (Cole, 1994). These alliances in turn form the foundation for collective action in which individuals participate in altering societal structure and behaviour in such a way as to overcome constraints to the persistence of desired socio-political and environmental characteristics. This amounts to overcoming the obstacles to the attainment of a sustainable society.

In the chapter which follows, these ideas will be expanded and developed into a new ideology for a sustainable society. This is done in the light of contemporary discourse on the environment and development, which relates to the view of sustainability and development expressed in the paragraph above.

CHAPTER FIVE

CHAPTER FIVE

THE DEVELOPMENT OF AN IDEOLOGY

1. INTRODUCTION

In the discussion so far, the following have been identified as components of an ideology for a sustainable society:

- a view of individuals, society and the environment as intimately related;
- an identification and recognition of the socio-economic and political implications of a sustainable lifestyle; and
- alteration of societal structure and behaviour, through collective local action, for the transition to a sustainably developing society;

Through an examination of contemporary environment/development discourse, each element listed above will be explained, expanded and supported, as a necessary component for attaining sustainability in development. The practical implications of each component forms the criteria for the institutional and procedural framework for sustainability explained in the next chapter.

Although each element is discussed separately, linkages are drawn which tie them together in such a way as to form ideology and approach for sustainability. The elements are congruent ideas which flow from a broad view of the interrelatedness of humans and the environment, to the specific need for collective local action to achieve sustainability in development.

2. INDIVIDUALS, SOCIETY AND THE ENVIRONMENT AS INTIMATELY RELATED

The view of human nature supported in this dissertation (Chapter Three), is one in which humans, society and the environment are intimately related (Cole, 1994). The renewed discourse on the 'Gaia Hypothesis' supports this view of the relationship between individuals in society and the environment (Barrow, 1995; O'Riordon, 1989; Young, 1990). Individuals in society are seen to interact naturally with the environment, and this interaction is linked to the ability of the environment to endure its current state of stability (i.e human interaction with the environment affects its (the environment's) degree of sustainability) (Barrow, 1995; O'Riordon, 1989; Young, 1990). This is not a new idea, as it was proposed by James Lovelock in 1969, but it has only been taken seriously by mainstream science within the last decade (Barrow, 1995; Young, 1990).

Gaia was the Greek earth goddess, likened to a mother figure from whom all sustenance was obtained (O'Riordon, 1989; Young, 1990). Lovelock sees the Earth as a living being (Young, 1990). This being sustains a complicated set of chemical and physical conditions, in a relatively stable equilibrium (homeostasis), in order to sustain life (Barrow, 1995; O'Riordon, 1989; Young, 1990). Lovelock argues that before life existed on Earth, the solid earth, atmosphere and oceans were evolving through chemical and physical processes, tending towards a lifeless state of equilibrium or homeostasis (Young, 1990; O'Riordon, 1989).

However, a "once-in-eternity, once-in-a-universe coincidence occurred" and the Earth entered a state which has the ability to sustain life (Young, 1990 : 121).

> "At some stage, the newly formed living cells grew until their presence so affected the Earth's environment as to halt the headlong drive towards equilibrium. At that instant the living things, the rocks, the air, and the oceans merged to form the new entity, Gaia. Just as when the sperm merges with the egg, new life was conceived".
>
> (Young, 1990)

> Gaia is the name given to the biochemical homeostatic mechanism, which facilitates the biophysical and chemical conditions necessary for life on Earth (O'Riordon, 1989).

Although Gaia transcends humankind and would exist whether human beings lived or not, the actions of humans can alter the homeostatic process which has thus far sustained the conditions necessary for human life on Earth (O'Riordon, 1989; Young, 1990). Lovelock (1969) argues that each time we alter some part of the natural, chemical and biophysical processes, we increase the probability that one of these changes could weaken the stability of the entire system, by reducing the variety of options available to the system the respond to changes made to it (O'Riordon, 1989). Man then has the capacity to alter the homeostatic relationship (for example by disturbing the savannah margins) and encourage a new homeostasis in which we are replaced with a more 'environmentally seemingly' species (Young, 1990).

The optimism in Lovelock's theory, however, comes from the view that humankind has the power of reason and the ability to make choices (Young, 1990). Human reason, as part of the homeostasis, which is Gaia, gives us the choice between destroying Gaia systems or respecting our interdependency with these systems (Young, 1990). On the other hand, true Gaianism involves the belief, that humans, being so intimately involved in the intrinsic processes of homeostasis (Gaia) actually contribute to the maintenance of this homeostasis (O'Riordon, 1989). Ultimately, then, there is no cause to worry about a final 'doom and gloom'. However, O'Riordon (1989) points out that the problem lies in being able to make the necessary alterations to societal behaviour in time, so as to avoid unnecessary human suffering and ecological degradation.

O'Riordon (1989 : 92) states that the "dilemma can be solved by being active in collectively ordained causes". This supports the notion (proposed by Cole, 1994) and adopted in this dissertation) that the individual interacts socially with the environment and that the human/environment relationship can be altered to be sustainable, through the identification of shared constraints, and the initiation of collective action to alter societal behaviour in such a way as to overcome these constraints.

An example of a form of Gaian cooperation and homeostasis are the Chipko Andolan 'hug-the-trees' movements of Nepal and Northern India (O'Riordon, 1989). Through non-violent protest, village women stopped the felling of trees (O'Riordon, 1989). The movement spread throughout the Himalayan communities and influenced community *politics and regional forestry* policy in the area (O'Riordon, 1989). Furthermore, although the movement did not stop deforestation entirely, it did alert the world to a very serious problem which, on a global scale, threatens its life-support system (O'Riordon, 1989). Community action, stimulated by a common threat, (deforestation and the consequent diminishing of resources) led to a change in societal behaviour (community politics and regional forestry policy).

One way in which Gaianism has manifested itself in the search for a new ideology, is through the Deep Ecology movement (Simmons, 1993; Young, 1990; O'Riordon, 1989). Although this movement predates the Gaian thesis, it incorporates Gaian concepts in its advocacy of a new ideology (O'Riordon, 1989). Deep Ecologists base their views on the writings of Arne Naess (1973), whose basic premise is that humans are no more that another member of the biotic community (Young, 1990; O'Riordon, 1989). The value of humans is regarded as the same as any other form of life (O'Riordon, 1989). Deep Ecology emphasises the value and quality of all forms of life; however, it does not recognise the cultural and economic diversity within human populations. (Young, 1990). This means that the relationship between, for example, poverty and the nature of environmental damage is not recognised (Young, 1990).

It is argued above that it is essential that the socio-economic and political context and implications of the new ideology be recognised. For this reason Deep Ecology in its purest form, will not be considered in this dissertation as the basis for a new ideology. This is generally congruent with contemporary discourse (Reed and Slaymaker, 1993; O'Riordon, 1989; Young, 1990; Simmons, 1993) and O'Riordon (1989 : 92) states "Deep ecology is not a widely accepted movement..." and "...this facet of Gaianism is unlikely to become a major force". (For an extensive critique of Deep Ecology see Young, 1990). Simmons (1993), however, recognises that various streams of thought, such as bioregionalism and ecofeminism, seem to have recently merged with the Deep Ecology movement. These are developments which relate to some aspect of Deep Ecology and do not necessarily incorporate the latter's basic principles (Simmons, 1993). These currents in the discourse will be incorporated in the discussion below.

3. THE SOCIO-ECONOMIC AND POLITICAL IMPLICATIONS OF A SUSTAINABLE LIFESTYLE

Two dominant streams of thought in contemporary discourse which link environmental issues to their socio-economic and political context, are eco-socialism and eco-feminism (Adams, 1995; Young, 1993; Barrow, 1995).

3.1 ECOSOCIALISM

The ecosocialist approach involves a critical analysis of the existing definition of needs, distribution of resources, forms of ownership, forms of technology and social structure (Adams, 1995). Such ideas can be found in the work of Murray Bookchin (Adams, 1995). Bookchin believes that the cause of the environmental crisis is the domination of some over others, and that there can be no solution to the problem without political change (Young, 1990; Adams, 1995). His beliefs are basically anti-industrial and state centralisation (Adams, 1995). Bookchin (1980 : 12) therefore links societal behaviour and the environment -

> "there is a tie between the way people deal with each other as social beings, men with women, old with young, rich with poor, white with people of colour, first world with third, elites with masses - and the way they deal with nature"
>
> (Young, 1990)

Bookchin links societal behaviour and the environment in a manner which is anti-central state control and industrialisation, supporting the need for the empowerment of people (Young,

1990). He states that individuals should take an active and participatory role in shaping their society (Young, 1990). Bookchin (1980 : 78) states "To ask people to regain power over their lives is even more important than to add a complicated, often incomprehensible, and costly solar collector to their houses" (Young, 1990). This echoes the interdependent view of human nature, society and the environment (supported in this dissertation - Chapter Three), in which the ultimate strategic objective for a sustainable lifestyle "must be to empower people to participate in controlling their own lives" (Cole, 1994 : 236).

3.2 ECOFEMINISM

Another contemporary discourse which links the environment to the socio-economic and political context, is ecofeminism. This stream of thought views the cause of the ecological crisis as the domination of one societal group (males) over another (females) (Adams, 1995). Feminist analysis focuses on the role of patriarchy in the current capitalist economic structure. Domination of women by men and its consequences, such as the exclusion of women from certain political structures, and the resultant subjugation of nature, form the basis of ecofeminist views (Adams, 1995). Ecofeminists call for the recognition of the 'feminist principle in nature' in which the earth is viewed as sustainer and provider and women (due to their reproductive roles) are seen as closer to nature (Adams, 1995; Young, 1990).

Young (1990) points out that some of the strongest critics of eco-feminists are mainstream feminists, who object to the idea that female mentality is essentially different to that of men. Mainstream feminists argue that by linking the female way of thinking to biology, the earth and nature, it can be implied that it is 'less rational' than male mentality (Young, 1990).

3.3 BIOREGIONALISM

A common thread which supports the view of a natural interrelation between individuals, society and the environment, can be drawn between ecosocialism, ecofeminism and the Gaia Hypothesis (Young, 1990). This thread is found in bioregionalism (Young, 1990). As Young (1990 : 135) states, "If Bookchin is right, and if we accept that the human race is part of Gaia, then it is valid to argue that our interference with nature is natural."

The view explained above is expressed through the implementation of the concept of bioregionalism (Young, 1990). This concept is based on the idea of a 'bioregion' (Young,1990). A bioregion is defined in terms of its unique species characteristics (Young, 1990). As the nature of the species changes (biotic shift) from one place to another, one moves from one bioregion into another (Young, 1990). Young (1990 : 135) gives a formal definition of a bioregion when he states

> "The central idea is the notion of a bioregion, a piece of the earth's surface defined in terms of a 'biotic shift', or percentage change of species from one place to another. Thus if 15-25 per cent of the species in one place are different from those in the next place, on the other side of a watershed, perhaps, or on the plains as opposed to the hills, then the places are in different bioregions."

Young [1990] explains that one bioregion is likely to have different soils and a different climate to another and different tribal regions are considered to be bioregions.

Bioregions are therefore defined in terms of the natural and cultural environment, making societal structure 'inextricably linked' to all forms of life (Young, 1990). The maintenance

of this link forms the common interest or consensus required for the functioning of the democracy. Harmony, cooperation and social management are emphasised in a decentralised, participatory democracy (Young, 1990).

Bioregionalism, therefore, calls for a participatory development strategy based on decentralised decision-making, which is grounded in the local socio-ecological realities of specific places. Such a development approach has been called by many names - 'green endogenous development' (Friberg and Hettne, 1985), 'development from within' (Taylor and Mackenzie, 1992), 'self-reliance' (Galtung, 1980), 'local direction' (Timberlake, 1985) - but typically involves the following:

- reliance primarily on local resources and knowledge;
- the social unit of development being defined in terms of cultural and/or ecological factors (this could be a bioregion);
- development which is defined, implemented and controlled by the residents of local communities and rooted in the community's values and institutions;
- an awareness of local ecosystem potential and local and global limitations;
- development which is tailored to the basic needs of a specific community, but is not limited solely to meeting basic needs;
  development which does not depend solely on the market;
- a recognition of diversity and the mobilisation of various individuals and groups with the community;
- linkages (knowledge and resources) to the regional, national and international community which are used to strengthen *local* institutions and which are sustainable; and
- the strategy of self-reliance should apply at any scale, for example, the local, regional, national or international, as in groupings of nations (for example, the Southern African Development Community (SADC).

(Friberg and Hettne, 1985; Taylor and Mackenzie, 1992; Galtung, 1980; Timberlake, 1985)

If such a concept of bioregionalism is to be implemented, then, as Cole (1994) emphasises, it is essential that the political and economic implications of the concept are made explicit. This leads us to the next component of a sustainable society.

4. THE FACILITATION OF COLLECTIVE LOCAL ACTION

The implied political program for development which is locally conceived, based on the development of local environmental goods and services, participatory (rather then centrally controlled) and innovative, is socialist (Cole, 1994). However, as Young (1990) points out, there are two kinds of socialism. The first is a collective socialism which would result in a strong centralist administration (Young, 1990). Alternatively, an 'anarchist socialism' which defends individual initiative against centralist administration may be adopted (Young, 1990).

4.1 COLLECTIVE STATE SOCIALISM

The idea of a collective socialism and a strong centralist administration is contrary to the criteria of locally conceived, participatory development described above and required for the implementation of bioregionalism (Young, 1990; Gorz, 1994). In the search for a political

program which facilitates local innovative participatory democracy, one cannot simply eliminate existing social and economic forces of the state, capital, money, the market and the legal system (Gorz, 1994). Gorz (1994 : 9) explains that although such an elimination could facilitate the imposition of alternative structures and development goals, it leads

> "just as directly to the 'dead-end of the forms of bureaucratic-administrative society', which are just as incapable of adjusting their economic decisions to the needs of lifeworld interests of individuals".

The Soviet-type socialist systems implemented around the world, including those in Africa and the Middle East, have tried to develop their own modes of economic and social development (Gorz, 1994). They have failed in this quest, primarily because of their failure to facilitate democratic participation by local communities in the development process (Gorz, 1994). Gorz (1994 : 10) summarises the problem when he states,

> "They have been capable of employing or developing modern techniques only for the unproductive purposes of prestige and power - purposes entirely foreign to the lived interests and aspirations of civil society".

State socialism therefore does not fulfil the criteria for a development process which is based on participatory, local democracy (Young, 1990; Gorz, 1994).

4.2 'ANARCHIST SOCIALISM' / TRANSCENDING CAPITALISM

The type of socialism, supported in this dissertation, is based on a promotion of individual initiative and its influence on the broader society. This is congruent with the view, adopted in this dissertation, that individuals, society and the natural environment are interdependent and that creative cooperation between individuals can alter societal behaviour towards patterns of sustainability (Cole, 1994). Environmentalists at the left of the political spectrum are now beginning to re-emphasise this view of socialism because of it compatibility with concepts of bioregionalism, decentralisation and the promotion of small-scale local economies (Young, 1990).

Gorz (1994) calls this type of socialism 'transcending capitalism' - not the abolition of capital. Transcending capitalism involves getting beyond a society which is dominated by the economic values of efficiency and profitability, to a society which makes use of the economy to fulfil its own goals and objectives - to overcome what Cole (1994) calls its 'shared constraints' (Gorz, 1994; Cole, 1994). The question remains, however, as to whether society can 'transcend' itself, not reverting to political systems of the past, but to a mode of development which is different to the existing one in which the ecological crisis has arisen (Gorz, 1994).

For reasons discussed above, the answer is not in an overthrow and elimination of the existing mode of development, which is based on capital and the workings of the market (Gorz, 1994). Rather, we need to solve the problem of preserving the existing autonomy of the state, press and economy, while redirecting their goals towards the needs of local communities in the pursuit of sustainability (Gorz, 1994). Gorz (1994 : 10) makes this idea explicit when he explains:

> "The problem to be resolved thus consists in preserving the relative autonomy of the state, culture, the legal system and the press, and so on - and also, indeed, of the economy - without surrendering the aim of shaping and orientating economic and technical development in a socio-ecological direction".

To achieve this, the contents of development need to be determined by the needs and aspirations of the community (Gorz, 1994). If the view of individuals and society as interdependent is adopted, these needs and aspirations are the shared constraints imposed by the structure of society, to the fulfilment of individual potential (Cole, 1994). If the structure of society is defined in terms of bioregions, the sustainability of that society, and therefore its ability to meet individual needs, will depend on the maintenance of the natural and social resources which gave it its unique identity in the first place - this, then, becomes the goal of development. Economic and technical development is then orientated towards this goal (Gorz, 1994). This application of bioregionalism will facilitate the precondition which Gorz (1994 : 10) stipulates is necessary for the general orientations of development: that these orientations will always be towards "an economy that is efficient enough for the potential surplus which it produces to be redirected in large measure to non-economic ends".

More specifically, if what Gorz (1994) calls 'criteria of choice' (criteria for development which may be contrary to strictly economic criteria, which the society/community has chosen, through a participatory democratic process - informed by shared constraints faced) are determined as the goals of development, that development will be tied to the needs of the community (Gorz, 1994). If, through the application of the concept of bioregionalism, the identity and needs of the community are tied to the environment, then development will be tied to the socio-ecological environment.

In summary, then, economic development is focused towards serving the needs of the community who continually, according to their needs or shared constraints, redefine its orientations (Gorz, 1994). Through the application of bioregionalism, the structure and identity of a particular community is defined in terms of its locally unique social and ecological characteristics. Development, therefore, involves the identification of shared constraints imposed by the social and ecological characteristics of the local context (Cole, 1994; Adams, 1995). This forms the basis for alliances for cooperative action to overcome these constraints (Cole, 1994). Therefore any activity which decreases the ecological and sociological foundations of life should diminish and disappear (Gorz, 1994). Those activities should grow, which support the natural foundation of life, improve its quality and enhance self-determination and the creative fulfilment of individual potential (Gorz, 1994). Gorz (1994 : 12) explains this process when he states:

> "The solution consists in winning from the megamachine (or the 'system', as Habermas calls it) broader and broader spaces in which the 'logic of life' (or individual potential/aspirations) can unfold freely, and in making the system compatible - by its orientations, its techniques, the limits of the space it occupies and the restrictions and rules to which its functioning is subject -with that of the free unfolding of life. This perpetual action of laying down orientations, of shaping and subjecting the system to a rationality which is not its own - that of the personal fulfilment of individuals - will never be finished."

As stated above, this is a continual process in which aspirations are met and new ones are generated (Gorz, 1994). However, as new aspirations place increasing demands on the ecological and sociological base of the system, the natural foundation of life will increasingly be unable to fulfil aspirations and overcome common constraints to the fulfilment of these needs. Therefore, as Gorz (1994 : 33) states, "Ecological necessities have to become the basic principles of economic activity". Economic activity needs to be directed towards enhancing the ecological and sociological potential to overcome the constraints it places on the fulfilment of individual potential (Gorz, 1994; Cole, 1994).

5. THE TRANSITION TO A SUSTAINABLY DEVELOPING SOCIETY

The discussion which follows is divided into two sections. The first section involves a theoretical description of the transition from our current state of unsustainability to a sustainably developing society. Thereafter, a practical way in which this transition may be facilitated is discussed.

5.1 THEORETICAL DESCRIPTION OF THE TRANSITION TO A SUSTAINABLY DEVELOPING SOCIETY

The goal is to move towards a state of sustainability, a state of constant "persistence of certain necessary and desired characteristics of the natural and the socio-political system (adapted from Robinson et al, 1989)" (cited Reed and Slaymaker, 1993 : 725). In order to move towards this state, we need to increase the potential or capacity of the socio-ecological system to endure - Reed and Slaymaker (1993 : 725) also define sustainability as the 'capacity of a system to endure'. Enhancing the socio-ecological system's potential to endure, will increase the scope for the fulfilment of individual potential in society - it will facilitate the reduction of shared socio-ecological constraints discussed in the section above. Increasing socio-ecological potential to fulfil individual needs in society, is akin to what Gorz (1994 : 11) calls, "winning from the megamachine (or the 'system' as Habermas calls it) broader and broader spaces in which the 'logic of life' can unfold freely..."

The aim, then, is to enhance socio-ecological potential to overcome the shared constraints faced by individuals in a bioregional community (Gorz, 1994; Cole, 1994). To achieve this, action should focus on degradation and depletion of the socio-ecological environment, (for example, limiting the accumulation of waste). Alternatively action should focus specifically on enhancing the quality and quantity of socio-ecological goods and services (Robert, 1995; Reid, 1995; Gorz, 1994; Pye-Smith et al, 1994; Murdoch, 1993). The first focuses more on moving away from our current state of unsustainability (thereby moving towards sustainabilty) and the second is more about moving towards sustainability and beyond (thereby tending away from unsustainability).

Although these two movements have the same result (movement towards sustainability and a sustainably developing society) the goals are different - the first focuses on remedial action and the second on proactive, innovative action. These alternating goals facilitate the transition from our current society to one based on a sustainable and later a sustainability developing lifestyle in which increasing individual needs are met. It is acknowledged that both types of movements could be occurring at the same time in different sectors of society, or indeed within the same sector, where remedial action and innovative strategies are implemented simultaneously. For example, the amount of pollution a factory produces can be decreased simultaneously with an education program on methods to decrease pollution.

Ecosystem degradation is decreased, while human potential is increased.

The simultaneous operation of these two movements constitutes the transition from an unsustainable, to a sustainable and then to a sustainably developing society. Ideally, as argued above, all economic activity should be subordinated to socio-ecological criteria - "Ecological necessities have to become the basic principles of economic activity (Gorz, 1994 : 33)". However, as stated above, the answer does not lie in an idealistic jump from our present industrialising economy to the imposition of an alternative mode of development (Gorz, 1994). This leads just as directly to an administrative-bureaucratic society, unable to adjust economic decisions to common interests of individuals (Gorz, 1994). Therefore a stage and process of transition is needed (Gorz, 1994). Logically, this transition consists of moving away from where we are (unsustainable development) to development which is sustainable and finally to a sustainably *developing* society. This transition is described by Gorz (1994 : 11, second parenthesis added) when he states:

> "The solution consists in winning from the megamachine (or the 'system' as Habermas calls it) broader and broader spaces in which the 'logic of life' [personal fulfilment of individuals in society] can unfold freely, and making the system compatible - by its orientations, its techniques, the limits of space it occupies and the restrictions and rules to which its functioning is subject - with that free-unfolding of life".

Therefore, the final stage (or goal) of a sustainably developing society, facilitates an increasing fulfilment of individual aspirations, in a socio-economic and political context which does not limit (for example, by ecological degradation) this fulfilment (Gorz, 1994).

5.2 PRACTICALLY FACILITATING THE TRANSITION

The point of departure, is where we are now - unsustainable development. Those activities which presently threaten the socio-ecological environment (such as air pollution) must diminish and disappear (Gorz, 1994). Firstly, focusing action on decreasing the present degradation of the socio-ecological (for example, by decreasing air pollution) will be discussed. The concept of 'The Natural Step', developed by a group of Swedish scientists, offers a framework in which this transition from an unsustainable to a sustainable society can begin (Robért, 1995).

'The Natural Step' is not only a process, but has also become an international federation of professional associations or networks (economists for the environment, medical doctors for the environment, scientists for the environment, business for the environment, etc) who cooperate on concrete development projects (Robért, 1995). These professionals all work from the same overall principles and 'mental model' for sustainability (Robért, 1995). They use different skills in different fields; however, all orientate their work towards the fulfilment of socio-ecological principles of sustainability which they have identified (Robért, 1995). The Natural Step, as a foundation, initiates and supports networks of professionals on an international scale (Robért, 1995). Its particular relevance in this context lies in the conceptual and practical framework it offers for the first half of the transition to a sustainably developing society - moving away from the current state of unsustainability.

Identifying the overall principles of the Natural Step System involves the identification of ecological connections, without ever having to resort to reductionism (reducing the whole into its detailed component parts) (Robért, 1995). This is facilitated by an initial identification of the fundamental principles at the beginning of cause and effect relationships in nature - the

first law of thermodynamics and the principle of matter conservation (Robért, 1995). Then the scientists elaborated on cause-effect relationships further downstream, where ecological interactions are more complex, as far as they could agree upon (Robért, 1995). Thereafter, the results were handed to decision-makers, who then took the system still further downstream (where the complexity is 'immense') in their own particular field of expertise (Robért, 1995). The Natural Step also applies this 'reduced complexity' process to social norms (Robért, 1995). Robért (1995) explains that this method has been effective for a number of reasons, including the following:

- "it is easier to gain an overview with principles than with details (downstream) because of the reduced complexity;
- professional people have detailed knowledge within their own fields, but often lack the wider overview of the ecological basis of their activities; and
- by stimulating professionals to interpret the upstream-information into concrete measures downstream, one creates engagement and mutual respect instead of opposition".

(Robért, 1995 : 2)

5.2.1 THE 'COMPASS'

The planning process involves the stages described below.

5.2.1.1. THE IDENTIFICATION OF SYSTEM CONDITIONS

The identification of 'preconditions' which will control all interactions with nature (development of any kind - including economic development) to ensure that these interactions with nature are sustainable. The system conditions are the 'compass' which guides economic/ecological planning and thereby provides a framework for the transition towards development which is sustainable (Robért, 1995).

From an analysis of the first and second law of thermodynamics, the process of photosynthesis and the principle of matter conservation, the scientists developed four general conditions necessary for the maintenance of the quality of ecosystems (Robért, 1995).

(i) System condition one:

The quality of substances from the Earth's crust present in nature must not systematically increase. This means that in a sustainable society, fossil fuels, metals and other materials must not be extracted faster than they are naturally replenished. Practically, this means a decrease in the economic dependence on metals, fuels and other minerals.

(ii) System condition two:

The quality of substances produced by society present in nature must not systematically increase. This means that in a sustainable society, substances, such as various waste products, must not be produced at a faster rate than they can be assimilated by nature. Practically, this entails a decrease in substances which are accumulating in nature and which are foreign to nature.

(iii) System condition three:

The physical basis for the productivity and diversity of nature must not be systematically diminished. This means that in a sustainable society, the productive areas of nature must not be diminished in quantity or quality, and we must not harvest more from nature than can be recreated. Practically this means a decrease in economic dependence on activities which encroach on the productive areas of nature e.g long-distance road transport.

(iv) System condition four:

Fair and efficient use of energy and other resources must take place. This means that basic needs must be met in the sustainable society, with the most efficient and fair use and distribution of resources. Practically this means a reduction of the economic dependence on activities which use a large amount of resources, in relation to the societal goals they fulfil - (do more with less).

These conditions were based on two broad principles, namely: that waste should not systematically increase and that the replenishment of environmental goods and services must be at least as large as the consumption (Robért, 1995). If either of these principles is not adhered to, an overall decrease or degradation in environmental goods and services results (Robért, 1995). This is compatible with Goodland's definition of environmental sustainability, which focuses on keeping the harvest rates of environmental goods and services within regeneration rates, and holding waste emissions within the assimilative capacity of the environment (Goodland, 1995).

Although social sustainability (seen here as the prevention of human suffering - due to conflict, poverty etc.) is contingent on environmental sustainability, (which supplies the conditions necessary for social sustainability), it is argued here that in order to apply the 'compass' to social norms, conditions which are necessary for social sustainability should be made explicit (Goodland, 1995). As the application of the system conditions described above prevents the degradation and depletion of environmental goods and services, system conditions should be developed which help to prevent human suffering - this suffering is what Goodland calls the 'depreciation' of social and human capital (Goodland, 1995). Enhancing human capital involves increasing levels of nutrition, health and education, thereby helping to prevent poverty and illness - human suffering (Goodland, 1995).

As biophysical scientists agreed on basic cause-effect relationships in the biophysical environment, social scientists should try to achieve a consensus on broad cause-effect relationships in the social environment (to be expanded into detailed, context-specific relationships by individual communities). Since social sustainability is dependent on environmental sustainability, it is likely that many of these may ultimately be contingent on the system conditions relating to the biophysical environment, described above (Goodland, 1995).

5.2.1.2 IDENTIFICATION OF THE NATURE OF THE INTERACTION WITH THE ENVIRONMENT AND THE TYPE OF INFORMATION NEEDED

The upstream information (information on the socio-ecological cause-effect relationships) needed is defined by the preconditions which have to be met in terms of a specified goal. For example, if a potentially polluting industry is to be established, one of the preconditions to be affected would be System Condition Two (substances must not be produced at a faster rate then the environment can assimilate). Therefore information is needed on the possible cause

and nature of potential pollution and the effect which this may have on the ecosystem into which it will be deposited - what effect will the potential pollution have on the assimilative capacity of the ecosystem? If System Condition Two is violated, alternative ways to achieve the goal must be found, or an alternative goal has to be identified.

The preconditions become the frame (controlling factors) for the identification of alternative subgoals (Robért, 1995). Subgoals are then chosen on their ability to lead to the goal (Robért, 1995). Understanding of the cause-effect interactions between human activity and nature allows us to steer economic activity in accordance with the system conditions and therefore towards a sustainable society (Robért, 1995). In the resource framework proposed, framework strategies are developed, based on international knowledge relating to the maintenance and enhancement of resources (such as the preconditions developed by Robért, 1995). This resource framework sets the context for the development of policies, programs and projects (PPP). This will be explained in Chapter Seven.

6. MOVE FROM A SUSTAINABLE TO A SUSTAINABLY DEVELOPING SOCIETY

6.1 THEORETICAL DESCRIPTION OF THE TRANSITION

Robért (1995) likens our current unsustainable society to a ship with holes in it. Filling up the holes means ensuring that the depletion and degradation of socio-ecological resources do not occur, by controlling development using the systems criteria (Robért, 1995). However, it is argued in this dissertation that we now need to sail the ship forward and steer it in the appropriate direction - we need to move from a sustainable society to a sustainably developing society. This brings us to the second movement of moving *towards a sustainably developing society*, rather than focusing action on moving *away* from unsustainable development.

If developing sustainably means addressing *increasing* human needs (or potentialities as Goodland, 1995 puts it), without degrading or depleting environmental goods and services, then we need to increase the potential of these environmental goods and services to meet human needs. This idea is reflected in Chambers' (1992 : 217) definition of 'sustainable', in which he states, 'sustainable' refers to the maintenance or enhancement of resource productivity on a long-term basis (Reid, 1995). This correlated with Gorz's (1994) hypothesis that ecological necessities need to become the basic principles of economic activity and that we need to win wider and wider spaces from the 'system' in which individual potentialities can be met. If the expansion of socio-ecological potential becomes the focus of economic activity, then the potential to overcome what Cole (1994) calls shared constraints (imposed by the socio-ecological circumstances) to meet individual aspirations, expands at a corresponding rate. Hence, 'wider and wider spaces' (increasing resource potential) are won in which development can take place (individual potentialities can be met).

This leads to a sustainably developing society:

- the society is *sustainable* because the aims of economic activity are subjected to increasing resource potential, to overcome the limitations of that potential in meeting human aspirations (therefore investing in a project which potentially degrades and depletes resources, is like investing in a project which will run at a loss! It will result in fewer human needs being met); and

- the society is *developing* because the increase in resource potential means *increasing* human aspirations can be addressed.

The question remains, however, as to how socio-ecological constraints to the fulfilment of individual potential are overcome - how socio-ecological *resource* potential is increased. Our definition of a resource gives an indication of how seemingly finite 'resources' may be increased.

6.2 PRACTICALLY FACILITATING THE TRANSITION

6.2.1 RESOURCE DEFINITIONS

In this section, the definition of a 'resource' will be investigated in order to examine how it is possible to 'increase' socio-ecological potential to meet human needs. It is argued that the 'appraisal' view of resources and the development of local knowledge facilitates this increase in socio-ecological potential, to overcome constraints to development.

Mather and Chapman (1995) look at the various definitions writers have attributed to the word 'resource'. These range from stocks of materials found in nature or the environment, (for example, coal or iron deposits), to human-centred definitions such as 'means of supplying a want', 'skill in devising expedients' which presume a human to be involved (Mather and Chapman, 1995). For some, resources are stocks which occur naturally in the environment for others, they are the result of human appraisal (Mather and Chapman, 1995).

The practical significance in the difference between these viewpoints is pronounced (Mather and Chapman, 1995). If resources are seen as merely stocks of material occurring in the natural environment, then they are fixed in quantity, finite and limits to their use exist (Mather and Chapman, 1995). If, however, the existence of resources are a consequence of human appraisal, then limits are not imposed by the non-human environment (Mather and Chapman, 1995). Limits in this case are determined by human perceptions of value and usefulness (Mather and Chapman, 1995).

Erich Zimmerman, one of the most notable contributors to the theory of resources, looked at how we can develop a new view of natural resources (Mather and Chapman, 1995). He supports the 'appraisal' or functional view and states, "a 'resource" does not refer to a thing or to a substance but to a function which a thing or a substance may perform (1951 : 7)" or "resources are not, they become (1951 : 51)" (Mather and Chapman, 1995). In his view, therefore, resources do not derive their character from any intrinsic chemical or physical properties, but rather as a result of human perceptions of the function they perform - their value or usefulness (Mather and Chapman, 1995). "Resources are defined by humans, rather than by nature (Mather and Chapman, 1995 : 3)".

Mather and Chapman (1995) call this view (Zimmerman) the perceptual view of resources, as opposed to a material one, which sees them simply as material stocks supplied by nature. An example which illustrates the perceptual view of resources in that of the snow on the Cairngorm Mountains in Scotland (Mather and Chapman, 1995). During the 1960's this snow became an environmental resource when it was used for skiing in the tourist industry (Mather and Chapman, 1995). What was previously merely a natural phenomenon (not a resource), became a resource, due to human perceptions that it could be used in some way (Mather and Chapman, 1995). The farmers in the area, however, probably continued to view the snow as a problem which decreased their farming productivity (Mather and Chapman, 1995). Therefore, a natural substance changed in perception to a resource over time, but

perceptions of its definition as a resource also varied across groups of people (Mather and Chapman, 1995). "It would seem that the 'material' view of resources, as stocks of substances, is untenable in this case (Mather and Chapman, 1995 : 4).

Another useful example cited by Mather and Chapman (1995) is that of the *Imperata* grassland which has replaced the forest in that area. Many planners may see this as a lost resource and an example of environmental degradation; however, local people regard the grassland as considerably more valuable than the forest as a source of thatch, fodder and hunting ground for edible wildlife (Mather and Chapman, 1995). Although the perceptual concept of resources applies again, Mather and Chapman (1995) point out that this does not mean that the material definitions of resources are not valid. They are meaningful if related to a particular perceptual definition of resources (Mather and Chapman, 1995). Snow, for example, which through the perception of its useful'ness' becomes a resource, still has a certain quantity, and other material characteristics (Mather and Chapman, 1995). For any perceptual definition of an environmental resource, material definitions in terms of its quantity in hectares, meters, etc exist (Mather and Chapman, 1995).

Zimmerman (1951 : 7) illustrates the interrelatedness of these two conceptions of resources, when he states that the material definition on its own leads to the "false impression of resources as something static, [and] fixed, whereas actually they are as dynamic as civilization itself" (Mather and Chapman, 1995). Likewise a perceptual view of resources is limited if not extended to its material measurements (Mather and Chapman, 1995).

Resources are therefore 'created' through our perception of them as such - the snow in the Cairngorms is an example of where an environmental resource was created (Mather and Chapman, 1995). The existence of resources, is therefore, intimately linked to cultural and social trends (Mather and Chapman, 1995). The creation of resources can result from a change in social values (thatch now being used as a building material, added value to grasslands as a resource) or can stem from changes in technology (natural materials which were not previously used for any specific human purpose can become useful) (Mather and Chapman, 1995). The discovery, for example, of the vulcanization of rubber, which increased its flexibility and durability, led to its use for, particularly, bicycle tyres (Mather and Chapman, 1995). Other examples include technological advancements such as silvicultural techniques, which have rendered land previously unsuitable for timber growing into potential areas for afforestation (Mather and Chapman, 1995).

This concept of resource creation is reflected in Reed and Slaymaker"s (1993) idea of 'resource development'. This they define as the "transformation of ecosystem components into 'useful stuff" for human consumption" and the maintenance of the productive capacity of the resource itself to meet long-term human needs (Reed and Slaymaker, 1993).

The creation and development of resources described above will hereafter be termed 'resource maintenance and enhancement'.

It can be argued that the appraisal view of resources does not recognise the intrinsic value of the environment. However, if the Gaia Hypothesis is applied to this view of resources, then biophysical and chemical processes which maintain the conditions necessary for life on earth are seen as transcendent of humankind (Young, 1990). Gaia transcends humankind and would exist if human beings existed or not (Young, 1990). Furthermore, if we accept that humans can alter the homeostasis that is Gaia, and create a new homeostasis - leading to the existence of a more 'environmentally seemingly' species - then the environment will be valued for its ability to support human life, even if it is not valued merely because it exists.

The question can now be asked as to what happens when people do not accept the Gaia Hypothesis and define resources in terms of their use to humankind. Will this not lead to the view that environmental matter exists only to serve man and man is therefore free to exploit it? This view is possible even if resources are given a material definition and they are seen as occurring in limited quantities in the environment - environmental degradation still takes place today, even after the limits to growth hypothesis. However, if economic activity is subjected to socio-ecological criteria, as proposed in this dissertation, then defining resources in terms of their usefulness and value is not a path to their destruction. This is because usefulness and value itself is determined in terms of the ability of the resource to overcome common socio-ecological constraints to the fulfilment of individual potential. Therefore substances only become resources if they in some way help to overcome socio-ecological constraints (limitations to the fulfilment of individual potential). This means that a substance could be termed a resource if it, for example, increases agricultural production (thereby helping to reduce poverty), is part of a technological process which reduces pollution emissions (thereby decreasing the risks of illness), is used to improve educational programmes or prevents the degradation of a natural area which is valued purely because of its existence. Resources are therefore defined in socio-ecological, not economic terms.

Furthermore, this maintenance and enhancement of resources, by the identification of ways in which they can be used to overcome common socio-economic constraints, is done within the system constraints explained above. This ensures that degradation and depletion of the earth's socio-ecological systems is prevented.

The enhancement of resources (by the implementation of an appraisal view of resources), reflects the point of what Schumacher had to say in his landmark publication 'Small is Beautiful' (1973) (Young, 1990). Schumacher (1973) spoke of changes which were primarily based on *ideas* (Young, 1990). Applied here, these ideas are different ways of using an environmental element or process ('good' or service) in order to create a resource, to address specific socio-ecological constraints to development. These ideas, applied in different circumstances, would lead to an increase in technological and non-technological choices in which shared constraints to the meeting of human potentialities (basic needs) can be overcome (Young, 1990). Or as Gorz (1994 : 11, parenthesis added) puts it, winning "broader and broader spaces (from the system) in which the 'logic of life' can unfold freely..."

The argument can be expressed that reliance of local resources and knowledge is a poor foundation for technological improvements (Timberlake, 1985). Timberlake (1985 : 189) asks the question, "How can peasant agriculture improve if improvements must be based on peasant knowledge?"

Timberlake (1985 : 189) answers his own question by stating, "in fact, projects based on, and building from local knowledge are the *only* way technical change can come about. Local farmers know enough to know what is better, to seize on it and use it." For this to happen, research will have to be focused on the development of various ways to overcome the shared constraints felt by the community - making researchers 'clients' to the community (to the farmers in this case) (Timberlake, 1985). Development, therefore becomes a learning process, not just the application of predetermined ways to meet goals (Reid, 1995).

7. SYNTHESIS

This development ideology is one which has been expressed in various forms, by numerous writers in a developmental and environmental field. The explanation of some of these commentators' ideas described below is presented, not only in support of the views expressed thus far, but also as a contextualising synthesis for the framework for resource maintenance and enhancement, to be presented in the next chapter.

In the late 1970's and early 1980's, Johan Galtung, previously professor of peace studies at Oslo University, studied and produced his first ideas on self-reliance, which he saw as essential in order to meet human needs (Reid, 1995). Galtung explained a strategy of self-reliance which consisted of five basic components:

7.1 MEETING NEEDS

The satisfaction of basic human needs, which is the first priority of development, must not depend solely on the market, and economic activity must not be limited solely to meeting basic needs (Reid, 1995). As the development ideology supported in this dissertation is one which is based on the overcoming of common socio-ecological constraints to the satisfaction of individual potentialities, meeting of basic needs is the first step in this process. Furthermore, meeting basic needs does not depend on the market, because the market is subjected to socio-ecological criteria - the market is used to help in finding ways to overcome the socio-ecological constraints to meeting basic needs. However, the actual meeting of basic needs is done through the use of local resources in the bioregion. An example of this could be the use of economic resources to enhance the potential of local resources, as materials for use in affordable housing development. Finally, economic activity would not be limited solely to the meeting of basic needs, as it is subjected to aiding the process of overcoming socio-ecological constraints to meeting *increasing* potentialities -once basic needs are met, development consists of addressing new needs.

7.2 RELYING ON LOCAL RESOURCES

A society wishing to become self-reliant must try to produce what it needs by relying on local resources (Reid, 1995). Galtung (1986 : 101, parenthesis added) recognises that this may be 'challenging', but he highlights the advantages when he states:

> "produce what you need using your own resources, internalizing the challenge this involves, growing with the challenges, neither giving the most challenging tasks (positive externalities) to somebody else on whom you become dependent, nor exporting negative externalities (such as pollution, depletion, top-heavy social formations) to somebody else to whom you do damage and who may become dependent on you".
>
> (Reid, 1995)

The development ideology and strategy proposed in this dissertation is one based on the Gaia hypothesis and on bioregionalism. This implies that communities are intrinsically linked to their natural environment and that they are defined in terms of this relationship to the local environment. This is facilitated through the criteria that communities are distinguished from one another in terms of their unique socio-ecological characteristics. The social and cultural survival of a particular community

is therefore determined by the maintenance of the socio-ecological characteristics which gave it its identity in the first place. In order to maintain the identity of the community as a whole, therefore, development needs to focus on the maintenance and creation of local resources.

Furthermore, the development strategy proposed stresses the need for economic activity to be subject to socio-ecological necessities. Therefore local resource maintenance and enhancement is the focus of development. Problems of pollution and environmental degradation which have already occurred are ecological constraints to the meeting of individual potentialities. As such, they are the terms of reference for developments (such as the restoration of degraded land) which aim to overcome the limitations (such as decreasing the amount of land available for agricultural production) they impose. Negative externalities are therefore internalized and the ability of local resources to meet the aspirations of the community is enhanced. In this way, the capacity for the community to be self-reliant is increased - or as Gorz (1994 : 11) states, "...broader and broader spaces" are won from the system, in which the 'logic of life' can unfold.

7.3 TRADE

Thirdly, when a society cannot produce all it needs from its own resources, it will have to trade - even a society which strives to be self-reliant (Reid, 1995). Galtung (1986) points out that trade is not necessarily in opposition to a strategy of self-reliance if it adheres to two rules (Reid, 1995). The first is that it should be as equal as possible in terms of the net balance of resource costs and benefits, including externalities (Reid, 1995). Galtung (1986) points out that this is easier to achieve if the exchange is intrasectoral, rather than intersectoral i.e exchange of primary products, or exchange of secondary products or exchange of tertiary products (Reid, 1995).This means that a relationship of interdependence, rather than dependence, is likely to evolve.

The second rule is that a country/community should be at least self-sufficient in the production of basic needs - i.e. it should not rely on trade for the supply of basic needs (Reid, 1995).

The development strategy supported in this dissertation is one based on the maintenance (system conditions) and enhancement (resource creation) of resources, in order to overcome common constraints to the fulfilment of individual potential. This is supported by Chambers' (1992 : 217) definition of 'sustainable', in which he states, "Sustainable refers to the maintenance or enhancement of resource productivity on a long-term basis" (Reid, 1995). Since, however, this resource enhancement and maintenance is based on local resources, it is acknowledged that as Galtung (1986) explains, there may be some resources which are needed and which are not available in the communities' bioregion. In this case it is important to recognise and acknowledge one of the key points of the 'Development from Within' model proposed by Fraser Taylor and Fiona Mackenzie for development in the 1990's. In this model, local communities striving to "develop from within" are not seen as isolated, autonomous entities, but rather as linked to other local economies in such a way as to strengthen their own local initiatives (Crush, 1995). Local communities are seen to obtain benefits from inter-regional, national and international exchanges, which include the exchange of information, resources and knowledge (Crush, 1995). These other local, regional and national economies to which the bioregion is linked, should, as explained in the point above, also be based on the maintenance and enhancement of local resources. Therefore if excesses are generated in the development of local resources, they can be used for trade (preferably

in the same sector) for resources which the bioregion lacks. Trade is always subject to socio-ecological necessities of the local community and should always be on an equitable basis, not leading to dependency of one party on another -

> "Self-reliance does not mean isolation. The need to trade means the interdependence of communi-ties, each of which respects the other's aspirations to self-reliance because one community cannot achieve self-reliance by exploiting another".
>
> (Reid, 1995)

More about making 'markets work for the people' is explained below. Firstly, however, the second 'condition' for trade mentioned by Galtung (1986) will be addressed. Galtung (1986) states that the meeting of basic needs should not rely on trade (Reid, 1995). This idea is supported in this dissertation, as it is believed that relying on resources from outside the bioregional community, in order to meet basic needs, places the community in a precarious position. This is because the bioregional community doesn't have control over the resources it is relying on and is therefore more vulnerable to what Edgren (in Timberlake, 1985) calls 'external shocks'. Goesta Edgren, pointed out how donors had made African agriculture more vulnerable to 'external shocks', by increasing reliance on sensitive hybrids which require more water and imported inputs (Timberlake, 1985). Meeting basic needs becomes reliant on an external resource, controlled by an external source and not especially adapted to the local environment. This leads to its 'vulnerability' to 'external shocks', leaving the community in a less secure position (Timberlake, 1985).

Security, in terms of sustainable livelihood security is defined by Chambers (1992 : 21) as referring to "... secure ownership of, or access to, resources and income earning activities, including reserves and assets to offset risk, ease shocks and meet contingencies " (Reid, 1995). This supports the notion that basic needs should be met using local resources which the community has secure ownership of and access to (Reid, 1995).

Meeting basic needs then becomes an issue of local resource maintenance and creation. Where local resources are inadequate, local initiative needs to look for new *ways* to overcome this shared constraint - new ways to meet individual potentialities - the essence of the nature of development proposed in this dissertation. Development then becomes truly sustainable, since it is not only based on local resources within a framework of 'system constraints' to their degradation, (resource maintenance) but is also founded on local initiative to 'enhance' or 'create' resources (resource creation).

7.4 MORAL CRITERIA

Fourthly, self-reliance allows a community to consider moral criteria when making development decisions. As the development strategy advocated in this dissertation supports the idea that all economic and other development decisions should be subject to socio-ecological criteria, these decisions would reflect the values of the community. Action is based on overcoming common socio-ecological constraints to the fulfilment of individual potential, which includes moral and spiritual potential.

7.5 SCALE

Finally, self-reliance can apply on any scale, be it, for example, local, regional, national or between groupings of nations in a continent or sub-continent.

8. CONCLUSION

In summary, development which is based on the concept of bioregionalism and focuses on resource maintenance and enhancement calls for the following:

- the social unit of development being defined in terms of cultural and/or ecological factors;
- reliance primarily on local resources and knowledge ;
- development which is defined, implemented and controlled by the residents of local communities' and rooted in the communities values and institutions;
- development which is tailored to the basic needs of a specific community, but is not limited solely to meeting basic needs, ;
- an awareness of shared socio-ecological constraints to meeting needs;
- identification of where the fundamental principles at the beginning of cause-effect relationships in nature - which form the preconditions to be met for the transition to a sustainable society - are being violated, thereby constraining development based on local resources;
- identification of more specialised subgoals which led to overcoming the constraints to development the maintenance or enhancement of resources, caused either by unsustainable practices or the need for resource maintenance and enhancement (identification of new ways of using resources to meet needs);
- a continual identification of ways in which to address socio-ecological resource potential (development as a learning process);
- development which does not depend solely on the market;
- a recognition of diversity and the mobilisation of various individuals and groups with the community;
- linkages (knowledge and resources) to the regional, national and international community which are used to strengthen *local* institutions and which are sustainable; and
- the strategy of self-reliance should apply at any level, for example, the local, regional, national or international, as in groupings of nations (for example, the Southern African Development Community (SADC).

These factors form the criteria for the institutional and procedural aspects of implementing such an approach to development, presented in the chapter which follows. The institutional and procedural aspects form the framework for resource maintenance and enhancement proposed in this dissertation.

CHAPTER SIX

CHAPTER SIX

INSTITUTIONAL IMPLICATIONS

1. INTRODUCTION

In this chapter, the institutional implications of the view of development supported in this dissertation, will be discussed. The resource framework proposed for the maintenance and enhancement of resources is based on addressing *shared* socio-ecological constraints to human development. Therefore it is essential that co-ordinated identification of shared socio-ecological constraints is facilitated. In this chapter, the institutional implications of this requirement are discussed. The chapter is divided into two sections. The first is a brief discussion of the theoretical need for alliances between conflicting interests in society, and the second is an examination of a practical way in which such alliances may be facilitated.

2. THEORETICAL NEED FOR ALLIANCES

The resource framework proposed in this dissertation is based on bioregionalism. The bioregion is a conceptual delineation of an area of common interest of human inhabitants, as they rely on common natural resources for meeting individual aspirations (Young, 1990). This concept, applied in a context in which individuals, society and the natural environment are seen as interdependent, leads to the need to identify 'shared constraints' to the fulfilment of the individual aspirations mentioned above. Individual potential cannot be fulfilled in isolation as individuals, society and the natural environment are interdependent. Therefore at the level of a bioregion (community level) individuals need to collectively identify constraints to the fulfilment of their potential, which is shared with others.

Once common constraints are identified, collective action is initiated in order to alter societal behaviour and facilitate the eradication of the constraint (Cole, 1994). What is necessary, therefore, is the means whereby individuals (or in a large bioregion interest groups such as a Housing Action Group) can meet and communicate their aspirations and the constraints to their fulfilment and agree on ways in which to overcome these constraints. To facilitate this, institutions are necessary which facilitate alliances (i.e.agreement(s) to cooperate (The Concise Oxford Dictionary, 1990) between individual interests (Cole, 1994). For this reason the socio-political agenda for development which is sustainable in this context is called 'transforming institutionalist' (Cole, 1994).

In summary,

> "If people are understood to be creative beings who are socially interdependent, then attempts to build alliances between competing social interests may go some way to resolving the problem of sustainable lifestyles".
>
> (Cole, 1994 : 236)

This institutional 'gathering' of people to identify shared constraints and agree on ways to overcome them is made explicit by Pye-Smith et al (1994), who identify this as one of the ingredients for effective locally-based development. They explain that even when local communities have a reasonable amount of control over local resources, they require co-ordination between individuals and interest groups to meet common goals (Pye-Smith et al, 1994).

3. PRACTICALLY FACILITATING ALLIANCES

Getting organised and coordinating individuals and interest groups to facilitate action, requires what Pye-Smith et al (1994 : 187) call a 'catalytic impulse' - " the social equivalent of the grain of sand that prompts an oyster to make a pearl. "The 'catalytic impulse' should coordinate various social actors towards addressing common constraints and initiating sustained socio-political change" (Pye-Smith et al, 1994; Aburge, 1994). This can begin by institutional development to facilitate the gathering of the community in the bioregion together to address shared socio-ecological constraints, or to systematically explore local needs and resources (Pye-Smith et al, 1994). Such an institution will be called a bioregional coordinating institution.

This body should facilitate development and approach shared constraints, in a manner which aids the implementation of a participatory and flexible development for sustainability, according to the criteria listed at the end of the previous chapter. This participatory, flexible and locally-based approach to development is one which has commonly characterised the work of Non-Governmental Organisations (NGO's) worldwide (Pye-Smith et al 1994; Brutus, 1996; Timberlake, 1985; Abugre, 1994).

NGO's have already shown this approach to be successful in meeting certain needs in many African countries.

> "The African crisis, while it has highlighted the failures of the government and multilateral aid agencies, has also highlighted the success of the NGO approach".
>
> (Timberlake, 1985 : 188)

The overall NGO approach is illustrated in UNEP's (1984) statement that:

> "Their [NGO's] high record of success is related to the small-scale and local direction of their projects and the requirements for local community participation, as well as their flexibility in operation and their ability to learn from mistakes. The dominance of field activities gives these activities an impact out of proportion to the money invested" (Timberlake, 1985 : 188).

Abugre (1994) identifies three aspects characterising strong NGO's which facilitate sustained development. These aspects correlate with and summarise the criteria for institutional development identified at the end of the previous chapter. These are:

- a participatory institutional environment;
- participatory methods and approaches; and
- a participatory learning environment (Abugre, 1994 : 131).

3.1 A PARTICIPATORY INSTITUTIONAL ENVIRONMENT

If people are to overcome constraints to meeting their potentialities (or, as Abugre, 1994 : 131, puts it, "'gain freedom' to act and share with others") institutional support is vital (Aburge, 1994). Furthermore, if local innovative action and practical testing of new ideas (described in this dissertation) is to take place, a participatory institution which encourages the expression of a variety of skills, is required (Abugre, 1994). Abugre (1994) emphasises

that a participatory institution should place its trust in people, learn from them, and enable them to enhance their skills self-esteem and independence - an idea which correlates with the view, adopted in this dissertation, of individuals as interdependent with society. The coordinating role between conflicting individual and group needs, which is listed as a criterion for institutional development (chapter five), has been performed effectively in participating NGO's. Antony Brutus (25/03/96), a researcher in community development, reported on how NGO's provide 'social cohesiveness' and "marshal independent action and protect the quality of our environment". The role which NGO's play as indicator of the "vitality and creativity of our society (Brutus, 25/03/96) is an important one. This is especially so when individuals are seen as having the ability to overcome shared constraints to meeting individual potentialities, through **coordinated** action to alter societal behaviour (Cole, 1994).

3.2 PARTICIPATORY METHODS AND APPROACHES

Participatory methods and approaches' refers to the methods of interaction between the community and the organisation, as well as within the organisation itself (Abugre, 1994). Participatory methods are essential in collecting, analysing and applying information related to development constraints and proposed action (Abugre, 1994). Furthermore, community participation is vital in monitoring, evaluation and determination of how lessons learnt will be implemented (Abugre, 1994). Finally, such methods are an important means of ensuring that the learning process is at least partially based on local knowledge and experience (Abugre, 1994). These participatory methods and approaches facilitate development which is defined and implemented by the community, which reflects community values and needs, and which is based on local resources and knowledge - criteria listed (Chapter Five) as necessary for institutional development which is sustainable.

3.3. A PARTICIPATORY LEARNING ENVIRONMENT

A participatory learning environment implies that the institution should facilitate development as an interactive learning process, as listed in the criteria in Chapter Five. The co-ordinating institution should facilitate this learning process in which people learn from the experience of the institution, and various interest groups and individuals inject new ideas into the coordinating institution (NGO). "In other words, grassroots people learn from the organisation (values and expertise) at the same time as they feed new knowledge, ideas and values into it, thereby playing an important part in shaping it" (Abugre, 1994, in Cole : 131). The coordinating institution should include, inter alia, interest groups, the proponents, consultants, research scientists and resource managers, in this process (Beanlands and Duiker, 1983). In its role of facilitating the development of knowledge applicable to development, the co-ordinating institution would:

- Review the policies and procedures of the co-ordinating institution and suggest changes required to support a more sustainable approach to addressing common socio-ecological constraints. The institution should design policies and monitor and review their implementation, in order to build up a knowledge base of practices for resource maintenance and enhancement, and identify deficiencies. This leads to a refinement of the process of addressing the shared socio-ecological constraints to development;
- Develop and maintain a knowledge base, which consists of a central storage and retrieval system of all local assessment reports, documents prepared by the institution and all relevant local and international research literature;

- Assist the coordinating institution in prioritising socio-ecological constraints to be addressed, according to the knowledge base and its deficiencies. The current state of knowledge relating to maintenance and development of each socio-ecological constraint should play a role in prioritising and ordering the sequence for addressing these constraints. As knowledge pertaining to certain socio-ecological factors and their maintenance and enhancement increases, new constraints, and those clouded in uncertainty as to how to approach them, can be increasingly addressed; and
- Encourage regular meetings between its members to investigate current international and local developments in policies and procedures relating to development which is maintains and enhances resources. (adapted from Beanlands and Duinker (1983 : 9).

Through the aspects listed above, the coordinating institution should facilitate the following: responsiveness to the needs of the community in the bioregion; and interactively identifying common constraints to development and mobilising socio-ecological resources to address these constraints (Abugre, 1994). This institution facilitates partnerships between people to address common constraints. This is congruent with developing sustainably within a context of participative involvement of the individual in adjustments made to society (Cole, 1994; Abugre, 1994). One writer from Guyana commented that sustainability called for us to "strike a sustainable balance between 'eco' and 'ego' systems: to look at the world and each other with a new sense of partnership ..." (cited Reed and Slaymaker, 1993 : 732).

The criteria listed for institutional development are therefore congruent with the approach to development adopted by successful NGO's. The criteria are then in line with current trends, as NGO's are increasingly playing a more active role in development all over the world (Brutus, 1996). Anthony Brutus (1996) reported in the Cape Times on 25/03/96 that:

> "Healthy Non-Governmental Organisations (NGOs) in Europe, SA (South Africa) and almost anywhere else in the world demonstrate that they are an essential part of a vibrant society."

3.4 THE DEVELOPMENT OF PARTNERSHIPS

Partnerships are required, not only between conflicting interests for the identification of shared socio-ecological constraints within the bioregion, but also between the various bioregional coordinating institutions. Ideally, then, these partnerships would occur between bioregions and facilitate dealing with shared constraints caused by socio-ecological resources which cross bioregional boundaries. Since, however, the boundaries which presently exist are political ones and are not based on shifts in species and on areas occupied by indigenous communities, the existing local authorities will be considered bioregions.

To implement the local, resource-based development advocated in this dissertation, then, local authorities should consider themselves the coordinating institutions representing a bioregion and adhere to the 'rules' of endogenous development, described in Chapter Five above. From this point, therefore, bioregions will be referred to as local authority areas of jurisdiction, and the functions of the bioregional coordinating institution will be performed by the local authority. By implication, then, local authorities should therefore facilitate development in an approach which correlates with that adopted by NGO's discussed above. This is not a new idea or a utopian ideal. Timberlake (1985 : 189) states that "agencies and governments, to avoid past errors, are either going to have to work more *through* NGO's and

small organizations, or work more *like* them - or maybe both". Furthermore, international experience shows many examples of collaboration of local authorities and NGO's (Bernstein, cited in The Cape Times 17/07/1996).

> "In Latin America municipal governments have formed collaborative ventures with NGO's, hoping to emulate NGO flexibility, innovation, client responsiveness and pragmatic effectiveness. In Colombia, for example, NGO-municipal collaboration has become routine in local planning, primary health care, housing, garbage collection and recycling, micro-enterprise promotion, daycare and urban transport"
>
> (Bernstein, cited in The Cape Times 17/07/1996)

More detail on local authorities performing their functions as a bioregional co-ordinating institutions is given in the chapter which follows.

The partnerships between bioregional coordinating institutions, then, become partnerships between local authorities in a particular region. Such a partnership allows the local authority to benefit from the experience and knowledge gained by other local authorities. An institutional mechanism which facilitates coordination between the local authorities is therefore proposed. This function can be performed by existing regional authorities, which should exhibit the same characteristics (based on NGO approach) as those proposed for the local authority (bioregional coordinating institution). It must be recognised that this function is separate from the regional authorities' role of identification of socio-ecological constraints, which are typically *regional* in nature.

3.4.1. PARTNERSHIPS AT DIFFERENT SCALES

This leads to the point that socio-ecological constraints manifest themselves at different levels, and should therefore be identified at each level (Reed and Slaymaker, 1993). Reed and Slaymaker (1993) identify four levels as illustrative of various scales at which socio-ecological constraints are experienced. These are the planetary, global, regional and local scales (Reed and Slaymaker, 1993). At each level different constraints to the fulfilment of individual potential in society are evident. Before partnerships between community institutions and various levels of government are discussed in greater detail, socio-ecological constraints to development at various scales will be examined. It should be noted, however, that the discussion below of various scale-dependent socio-ecological constraints is an illustrative, not an exhaustive, account.

On the planetary scale the issues in question are, for example, the maintenance of biological and geochemical processes which sustain life on the planet (Reed and Slaymaker, 1993). Any degradation or depletion of planetary processes would become a constraint because it would threaten life on earth itself (Reed and Slaymaker, 1993). This correlates with the view of humans and the environment as interrelated, reflected in the Gaia hypothesis (Reed and Slaymaker, 1993). Furthermore, it ensures that at the planetary scale, human activities are subservient to the environment (Reed and Slaymaker, 1993). When applying the 'compass' of the (Natural Step) concept discussed above, partnerships at the planetary scale serve to identify the system conditions necessary to guide development and ensure that life-sustaining processes are not threatened. Such partnerships have already been initiated by the Natural Step Foundation, which through the work of scientists world-wide, are identifying fundamental principles and (system conditions) necessary for the persistence of essential life-sustaining processes (Robért, 1995).

On the global scale constraints to the fulfilment of individual potential, include issues such as the inequality of resource distribution and inadequate social welfare as a result of that unequal distribution (Reed and Slaymaker, 1993).

These global constraints manifest themselves in constraints such as an inadequate provision of basic human needs and the unequal distribution of resource benefits (Reed and Slaymaker, 1993). Reed and Slaymaker (1993 : 730) state that:

> "Sustainability on a global scale, therefore, extends obligations to human beings across class, gender, culture, geographic locality, and alternative lifeways, not just to nonhuman environmental components as discussed at the planetary scale".

The United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in Brazil (1992) is an example of cooperation on a global scale (Reed and Slaymaker, 1993). The final influence of this conference is not yet clear; however, it was an attempt by the global community to address environment and development goals on a global scale (Reed and Slaymaker, 1993).

Regions are defined here as "organised spatial systems on a subnational scale" (Reed and Slaymaker, 1993 : 732). Typical constraints to development on the regional scale include issues such as the depletion of the natural regenerative capacity of renewable resources, the use of the environment to assimilate waste products and uneven patterns of rural and urban development (Reed and Slaymaker, 1993). Discussions concerning sustainability in development at this level often relate to, for example, the development of rural communities and their relation to their urban heartland (Reed and Slaymaker, 1993).

On a local scale addressing socio-ecological constraints generally involves decreasing environmental degradation and depletion, thereby enhancing resource potential to fulfil individual needs in society (Reed and Slaymaker, 1993). This could involve subjecting economic activities to environmental criteria, such as those proposed for organisations adhering to the 'Natural Step' concept. The local implications of global preconditions for sustainability involve action such as decreasing dependency on: substances which are accumulating in the environment; on activities which encroach on nature, on metals, fuels and other minerals and on activities which use a large amount of resources in relation to the societal goals they fulfil (Robért, 1995). Furthermore, addressing socio-ecological constraints at this level involves resource creation and development, maintaining and enhancing the productive capacity of the resource itself (Reed and Slaymaker, 1993).

It is emphasised here that the discussion above and the examples of scale-dependent socio-ecological constraints is meant to be illustrative, not comprehensive. It is acknowledged that these constraints are not necessarily confined to a specific scale, and that a particular issue could have various dimensions which manifest themselves at various levels.

Since socio-ecological constraints to the fulfilment of individual potential occur at different scales, the identification of shared constraints should occur at different scales. This has implications for the role of the institutions facilitating development. It means that local authorities should identify their shared socio-ecological constraints to developing sustainably, as should regional authorities and national authorities. Therefore, *shared* constraints to local development are dealt with by a coordinating institution between local authorities - traditionally the role of the regional authority. The regional authority should also identify its scale-dependent socio-ecological constraints to development. Shared constraints to

development felt by regional bodies are then dealt with by the national government. The system can be expanded to international level, where national governments identify their socio-ecological constraints to development and those which it shares with neighbouring countries (for example, the Southern African Region) are dealt with by a coordinating institution on a sub-continental level (for example, the Southern African Development Community [SADC]).

Local government therefore performs the role of a coordinating institution for addressing socio-ecological constraints shared between individuals. Furthermore the local authority participates on a body which identifies and addresses shared socio-ecological constraints between local authorities. This body may be the regional authority, which in turn performs three main functions: coordinating institutions for addressing socio-ecological constraints shared between local authoritities; identifying scale-dependent socio-ecological constraints on a regional scale and participating on a body which identifies and addresses shared socio-ecological constraints between regional authorities - traditionally the role of national government. National government then coordinates the identification of shared regional socio-ecological constraints, identifies national socio-ecological constraints and participates in the subcontinental and international debates, conferences and agreement addressing socio-ecological constraints on a global and planetary scale.

4. CONCLUSION

In this chapter, the institutional implications of the view of development outlined in the previous chapter have been discussed. Coordinating institutions, which facilitate the identification of shared socio-ecological constraints to development, are proposed. The area of jurisdiction of these institutions should ideally be based on a specific bioregion. For practical purposes, however, it is proposed that local, regional and national governmental boundaries delineate the jurisdictional areas of the coordinating institutions. Each local, regional or national area should therefore view itself as a bioregion, adhering to the principles of endogenous development. These coordinating institutions, consisting of interest groups in society (for example, governmental bodies, NGO's, community groups, private sector etc.) should be developed for all levels of government, to address scale-dependent socio-ecological constraints to individual development. In the chapter which follows, the procedural implications of the institutional framework described, will be explained.

CHAPTER SEVEN

CHAPTER SEVEN

PROCEDURAL IMPLICATIONS

1. INTRODUCTION

In this chapter, the procedural implications of the resource framework developed, will be discussed. The reader is referred to the following:

- Appendix A - Hypothesis development (A)
- Appendix B - Hypothesis development (B)
- Appendix C - Hypothesis Implementation and Refinement

From the criteria listed at the end of Chapter Five and the discussion on institutional development above, the following four points are a summary of the procedural requirements of the resource framework proposed in this dissertation:

- it must be seen as an interactive learning process, to overcome local socio-ecological constraints to the fulfilment of individual potential;
- it must facilitate the identification of shared socio-ecological constraints (See Appendix A - Hypothesis Development [A]); and
- it must facilitate the identification of ways to maintain and/or enhance resources to address the socio-ecological constraints to individual fulfilment (See Appendix B - Hypothesis Development [B]).
- it must facilitate the testing of hypotheses through implementation (see Appendix C - Hypothesis Implementation).

The facilitation of these requirements must be in a participatory manner, rooted in local institutions, values, resources and knowledge, tailored to the specific needs of the community. Each of the requirements will be discussed separately in the section which follows.

Hypothesis development and implementation will be discussed separately in section 4 and section 5. It is recognised, however, that these are interrelated processes, which would in practice occur simultaneously.

The case study presented in the next chapter serves as an example of the concepts and procedures explained below.

2. DEVELOPMENT AS AN INTERACTIVE LEARNING PROCESS TO OVERCOME SHARED SOCIO-ECOLOGICAL CONSTRAINTS

Viewing development as a learning process, as discussed above, recognises our limited knowledge and capabilities to predict the socio-ecological impacts of human action (Beanlands and Duinker, 1983). It involves viewing the project, program and policy as an experiment to verify certain hypotheses. Beanlands and Duinker (1983 : 4) state "...it may be necessary to consider the entire development project in an experimental context and design baseline studies, predictions and monitoring programmes around the need to verify hypotheses". Context-specific hypotheses are developed from framework strategies. These framework strategies are expressed in terms of projects, programs and policies, relating to a specific temporal (now!), spatial, governmental (local, regional or national) and sectoral (the resource

in question) context. Two types of framework strategies are proposed:

- those based on the international knowledge base for the maintenance and enhancement of resources, which have not been tested (by means of project, program and policy implementation) in the local context - international framework strategies; and
- those based on the international knowledge base for the maintenance and enhancement of resources, which have been tested in the specific local context -resource strategies.

2.1 RESOURCE STRATEGIES

Resource strategies are 'tested' (implemented) projects, programs and policies (PPP), which have succeeded in maintaining and enhancing a specific resource in a specific spatial, governmental and temporal context.
The development of these 'resource strategies' may be likened to Sectoral Environmental Assessment (EA). Goodland and Tillman (1995 : 16) define Sectoral EA as "the process of examining potential environmental and social implications of all or most of the potential projects proposed for the same sector". There is, however, an important difference. The resource framework proposed here is based on the maintenance and enhancement of local socio-ecological resources, in response to *existing* shared socio-ecological constraints. Resource strategies list the previously tested means of achieving this. Sectoral Environmental Assessment, however, looks at the way in which resources can be used to meet a *perceived* need. In other words, instead of looking for ways to make environmental factors and processes respond to increasing needs, it is proposed that needs should be defined in terms of environmental resources, indicating where they commonly constrain the fulfilment of individual aspirations. This subtle difference acknowledges and responds to the criticism, presented in Chapter Two, of the current concept of sustainable development's inadequate integration of environmental and developmental goals.

The following example illustrates this difference. Goodland and Tillman (1995) point out that a Sectoral EA would begin with the need to meet projected power demands using optimal methods, such as energy conservation and the use of renewable energy. Implementation of the resource framework proposed, however, would begin with a list of tested ways in which energy can be maintained and enhanced (resource strategies), to address currently shared energy constraints to individual development. This reduces the uncertainty involved in prediction, as *present* needs are addressed, but in a way which, at a minimum, maintains the resource, and ideally enhances it (increases its potential to meet needs in some way). Therefore the ability of future generations to meet their own needs is at least the same as the present generation's ability to meet their needs. It can be argued that the ability of future generations to address their socio-ecological constraints in this framework will always be greater than that of present generations. This is due to a constant increase in knowledge, as a result of continual project 'experimentation' (implementation).

These resource strategies, then, are alternative PPP's, with a proved ability to maintain and enhance local socio-ecological resources. The resources are then used to address shared socio-ecological constraints to the fulfilment of individual potential in society - as proposed by Cole (1994) and discussed in Chapter Four. The use of resource strategies, as proposed here, shares many advantages with the implementation of Sectoral EA's. It allows, for example, the gathering of data relating to particular resource, thereby aiding in the development of projects (Goodland and Tillman, 1995). Resource strategies express this data in terms of its relevance to the maintenance and enhancement of a particular resource. In this

manner, data is transformed into knowledge on locally applicable strategies for the maintenance and enhancement of resources.

This context-specific resource base is developed for all levels of government. In summary:

- context-specific hypotheses (PPP's) are developed from the framework PPP strategies (these are either locally 'tested' resource strategies or locally 'untested' international strategies for resource maintenance and enhancement;
- a resource strategy is a strategy which has been tested in a particular spatial and temporal context, for the maintenance and enhancement of a local socio-ecological resource;
- should no resource strategies exist, the international framework strategies pertaining to the maintenance and enhancement of a particular resource are considered;
- should these international strategies maintain and/or enhance local resources, they become local resource strategies from which possible frameworks for the development of new context-specific PPP's are selected.

The process of refinement of broad international sustainable practices, into local resource strategies, is reflected in the 'backcasting' of the 'Natural Step' concept described in Chapter Five. In summary Robért (1995) explains that this process consists of identifying fundamental cause-effect relationships occurring 'upstream' (practices which have been shown internationally to lead to the maintenance and enhancement of resources). These, then, form the framework strategy (broad goal) for dealing with socio-ecological constraints to development. Thereafter, subgoals (which, through the implementation of PPP's, apply the broad international strategies to the local context) are determined in order to test the 'upstream' (international) strategies in a specific spatial context. In other words, the 'upstream' relationships are the goals which form the framework in which context-specific subgoals (resource strategies) are developed further 'downstream'. These sub goals (resource strategies) then become the framework for the development of present PPP's. These present PPP's re-test the resource strategies in a new spatial and/or temporal context.

The 'state of knowledge' referred to in this resource framework gives an indication of the degree to which framework strategies, relating to a particular resource, have been locally tested. The current state of knowledge plays a role in prioritising socio-ecological constraints to development. Socio-ecological constraints, pertaining to resources for which local resource strategies exist, are prioritised over those for which no such strategies have been developed. The state of knowledge indicates which constraints are more likely to be dealt with in a manner which presently maintains and enhances resources (Beanlands and Duinker, 1983). Beanlands and Duinker (1983 : 4) express this idea when they state:

> "In other words, the ranking of required environmental studies by priority should reflect, in part, the extent to which the science of ecology has developed a conceptual or theoretical knowledge base for the particular phenonema of interest".

In this resource framework, this criterion for prioritising socio-ecological constraints to be tested (PPP implementation) is extended to include a reflection of the extent to which *locally* applicable knowledge has been developed, as explained above.

Resource strategies, like Sectoral EA's, therefore, help to prioritise action, in a sequence which ensures that the "environmentally better projects are taken up before the environmentally weaker projects (Goodland and Tillman, 1995 : 17). "Environmentally better projects", within the context of the resource-based development supported here, would be those which have been shown to effectively maintain and enhance a particular resource in a specific context i.e. those for which resource strategies have been developed. As knowledge pertaining to the maintenance and enhancement of certain socio-ecological factors increases, and more resource strategies are developed, more constraints can be increasingly addressed.

This method embraces the 'precautionary principle', which means that "where there is uncertainty about the long-term consequences of current resource use, we should err on the side of caution (O'Riordan, 1995 : 84)". The precautionary principle was developed in order to address uncertainty with regard to environmental elements and processes, and their reactions under project, program and policy conditions (O'Riordan, 1995). This principle will not be discussed in detail here, and the reader is referred to O'Riordan (1995) for a fuller explanation and for examples of its implementation. However, the precautionary principle is embraced in the procedure described in this dissertation, in the following way. By prioritising the maintenance and enhancement of resources in terms of, inter alia, the state of knowledge relating to each resource, action in advance of proven hypotheses for sustainable practice is not only strongly discouraged, but unlikely to occur. Socio-ecological constraints, which relate to resources for which limited context-specific knowledge is available (limited or no resource strategies), are given a low priority for action.

Each coordinating institution retains PPP's which lead to a specific resource's maintenance and enhancement, in their particular context. In its co-ordination role of addressing common constraints across local authority boundaries, the regional authority, for example, would retain what commonly (common to all *local* authorities) leads to resource maintenance and /or enhancement. Similarly, the national authority retains what commonly (common to all *regional* authorities) leads to resource maintenance and/or enhancement.

In dealing with regional socio-ecological constraints to development , for example, the regional coordinating institution should establish a broad regional body of knowledge of internationally recognised sustainable regional practices. This body of knowledge should be refined in the manner described above, to apply to a specific regional context (for example, the Erongo Region in Namibia). The national authority should do likewise. This reflects the need to address socio-ecological constraints in such a way as to acknowledge their variations according to the scale on which they occur, as discussed in Chapter Six.

The local, regional and national scales described above are used as illustrative of the proposed processes for all scales.

In summary, then, this process of testing (by PPP implementation) internationally recognised local, regional and national strategies for resource maintenance and enhancement, facilitates the establishment of a locally regionally and nationally applicable knowledge base of resource strategies. These strategies reflect the means by which specific resources are maintained and enhanced on a particular level of government at a particular time (they are constantly being altered in line with the results of PPP implementation) and at a particular level of coordination (project, program or policy level). Those socio-ecological constraints for which there is more context-specific knowledge (resource strategies), are dealt with first, embracing uncertainty through the precautionary principle.

The maintenance and development of such a knowledge base requires:

- regular review of the projects, programs and policies of the coordinating institution and identification of more effective approaches to addressing socio-ecological constraints;
- the development and maintenance of a central storage and retrieval system of all local environmental assessment reports and all relevant local and international research literature; and
- regular meetings of the coordinating institution to investigate current international and local developments in practices (PPP's) relating to the maintenance and enhancement of resources.

(Adapted from Beanlands and Duinker, 1983)

3. THE IDENTIFICATION OF SHARED SOCIO-ECOLOGICAL CONSTRAINTS (HYPOTHESIS DEVELOPMENT [A])

The identification of shared socio-ecological constraints to development, involves the following:

- the desegregation of the community in terms of various interest groups; and
- the implementation of strategies to coordinate the identification of their shared socio-ecological constraints - these constraints are expressed in terms of the limitations a particular resource places on human development.

This stage will be called social assessment, to distinguish it from Social Impact Assessment (SIA). SIA is defined by Burdge (1995 : 2) as "the systematic analysis in advance of the likely impacts a development event (or project) will have on the day-to-day life (environmental) of persons and communities". Social assessment, as described below, however, provides the sieve for the identification of socio-ecological resources, which are constraining development. It is not the identification of the social impacts of a preconceived project, but rather the social scoping exercise which informs the goals of the environmental assessment, thereby indicating which resources are to be maintained and enhanced. As stated in Beanlands (1983 : 66) "We definitely need a set of formal sieves to focus on the ultimate ecological concerns."

The social assessment described below is, therefore, a type of social scoping, as identified by Beanlands and Duinker (1983). Scoping is defined in the 1979 Regulations under the National Environmental Policy Act (NEPA) as a requirement that agencies undertake "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (Council on the Environmental Quality, 1980) (Beanlands and Duinker, 1983). Scoping provides the means by which the public is involved in "translating the policy wording of NEPA, that is 'restoring and maintaining environmental quality to the overall welfare and development of man', into tangible direction ..." (Beanlands and Duinker, 1983 : 66).

3.1 DESEGREGATION OF THE COMMUNITY

In order to identify shared socio-ecological constraints, it is necessary to desegregate the community in terms of various interest groups (Cock, 1994; Fowkes et al, 1995). This

desegregation of the community to identify the interests of various groups is suggested by (Cock, 1994 and Fowkes et al, 1995). Cock (1994 : 24) states that "Desegregating the impact assessment by location, income, occupation and ethnicity will identify any groups who are disproportionately affected by policy". The notion of *'shared'* socio-ecological constraints, adapted from Cole (1994) further aids in decreasing disproportionality in the identification of constraints to be addressed.

Fowkes et al (1995:5) state that the

> "awareness of 'desegregation' which recognises the complexities of social structures and seeks to identify the composition of the interested and affected parties in terms such as gender, age, educational achievements, income levels, ethnicity"

is a key concept contributed by sociology to public involvement in assessments. The formal social organisations and categories described by Fowkes et al (1995) are representative of the major groups in society. However, in the resource framework proposed, individuals are also invited to partake in the process of identifying shared socio-ecological constraints to human development.

3.2 COORDINATING THE IDENTIFICATION OF SHARED SOCIO-ECOLOGICAL CONSTRAINTS

Institutionally, as explained in Chapter Six above, the local, regional or national government would play the role of a coordinating institution, which facilitates the identification of shared socio-ecological constraints. The local authority would, for example, facilitate the identification of shared socio-ecological constraints between *individuals and groups* in the community, while concurrently participating on a *regional* body of government, which coordinates the identification of shared *local* socio-ecological constraints to development. Similarly, the regional body would coordinate *local* socio-ecological constraints, while also participating in a *national* government body which coordinates *regional* socio-ecological constraints.

Various innovative techniques should be employed by sociologists attached to, or employed by, the coordinating institution, in order to elicit shared socio-ecological constraints to development. Cock (1995 : 25) states that 85 different techniques relevant to SIA have been identified and states that SIA "should involve a mix of innovative research strategies", avoiding the wholesale adoption of one strategy over another. It is beyond the scope of this dissertation to investigate the various techniques applicable to social assessment. It is important, however, that shared socio-ecological constraints are expressed in terms of the socio-ecological resources or factors perceived to require maintenance and/or enhancement respectively. Beanlands and Duinker (1983 : 67) supports this when he states "To be useful as an operational guide, social scoping is often cast in terms of the plant or animal species perceived by society to be important". The process presented here of the social assessment of socio-ecological constraints, however, casts public input, not only in terms of ecological factors, but also in terms of sociological factors, such as available labour, technical and academic resources.

3.3 PRIORITISING THE IDENTIFIED SOCIO-ECOLOGICAL CONSTRAINTS TO DEVELOPMENT

Criteria for the prioritisation of the socio-ecological constraints identified include the following:

- the state of knowledge; and
- the importance various groups and individuals place on each of their socio-ecological constraints, which they share with other individuals and groups (or other local authorities within a regional authority area other regional authorities within national boundaries, etc.).

(i) The state of knowledge

This aspect has already been discussed, but is summarised here to allow for continuity.

The current state of knowledge relating to the maintenance and/or enhancement of each socio-ecological resource plays a role in prioritising socio-ecological constraints to development, which facilitates the implementation of the precautionary principle. The state of this knowledge (whether international strategies for resource maintenance and/or enhancement have been converted into context-specific strategies for the particular resource, i.e. resource strategies), indicates which constraints are more likely to be dealt with in a sustainable manner at present, as recommended by Beanlands and Duinker (1983). This is due to the greater body of knowledge which exists relating to their maintenance and enhancement.

(ii) The importance placed on various socio-ecological constraints, by individuals and groups on a particular spatial scale

Socio-ecological constraints are expressed in terms of the limitations a particular socio-ecological resource places on human development. The relative importance placed on these socio-ecological constraints, by various individuals and interest groups in society, is determined through the use of techniques such as the Delphi technique (Fuggle and Rabie, 1992). This technique is designed to encourage a consensus concerning issues which cannot be easily quantified, such as the relative importance of shared socio-ecological constraints (Fuggle and Rabie, 1992). It is beyond the scope of this dissertation to discuss the various techniques which can be used to prioritise socio-ecological constraints (see Fuggle and Rabie, 1992 for a discussion of evaluation methods and techniques), however, it is important that the technique/s chosen:

- are as precise as possible;
- recognise the subjectivity in the value judgements inherent in the social prioritisation of issues;
- make assumptions explicit;
- are adaptable to various socio-ecological constraints (from a lack of fertile soil for agriculture, to inadequate technical skills in the community); and
- facilitate the effective involvement of a diverse range of interested and affected parties (Fuggle and Rabie, 1992).

4. ASSESSMENT OF HYPOTHESES TO ADDRESS SHARED SOCIO-ECOLOGICAL CONSTRAINTS (APPENDIX B - HYPOTHESIS DEVELOPMENT [B])

As development is viewed as a learning process, resources are maintained and enhanced through the development and assessment of projects, programs and policies (PPP) as experiments, in which hypotheses are tested. This means that the point of departure is the hypothesis, which forms the basis of project development and assessment.

This stage comprises three main aspects:

- development of the context-specific hypothesis;
- assessment; and
- evaluation and review.

Hypothesis development involves the design of a PPP, which aims to maintain and/ or enhance the resources relevant to a specific socio-ecological constraint. Alternative PPP's are assessed and evaluated in terms of their ability to maintain and/or enhance the priority resource, at the present time and in the local, regional or national area in question. Finally, the effectiveness of the assessment of the hypothesis is reviewed and a decision is made as to which PPP alternative will be implemented to maintain and enhance the priority resource.

4.1 DEVELOPING THE CONTEXT-SPECIFIC HYPOTHESIS (CONTEXT-SPECIFIC FRAMEWORK PPP)

This discussion will begin with an examination of the definition of PPP's in the context of the resource framework proposed here.

The development of context-specific hypotheses in terms of PPP's reflects a tiered approach environmental assessment. Such an approach is promoted by contemporary academics (e.g. O'Riordan and Hey, 1976) and government agencies, such as the State of California (Therivel et al, 1992). PPP's are seen as distinct stages in the process of addressing needs (Therivel et al, 1992).

> "References to the importance and advisability of a tiered approach to assessment imply that the different stages in the formulation and implementation of a policy nest within one another, and that policies, plans and programmes are each a distinct stage in the process (Therivel et al, 1992 : 37)."

Although projects, programmes and policies are seen as distinct from one another, the process proposed in this resource framework links these stages and recognises their interrelatedness. Furthermore, the traditional hierarchical approach whereby "projects are undertaken within a programme, which in turn is the specific expression of a policy (Therivel et al, 1992 : 38)" is altered, as described below.

The conventional definition of 'policies' are:

> "the government's objectives and the preferred means for trying to achieve them ... Programmes or plans are sets of related activities and expenditure that give effect to policy ... Programmes may in turn be composed of projects, discrete activities usually at specific locations ... Whatever the precise definition given, the implication is that projects are undertaken within a programme, which in turn is a specific expression of a policy"
> (Therivel et al, 1992 : 38).

These definitions not only imply a clear distinction between policies, programs and projects, but also suggest a hierarchical and often chronological sequence of the policy-making process (Therivel et al, 1992). Policies provide the framework for programs which in turn provide the framework for projects (Glasson et al, 1994). This idea has, however, been challenged by academic and political writers (Therivel et al, 1992).

> "Problems with the concepts of hierarchies and of boundaries to the policy process have been a theme of policy analysis since the 1950s, with an emphasis on the complexity and open-endedness of policy definition and formulation" (Therivel et al, 1992).

In practice, there is often a "network or web of decisions over time, rather than one identifiable occasion on which policy is made" (Therivel et al, 1992 : 40). Furthermore, policy itself is often a series of decisions, rather than a single one (Therivel et al, 1992).

This open-endedness, complexity and interrelatedness of the project, program and policy-making process, has led to several problems being experienced in the dominant contemporary system of project Environmental Impact Assessment (EIA) (Glasson et al, 1994). Such problems include:

- project EIA's react to development proposals rather than anticipating them, so they cannot influence the design and implementation of these proposals;
- project EIA's do not adequately consider cumulative impacts caused by several projects, or a single project's subcomponents;
- project EIA's cannot fully address alternatives for development or mitigation measures, as these are often strongly influenced by decisions made at a more strategic level (for example, program or policy level), limiting the alternatives available for assessment; and
- project EIA's cannot address impacts which are not regulated through projects, but rather manifest themselves at a more strategic level. Impacts resulting from industrial practices or from new technologies are examples of such impacts.

(Glasson et al, 1994)

These problems have induced the call for a more strategic level of EIA, leading to the development of the Strategic Environmental Assessment (SEA). SEA can be defined as:

> "the application of environmental impact assessment to the level of policies, plans and programmes. More specifically, SEA can be defined as the formalized, systematic and comprehensive process of evaluating the environmental impacts of a policy, plan or programme and its alternatives, including the preparation of a written report on the findings of that evaluation, and using the findings in publicly accountable decision-making"
> (Therivel et al, 1992 : 20)

SEA has been cited as a means of addressing the problems relating to project EIA, listed above (Glasson et al, 1994; Therivel et al, 1992).

Glasson et al (1994 : 301) suggest that

> "By being carried out earlier in the decision-making process and encompassing all of the projects of a certain type or in a certain area, SEA can ensure that alternatives are adequately addressed, cumulative impacts are considered, the public is fully consulted, and decisions concerning individual projects are made in a proactive rather than reactive manner."

SEA's have been implemented in many countries, such as the United States, Britain, the Netherlands, France, Greece and Spain (Therivel et al, 1992; Glasson et al, 1994). They are usually an extension of project EIA to the program or plan level, in the incremental approach illustrated below (Therivel et al, 1992).

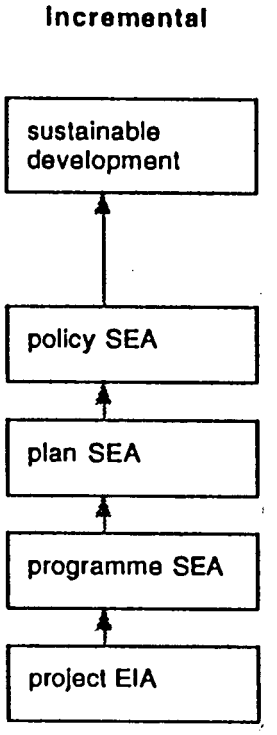


FIGURE 1: THE INCREMENTAL SEA SYSTEM

Source: Therivel et al (1992 : 312)

The 'trickle-down' method of SEA, is being advocated as a key method for the implementation of principles of sustainability (Therivel et al, 1994). This method is an attempt to facilitate the implementation of principles of sustainability through the 'trickle-down' of sustainable practices through the policy-making process (Therivel et al, 1994). In this method, sustainability is made the central objective of PPP's. This method, based on the hierarchy described above, is illustrated below.

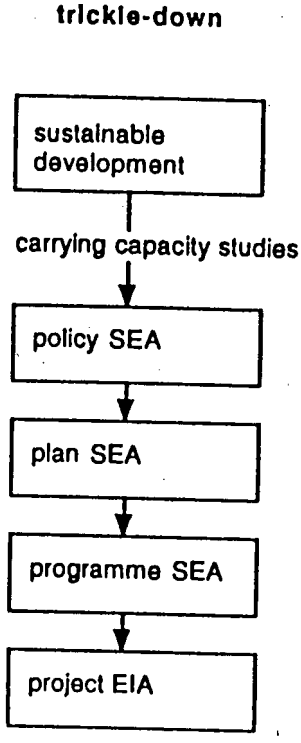


FIGURE 2: THE 'TRICKLE-DOWN' SEA SYSTEM

Source: Therivel et al (1992 : 312)

The argument is that we never quite achieve sustainability through the incremental approach to SEA (see Figure One). This is because this method aims to head towards sustainability, through the expansion of environmental assessment from projects to programs and then finally, to policies (Therivel et al, 1994). In practice, however, the application of sustainable practices rarely reaches the policy level, leading to an inability to reach sustainability in development (Therivel et al, 1994). Therefore, the 'trickle-down' method, as opposed to the incremental approach, is gaining support as a means to implement principles of sustainability.

The 'trickle-down' approach has been criticised for, inter alia, its inability to be applied to the rigid institutional systems existing in many countries. These systems lack the flexibility required to achieve "precautionary, long-range objectives such as sustainability" (Therivel et al, 1992 : 127).

Although the objective of maintaining and enhancing resources, as the central objective of all development activity, is supported in this dissertation, this is applied in a process which combines the incremental and the 'trickle-down' approach to policy-making. Such a process is supported by Therivel et al (1992 : 130), who state that, "In all probability the best approach will be to combine the ideal theoretical approach with the incremental real-life approach."

Therivel et al (1992) acknowledge that we must move away from the present development-centred approach to one in which the primary objective is sustainability. In an ideal world, principles of sustainability would be the criteria for the development of policy, and this would cascade down to the project level in the hierarchical system of policies, programs and plans currently implemented.

"However in our less than ideal world, changes take place incrementally: SEA at present is coming about as an application of a known technique to a slightly higher level of decision-making" (Therivel et al, 1992 : 130).

The process of project, program and policy-making in the resource framework proposed, therefore, reflects the following:

- the need for an approach to meeting needs in which the primary objective is sustainability;
- the need to ensure a commitment to sustainability of resources at a strategic level, in order to guide all projects, programs and policies according to its principles;
- the practical, contemporary trend of expanding project environmental assessment to programs and policies; and
- the need to accommodate the flexible, open-ended and often incremental nature of policy-making.

Programs are developed in such a way, as to address the shared constraints to the implementation of the project actions, which lead to the maintenance and enhancement of resources. Policies are developed in order to address the shared constraints to the implementation of the selected *programs*, which maintain and enhance resources.

In choosing between alternate framework strategies (framework PPP's), in order to develop the context-specific hypotheses, the following questions should be asked:

- Which framework project will coordinate actions (to address shared socio-ecological constraints to the fulfilment of individual potential) in such a way as to facilitate the largest increase in the priority resource?;
- Which framework program will coordinate the selected projects (to address shared socio-ecological constraints to project implementation) in such a way as to facilitate the largest increase in the priority resource?; and
- Which framework policy will co-ordinate the selected programs (to address shared socio-ecological constraints to program implementation) in such a way as to facilitate the largest increase in the priority resource?

Therefore in order to develop and refine a context-specific project, alternative actions must be assessed. This assessment includes:

- an assessment of component actions;
- evaluation; and
- review.

Similarly, in order to develop a context-specific program, related (in terms of the resource in question) alternate projects must be assessed. This assessment includes:

- an assessment of alternative *projects*;
- evaluation; and
- review.

Finally, in order to develop a context-specific policy, alternative programs must be assessed. This assessment includes:

- an assessment of alternative *programs*;
- evaluation; and
- review.

Therefore action assessment contributes to the development of a project, project assessment contributes to development of a program, and program assessment contributes to the development of a policy.

4.2 ASSESSMENT

The alternate framework strategies (PPP's) selected for assessment, should be applicable to the following:

- the maintenance and enhancement of the priority resource (selected due to its ability to address a priority socio-ecological constraint); and
- the level of government (local, regional or national) - as discussed, different socio-ecological constraints are often scale-dependent and therefore strategies should be applicable to the scale on which they occur.

This selection of alternatives is done by the relevant (local, regional or national) *co-ordinating* institution and therefore necessarily involves interested and affected parties. As discussed in the previous chapter, the primary function of the coordinating institution is the coordination of shared (between various interest groups) socio-ecological constraints to development. The coordinating institution, by definition, is made up of interested and affected parties. However, in fulfilling its role of a catalyst which drives the development process forward, the governmental authority should ensure that all interested and affected parties, relating to a specific PPP, are identified and included.

Alternative framework strategies (PPP's) are assessed in terms of their effectiveness, over their lifespan, in maintaining and/or enhancing the priority resource, within the administrative area in which the socio-ecological constraint is experienced. Other resources involved in the PPP must be at least maintained. However, if losses are experienced due to the PPP, mitigatory measures should be implemented. What is required, therefore, is a conceptualization of project-environment interactions (Beanlands, 1983). The assessment procedure described below responds to Beanlands and Duinker's (1983) idea of 'conceptualizing the project and the environment'.

Beanlands and Duinker (1983:63) states:

> "It starts with the basic premise that, from a systems point of view, individual construction or operation activities of a project will result in physical (e.g. sediment, water, minerals), chemical (e.g oil, pesticides, industrial wastes) or biotic (e.g. crops, predators, diseases) components, or energy (e.g heat) being introduced into, withdrawn from, or redistributed within a natural system as delineated by set boundaries. It is assumed that the nature and level of the components, or the amount of energy, can be determined by project details".

Each PPP must therefore be considered as follows:

- It would be broken down into its component parts, a strategy which correlates with and applies Brown and Hill's (1995) 'decision-scoping' process; and
- each part should be assessed in terms of its effect on the priority resource, a strategy which correlates with and applies Beanlands and Duinker's (1983) 'ecological scoping' process.

Beanlands and Duniker (1983) summarise these aspects in their notion of conceptualising the project and the environment. These will be considered separately in the discussion which follows.

4.2.1 CONCEPTUALISATION OF THE PROJECT (SEPARATION OF THE PROJECT INTO ITS COMPONENT PARTS)

Separation of the PPP into its component parts, described in this section, is an adaptation of the process of 'decision-scoping' suggested by Brown and Hill (1995).

> "Decision-scoping starts with a schedule of planning and design activities, and decisions, which will have to be made during the whole of the project planning, design, and approval continuum. In addition it must also identify exactly what information on environmental constraints and opportunities will be germane for each activity, and for each decision-point"
>
> (Brown and Hill, 1995 : 16).

At each decision-point in the PPP, the environmental assessment manager must determine whether the proposed PPP decision/activity will result in net gains or losses of the priority resource (Beanlands and Duinker, 1983). PPP are then assessed in terms of their net loss or gain of this resource (Beanlands and Duinker, 1983).

As suggested by Brown and Hill (1995), the environmental assessment manager and the project planner work together. However, where Brown and Hill (1995 : 17) state that the environmental assessment manager is likely to "pose environmentally based questions to the project planner which will result in new stages requiring specialist input ...", the process suggested here involves the project planner basing all decisions on the maintenance and enhancement of resources. This implies that the co-operation between the project planner and the environmental assessment manager needs to be a constant one. The project planner needs to be informed by the environmental assessment manager, as to whether *each* action in the project results in a net increase or decrease in the resource in question. The environmental assessment manager, in turn, needs to be informed of alternative project actions, which should be investigated in terms of their ability to maintain and/or enhance the resource in question. The relationship is therefore continually interactive.

4.2.2 CONCEPTUALISING THE ENVIRONMENT (ASSESSMENT OF THE PPP PARTS IN TERMS OF THEIR EFFECT ON THE PRIORITY RESOURCE)

Effective assessment of the project parts, in terms of their effect on the priority resource (i.e. environmental hypothesis assessment) requires an appropriate study strategy (Beanlands and Duinker, 1983). A way in which to develop such a strategy is through the implementation of ecological scoping, as suggested by Beanlands and Duinker (1983). The ecological scoping explained below is an adaptation of the process suggested by Beanlands and Duinker (1983)

in their article "An Ecological Framework for Ecological Impact Assessment in Canada". Beanlands and Duinker (1983) apply their ecological framework to resource variations in projects only. This ecological framework is adapted here to include an application to programs and policies, but with three important additions:

- as actions are the component parts of projects, projects are considered the component parts of programs, and programs, in turn, are considered the component parts of policies - this is in line with the view of PPP's as interlinked;
- for programs, the environment is conceptualised in terms of the limitations the requirements for access and extraction of resources, placed on *project* resource maintenance and enhancement; and
- for policies, the environment is conceptualised in terms of the limitations the requirements for access and extraction of resources, placed on *program* resource maintenance and enhancement.

This adaption of Beanland's and Duinker's (1983) ecological scoping framework is explained in more detail below.

The objective of ecological scoping

> "is to determine which interaction pathways offer the best opportunities for studies leading to a prediction or approximation of changes in the valued ecosystem components (priority resource), given the constraints posed by time limitations, natural variability, the state of ecological knowledge and the scientific tools available"
>
> (Beanlands and Duinker, 1983 : 5)

Such a process calls for the conceptualisation of the environment, as Beanlands and Duinker (1983 : 64, parenthesis added) state:

> "It is equally (equal to separation of the project into its component parts) important to conceptualize the environment in an ecological sense, keeping the PPP firmly in mind."

In the past the trend has been to overlay the project on the environment, and the analysis of the environment has usually been a detailed verbal description of various elements of the system (Beanlands and Duinker, 1983). This usually results in an inadequate understanding of how the PPP interacts with the components of the environment (Beanlands and Duinker, 1983). An earlier perception of the relationship between the parts of the project and the identified priority resource can aid in focusing the environmental assessment on important cause-effect relationships, which influence the maintenance and enhancement of this resource. As Beanlands and Duinker (1983 : 64) state:

> "We suggest that an earlier, more conceptual view of the environment would begin to guide the practitioner in identifying important PPP-environment interactions and in rationalizing the study approaches required to elucidate those interactions."

In the discussion below, Beanlands and Duinker's (1983) ecological scoping process is applied to PPP's, in the context of the resource framework proposed here. This is followed by an explanation of why this process, in terms of programs and policies, is set within a context of resource access and extraction.

4.2.2.1 Ecological scoping applied to the resource framework

In order to facilitate ecological scoping, Beanlands and Duinker (1983) present two models. These models are illustrative, not exhaustive, of the ways in which the environment may be conceived. A brief explanation of the focus of each of these models is presented below, and the reader is referred to Beanlands and Duinker (1983) for a more detailed discussion.

The first model recognises the hierarchical structure of ecosystems, forcing an investigation to answer the following questions:

- at what biological level (individual, population, community and ecosystem levels) is the priority resource; and
- at what biological level is it possible to predict or detect the possible perturbation? (Beanlands and Duinker, 1983)

The second way of conceptualising the environment for environmental assessment, as suggested by Beanlands and Duinker (1983), involves a look at the trophic structure. The impact of the project, usually acting through the physical and chemical environment, may manifest itself initially on biota at one or all levels of the food web (Beanlands and Duinker, 1983). It then becomes important to identify the following:

- the trophic level of the priority resource;
- the level at which the project is initially expected to affect the biota; and
- the important cause-effect relationships and processes down the system.

(Beanlands and Duinker, 1983)

Beanlands (1983) lists several advantages of placing the project in an 'ecological framework' i.e. expressing the project components in terms of the net loss or gain of "valued components or functions of the ecosystem" (the priority resource), after implementation. These include:

- the separation of the project into manageable parts;
- a focus on the nature and the source of the perturbation;
- the early establishment of time and space boundaries;
- a recognition of the valued ecosystem components (a specific resource priority -in the context of the resource framework proposed); and
- the consideration of functional ecological relationships wherever possible.

Once the PPP is divided into its component parts, and the environment is conceptualised in terms of the priority resource, it is possible to answer four basic questions, which form the study strategy for hypothesis assessment (adapted from Beanlands and Duinker, 1983). These questions, listed below, are adapted from Beanlands and Duinker, (1983 : 67, parenthesis added) in ways indicated in the brackets.

These are:

- is there reason to believe that the valued ecosystem components (priority resource) will be affected either directly or indirectly by the project (program and policy)?;
- is it realistic to attempt to study the effects on the priority resource directly?;
- how can the effects on valued ecosystem components (priority resource) be studied directly?; and
- is it necessary or helpful to use indicators of the impact (variation in the priority resource)?

These questions are asked because direct assessment and evaluation of variations in the priority resource may be impossible (Beanlands and Duinker, 1983). As Beanlands and Duinker (1983) state, where the valued ecosystem components (resource priority) are species populations, for example, it is often difficult to identify changes in these populations, due to human activity. The question whether variations in the priority resource, as a consequence of implementation of this project, can be measured directly, or whether indirect methods are necessary, should be addressed in the development of the study strategy (Beanlands and Duinker, 1983). Beanlands and Duinker (1983), identify various means by which variations in the priority resource, which occur indirectly through ecological relationships, can be measured.

It is beyond the scope of this dissertation to describe these ecological methods in detail; however, by way of example, one such method is the use of indicators to measure variations in the priority resource.

> "When all else fails, biologists involved in impact assessment studies may resort to the use of indicators as a means of obtaining some measurement of stress on a natural system"
>
> (Beanlands and Duinker, 1983 : 69)

An indicator implies "a movement of some variable away from a known or a set normality, that is, it indicates that a change has occurred (Inhaber, 1977)" (Beanlands and Duinker, 1983). Beanlands and Duinker (1983) explain that a number of indicators have been developed relating to variations in individual organisms, populations, communities and ecosystems. Shellfish, mosses and lichens, for example, bioaccummulate chemicals and have been used as indicator species in nuclear waste monitoring programs (Beanlands and Duinker, 1983).

Indicators of social resource variation include elements relating to at least four major categories: demographic (for example, population changes, health problems, relocation problems); socio-economic (for example, changes in employment patterns, systems of land tenure, income levels); institutional (for example, changed demand on local services) and community (for example, changes in social networks and levels of social cohesion) (Cock, 1994).

Of importance here is that the outcome of this ecological scoping process should be an appropriate ecologically framed study strategy (Beanlands and Duinker, 1983). This strategy should indicate the best way in which changes in the priority resource (defined and prioritised in terms of shared socio-ecological constraints to development) can be predicted or approximated (Beanlands and Duinker, 1983).

Each component part of the PPP is then assessed to determine whether or not it will result in the maintenance and/or enhancement of the priority resource. This can be done, for example, through the implementation of Beanlands and Duinker (1983) models, described above. Application of these models should result in a statement of whether the changes in the environment, due to PPP implementation, result in maintenance, losses or gains in the priority resource (Beanlands and Duinker, 1983). This overall variation in the priority resource should be measured over the life of the project (duration of impact) and within the local, regional or national boundaries of the area in question (extent of impact). The level of confidence and range of uncertainty involved in the assessment of the variations in the priority resource (due to PPP implementation) should be made explicit (Beanlands and Duinker, 1983).

4.2.2.2 Access and Extraction of Resources

While projects coordinate actions, programs and policies deal with the "course or principle of action adopted or proposed by a government, party, business, or individual, etc" (The Concise Oxford Dictionary : 921).

Projects are therefore assessed in terms of the way component actions facilitate resource maintenance and enhancement. Programs and Policies, however, are assessed in terms of how resource access and extraction requirements (principles/courses of action), facilitate the maintenance and enhancement of the priority resource. These requirements constitute what Mather and Chapman (1995) call the 'resource regime'.

These regimes are social and political structures or frameworks, within which people manage their resources (Mather and Chapman, 1995). "Different regimes of ownership and control have been established at different times and in different places and different resource sectors". These regimes (programs and plans) are therefore applied to the management of each priority resource identified in the coordinating institution. They relate to the rights of access and extraction of resources, regulating the power to exclude others and to manage resources in physical, technical and economic terms (Mather and Chapman, 1995). Various classifications of resource regimes have been proposed; however, they are typically dynamic rather than static (Mather and Chapman, 1995). Furthermore,

> "Two dimensions of variation can be distinguished in most typologies: one involves definitions of those individuals or groups with rights of access to the resource, and the other relates to limitations on extraction rates, or in other words the level of use of the resource by those holding access rights. In practice a distinction is usually made between state, private and common-property regimes".
>
> (Mather and Chapman, 1995 : 37)

The reader is referred to Mather and Chapman (1995) for a more detailed investigation of resource regimes; however, examples of such regimes are indicated in the figure below. Mather and Chapman (1995) acknowledge the simplication of this classification, and indicate that in practice, combinations and transitional types occur.

	Private property	Common ownership	Open access
Access or 'right' to extract resource product	owner/occupiers	group members	anyone
Limitation on level of extraction by	owner's decision	group rules	unlimited

FIGURE 3: RESOURCE REGIMES: ACCESS TO RESOURCES AND LIMITATIONS ON EXTRACTION

Source: Mather and Chapman (1995 : 37)

Of importance here, is the recognition of alternative regimes for the access and extraction of resources, which form the resource framework strategies in which programs and policies are developed and assessed. Since the overriding objective is the maintenance and enhancement of resources, these alternative resource regimes (programs and policies) are developed and assessed in terms of their ability to facilitate project maintenance and enhancement of a priority resource. Context-specific hypotheses are therefore expressed, on the program and policy level, in terms of the limitations imposed by existing access and extraction requirements on resource maintenance and enhancement.

As stated above, these regimes apply to various resource sectors (Mather and Chapman, 1995). Ideally, a program resource regime, in terms of the resource framework proposed, will facilitate the conditions necessary for all projects relating to a specific priority resource to maximise the maintenance and enhancement of that resource. This can be extrapolated to a policy resource regime, which will ideally facilitate the conditions necessary for all programs relating to a specific priority resource to maximise the maintenance and enhancement of that resource. In the context of development supported here, facilitating the conditions necessary for resource maintenance and enhancement, means addressing shared constraints to this aim. This is because the view of development adopted here is a process in which the shared constraints to the fulfilment of potential, form the basis for the alteration of society (Cole, 1994). Applied to the program and policy making context, this leads to the following interpretations:

- Programs are ways of addressing shared (between projects) constraints (imposed by requirements for resource access and extraction) to the fulfilment of the potential of a project to maintain and enhance a priority resource; and
- Policies are ways to address shared (between programs) constraints (imposed by program requirements for resource access and extraction) to the fulfilment of the potential of programs to facilitate the maintenance and/or enhancement of a priority resource.

These interpretations call for a means by which variations in specific resources, can be related to program or policy actions. One such method, which has its base in the writings of von Neumann and Morgenstern (1953) and was developed by Keeney and Raiffa (1976), is Multi-attribute Utility Theory (Bisset, 1988). This theory was developed and applied before 1978 but interest has increased only recently (Bisset, 1988). It involves the measurement of 'environmental attributes' (the priority resource), in order to facilitate the evaluation and review of alternative programs or policies - this method can also be applied to projects (Bisset, 1988). This method has been used by Collins and Glysson (1980) to assess two alternative waste disposal systems, and by Uys (1982) to assess alternative energy policies in South Africa (Bisset, 1988). Multi-Utility Theory is mentioned briefly, as an example of a possible way in which resource variations may be evaluated and reviewed, in a program and policy-making context. The reader is referred to Bisset (1988) for a more detailed explanation of the theory and an analysis of its positive and negative attributes.

Beanlands and Duinker (1983) suggest the following specific approaches to environmental assessment in this view of development as a learning process:

- always attempt to develop a PPP design which provides the opportunity for measurements of changes in resources, after project initiation;
- strike a compromise between studying the socio-ecological resource and the nearest surrogate components for which useful predictions are possible; judgement should be used to extrapolate from the predictions to take maximum advantage of the information which can be attained from natural or man-made occurrences and natural records;
- focus numerical data collection programs around a statistical definition of natural variation in time and space;
- refine a hunch concerning a potential resource reaction (impact) until it can be stated as a specific question for which a numerical answer is possible, or stated as an hypothesis which can be tested; and
- it may be as important to consider the long-term potential of the socio-ecological resources to recover from an expected impact, as it is to predict from the initial outcome of the perturbation.

(Adapted from Beanlands and Duiker, 1983 : 4)

4.2.3 EVALUATION

If two or more PPP's have the same overall effect (in terms of maintenance and enhancement) on the priority resource, they should be quantitatively evaluated (If tie - quantify!). This stage will be called the evaluation stage of the process and is the purview of the social and ecological scientists. Social and scientific methods for determining the magnitude of a variation in the priority resource will not be discussed here, except to emphasise that this difficult process is only required if two or more projects have the same overall effect (in terms of maintenance and/or enhancement) on a priority resource. Evaluation therefore aids in the selection of the alternatives (context-specific hypotheses) to be implemented.

4.2.4 REVIEW

Once alternatives have been assessed to establish whether or not they maintain and/or enhance the priority resource, and those which have the same effect have been quantitatively evaluated, the process is reviewed and an alternative is selected. The traditional aim of the

review stage is to provide an indication of the strengths and weaknesses of the proposal or assessment reports submitted (Department of Environmental Affairs, 1992). On the basis of this review, a decision is made on whether the proposal should be approved or not (Department of Environmental Affairs, 1992).

In the context of the framework for resource maintenance and enhancement described here, the proposal for implementation, is the alternative/hypothesis which evolves from the hypothesis development, assessment and evaluation stages. The focus of review is therefore on the process followed for the selection of the hypothesis for implementation. This is congruent with current practice, in which aspects of the process of environmental assessment (such as the validity of information and the adherence to procedural requirements), are evaluated at the review stage (Glasson et al, 1994).

If the process is considered adequate, the need for mitigatory measures is determined. The identification of effective mitigatory measures is vital to the approval of the preferred alternative, should it result in the decrease or deterioration of the environment in any way. Again, this correlates with current practice, in which the identification of mitigation measures is performed at the review stage (Glasson et al, 1994). The implementation of these measures, then, becomes the terms of reference for new projects, programs and policies, which are developed, assessed, evaluated and reviewed according to the same process. This process, therefore, facilitates the proactive identification of potential socio-ecological constraints, due to present activities. It makes dealing with these predicted problems a prerequisite for the implementation of a specific alternative for addressing current socio-ecological constraints. In this way, alleviating present problems does not result in the creation of new constraints. As Gardner (n.d : 24) points out, within a frame of reference, in which human activities (seen here as project, program and policy implementation) are related to sectoral development (expressed here in terms of priority resource maintenance and enhancement), project environmental assessment can "follow a more adaptive and proactive course to identifying, mitigating and compensating for loss and change in natural capital".

Once PPP's for the top priority resource have been developed, the process is repeated for the second priority resource, and so on. This process is repeated until hypotheses for all resources, whose maintenance and enhancement addresses a particular socio-ecological constraint, are developed.

4.3 EVALUATION AND REVIEW

The evaluation and review described above are part of the assessment stage of alternate PPP's. Maintenance and enhancement of the second priority resource, however, may involve the maintenance and/or enhancement of the top priority resource. The top priority resource, therefore, may be maintained and/or enhanced in several PPP's. This stage of evaluation and review concerns all the PPP's related to a specific resource. These policies are evaluated and reviewed in the same manner (in terms of the limitations the requirements for access and extraction of a resource, place on the maintenance and enhancement of that resource) as in the assessment stage described above. If an overall increase in the priority resource is anticipated, the PPP's hypotheses which have been developed, are implemented.

After implementation, as described in the section which follows, the PPP's which maintain and/or enhance a priority resource, as anticipated in the hypothesis development stage, become context-specific resource strategies, from which new PPP hypotheses are developed.

4.4 SYNOPSIS

Projects facilitate the conditions necessary for the implementation of those actions which are expected to result in the most effective maintenance and enhancement of resources. Context-specific programs (hypotheses) are developed by addressing the shared constraints to the implementation of *projects*, which maintain and enhance a specific priority resource. Similarly, policies address shared program constraints. To achieve this, each PPP hypothesis is developed through the application of framework strategies to the specific shared PPP constraint to maintenance and enhancement of resources that is being experienced. Programs, for example, address shared project constraints to the maintenance and enhancement of resources. Selection between various PPP hypotheses to address socio-ecological constraints may involve quantitative evaluation. This occurs when two or more projects, programs or plans result in the same net effect in terms of whether or not they will maintain and/or enhance the priority resource.

At the program and policy level, this assessment and evaluation takes place in the context of varying regimes, facilitating access to and extraction of the priority resource.

Ideally, then, when designing the project, gains and losses in each resource used, for each activity implemented and at each decision-point, should be made explicit. Again, this is an application of Brown and Hill's (1995) decision-scoping process for the planning, design and implementation of projects. Brown and Hill (1995 : 19) state:

> "It is a relatively simple task then to structure the environmental assessment process so that it is directed to providing the necessary input into each subcomponent of planning and design."

This process should clarify not only the extent to which the proposed project maintains and/or enhances the priority resource, but also the potential gains and losses in other resources used. This indicates where mitigation will be required, should the project be chosen in the final evaluation.

Once the alternative PPP's have been assessed and evaluated review of the process of hypothesis development, assessment and evaluation takes place. Finally, if this process was judged as adequate, mitigation measures are identified for the context-specific PPP chosen. Once effective mitigation measures, which can practicably inform new projects, are identified, the program under assessment is implemented. This program is also forwarded as a contribution to the policy-making process.

Once a PPP has been selected to facilitate (in terms of access and extraction) the maintenance and enhancement of the first priority resource, the process is repeated for the second priority resource, and so on. This process is repeated until hypotheses are generated for all resources whose maintenance and enhancement address a specific socio-ecological constraint.

Finally, all PPP's relating to a specific resource are evaluated and reviewed. If an overall increase in the priority resource is anticipated, the PPP's hypotheses which have been developed, are implemented.

The PPP's are implemented in a phased sequence which reflects the priority of the resources. After implementation, as described in the section which follows, the PPP's which maintain and/or enhance a priority resource, as anticipated in the hypothesis development stage, become context-specific resource strategies, from which new PPP hypotheses are developed.

5. HYPOTHESIS IMPLEMENTATION AND REFINEMENT (SEE APPENDIX C)

This stage involves the implementation, monitoring and audit[illegible]'s, which have been developed to shared socio-ecological constraints. This is [illegible]ich hypotheses are 'tested' and the knowledge base is refined, so as to be applicable to a specific place and time.

This framework is therefore a continual learning process, in which the results of PPP's, (in terms of the maintenance and enhancement of resources) are used to continually refine the knowledge base relating to a particular resource, in a specific spatial and temporal context. To facilitate continual learning, an effective monitoring and auditing process is required (Sadler, 1988). The broad stage of hypothesis implementation, in this framework, therefore includes monitoring and auditing.

5.1 MONITORING

Monitoring can be defined as:

> "the measuring and recording of physical, social and economic variables associated with development impacts (e.g. traffic flows, air quality, noise, employment levels). It seeks to provide information on the characteristics and functioning of variables in time and space, and in particular on the occurrence and magnitude of impacts".
>
> (Glasson et al, 1994 : 167)

As the process described in this dissertation is focused on the maintenance and enhancement of resources, monitoring will centre on the measuring and recording of anticipated resource variations, associated with projects, programs or policies (impacts). Bisset and Tomlinson (1988 : 117) summarise the aim of what they call 'impact monitoring' when they state, "The aim of impact monitoring is to detect an impact if it has occurred and to estimate its magnitude."

The context-specific hypothesis developed in the stage described above, provides the framework for the monitoring program. The hypothesis development procedure described above leads to the expression of an hypothesis in terms of anticipated maintenance and/or enhancement of a specific resource, over the duration of the project, program or policy, at a particular level of government and in a particular spatial context. Furthermore, it leads to the development of an ecological framework. As explained in the section on hypothesis development, this ecological framework describes various cause-effect relationships between the project and the priority resource. It shows whether variations in this resource may be examined directly, or if indicators are required for indirect investigations. These elements, then, form the strategy or framework within which monitoring takes place. This is consistent with current requirements for an effective monitoring strategy (Gasson et al, 1994; Beanlands and Duinker, 1988; Bisset and Tomlinson, 1988). Glasson (1994 : 169), for example, states that a monitoring program should have

> "clear objectives, temporal and spatial controls, adequate duration (e.g. covering major stages in project implementation), practical methodologies, sufficient funding, clear responsibilities, and open and regular reporting".

The context-specific hypothesis, then, is a type of scoping mechanism which focuses the monitoring program on the variations in the priority resource. Beanlands and Duinker (1983 : 9, parenthesis added) state that:

> "the design of a monitoring programme should be part of the development of a study strategy (hypothesis development) for any valued ecosystem component (resource priority)"

Bisset and Tomlinson (1988:119) support this idea when they state that, "Impact monitoring requires the formulation of hypotheses for successful application".

The results of monitoring programs feed into the stage of environmental impact auditing.

5.2 ENVIRONMENTAL IMPACT AUDITING

The variations in the priority resource anticipated in the hypothesis, are then audited to determine which actually occur after implementation of the project, program or policy (Bisset and Tomlinson, 1988; Glasson et al, 1994). The process of auditing described here is that of environmental impact auditing, as opposed to environmental management auditing. The latter refers to auditing in public and private corporate structures for environmental management, and will not be discussed (Glasson et al, 1994). Of relevance here is environmental impact auditing, which involves a comparison of the impacts predicted in the hypothesis assessment, with those which actually occur after implementation, in order to determine the effectiveness of the assessment (Glasson et al, 1994).

Although the process of environmental impact auditing will not be discussed in detail (the reader is referred to Glasson et al, 1994), its role in the learning process of resource maintenance and enhancement, described in this resource framework, is of importance.

This role takes on three forms:

- an indication of wether the hypothesis development process was satisfactory;
- refinement of the original hypothesis (resource strategy); and
- identification of the need for mitigation measures.

(Bisset and Tomlinson, 1988; Glasson et al, 1994)

5.2.1 AUDIT OF HYPOTHESIS DEVELOPMENT PROCESS

A lack of monitoring and auditing, after project implementation, has been a hinderance to the development of the environmental assessment process (Sadler, 1988; Bisset and Tomlinson, 1988). Sadler (1988) states that information on the effectiveness of predictive (used in hypothesis development) techniques would be beneficial, as considerable resources are used up in attempting to find 'optimal' techniques and methods for environmental assessment. An element of the total auditing done should therefore include a critical look at the methods and techniques used in hypothesis development. In this way, the knowledge base of context-specific strategies for sustainability, relating to the methods and techniques used to address socio-ecological constraints, is refined. This would be a type of procedural audit, as identified by Glasson et al (1994) and Sadler (1988). It is beyond the scope of this dissertation to discuss the ways in which techniques and methods may be audited. However, various approaches, which can be applied to such auditing, have been developed. An example of such an approach is Sadler's (1988) typology of research for evaluation of

environmental assessment procedures. Briefly, this typology facilitates the analysis of assessment practice from three points of view: (the type of research is listed with examples of its related elements of analysis alongside)

- Technical/scientific - adequacy of baseline studies, accuracy of impact predictions (variations in priority resource), suitability of mitigation measures;
- Procedural/administrative - fairness of public involvement, degree of co-ordination of roles and responsibilities; and
- Structural/decision-making - utility of process for decision-making.

(Sadler, 1988 : 133)

5.2.2 REFINEMENT OF THE HYPOTHESIS

This stage involves the feedback of the results of hypothesis implementation into hypothesis generation. After implementation, the PPP's which maintain and/or enhance a priority resource, as anticipated in the hypothesis development stage, become context-specific resource strategies, from which new PPP hypotheses are developed. This process is facilitated by the monitoring of resource variations under PPP conditions. This monitoring, then, leads to a greater understanding of specific environments (Bisset and Tomlinson, 1988). This results in a broadening of the knowledge base on how to address socio-ecological constraints in these environments (resource strategies). Monitoring is therefore vital to implementation of development as a learning process. This role of monitoring is discussed in more detail in the section which follows.

The present lack of data concerning variations in resource quantity and quality, due to human action, increases the level of uncertainty in the present process of impact prediction (Bisset and Tomlinson, 1988). Referring to this current process, Bisset and Tomlinson (1988 : 120) state that:

> "It is this lack of knowledge which, in part, makes impact prediction such a difficult and uncertain task. Increased impact monitoring in different localities for a variety of projects would be a considerable step in increasing the knowledge of the impacts of development".

If development, *per se*, is seen as a learning process, facilitated by effective monitoring and auditing, then by the very nature of the development process, uncertainty is reduced. Furthermore, as knowledge relating to human actions and the variations in the environment which they induce, is increased, the process of hypothesis development becomes easier - we recognise more easily what will result in the maintenance and/or enhancement of resources. This results in a continuous increase in the efficiency of addressing socio-ecological constraints to individual development, not only saving time and other resources, but also enhancing the effectiveness of the strategies employed - increasing their ability to maintain and/or enhance resources. Sadler (1988:141) states that:

> "For the purposes of audit and evaluation, it is clear that impact predictions should be stated as testable hypotheses. In addition, monitoring and mitigation programmes must be recognised as sources of information for testing these hypotheses as well as important elements in the management of the proposal under consideration".

The development process itself, therefore, involves an increasing ability not only to sustain resources, but also to enhance them (increase their potential to meet socio-ecological constraints). This is a practical way of implementing Gorz's (1994 : 11) *ideal* (as discussed in Chapter Four) of

> "winning from the megamachine (or the 'system', as Habermas calls it) broader and broader spaces in which the 'logic of life' can unfold freely, and in making the system compatible - by its orientations, its techniques, the limits of space it occupies and the restrictions and rules to which its functioning is subject - with that of the free unfolding of life".

5.2.3 IDENTIFYING THE NEED FOR MITIGATION MEASURES

The objective of hypotheses developed, is the maintenance and enhancement of resources. Projects are therefore audited in terms of the ability of their component actions, to fulfil this requirement. As discussed above, programs and policies are reviewed and audited in terms of their ability to facilitate the maintenance and enhancement of resources, through various measures regulating resource access and extraction. This ability is measured against that anticipated in the hypothesis development stage. Auditing shows where the expected maintenance and enhancement of a resource is not occurring, thereby indicating the need for mitigation measures.

Projects, programs and policies are assessed in the following way:

- projects are assessed in terms of their ability to maintain and enhance (through a combination of actions) a priority resource, as anticipated in the hypothesis development stage;
- programs are assessed in terms of their ability to facilitate (by regulating access and extraction of resources), the maintenance and enhancement (through a combination of projects) of a priority resource, as anticipated in the hypothesis development stage; and
- policies are assessed in terms of their ability to facilitate (by regulating access and extraction of resources), the maintenance and enhancement (through a combination of programs) of a priority resource, as anticipated in the hypothesis development stage.

Where a PPP has been shown not to maintain and/or enhance a resource, mitigation measures are identified through the same process of hypothesis development and assessment. This, then, addresses an element of a PPP, which is, or could become, a socio-ecological constraint to development - should it continue not to maintain and enhance the priority resource, as anticipated in the hypothesis development stage.

Furthermore, the original context-specific hypothesis is refined in the light of the results of monitoring and auditing. This facilitates *continual* learning, the mechanism which drives the process forward.

6. CONCLUSION

The procedure described in this chapter reflects the ideas of Impact Hypothesis, Adaptive Environmental Assessment and Management (AEAM) and Integrated Resource Management (IRM) (Gardner, n.d).

The idea of hypothesis testing echoes the Impact Hypothesis process developed by The Environmental and Social Systems Analysis Ltd. (Gardner, n.d). This process involves a description of the social and biophysical processes which connect development activities and their potential environmental effects (Gardner, n.d). It exhibits characteristics of Beanlands and Duinker's (1983) Ecological Framework for Environmental Impact Assessment, focusing on the effects of human activity on valued ecosystem components (Gardner, n.d). This approach facilitates the explicit statement of impacts on the environment and the development of a common framework for the comparison of projects (Gardner, n.d). Impact Hypothesis has primarily been applied to project EIA's, however, in the framework for resource maintenance and enhancement proposed here, it is also applied to programs and policies. As Gardner (n.d) states, "If the Impact Hypothesis approach is used within more comprehensive frameworks, it holds considerable potential for contributing to sustainable development because of its recognition of the centrality of linkages between development activities and the biophysical environment."

Furthermore, this view of development as a learning process, is congruent with the current discourse on the process of Adaptive Environmental Assessment and Management (AEAM) (Kennett and Perl, 1995; Gardner (n.d). AEAM was developed in order to integrate environmental, social and economic understanding into environmental policy and practice (Gardner, 1992). Its strategies focus on making learning as much a part of the product as problem-solving and on coping with uncertainty rather than improving predictability (Gardner, 1992). Kennett and Perl, 1995 present the five key aspects of AEAM as follows:

- incorporation of ecological knowledge with sociological knowledge at the beginning of the strategic analysis, rather than at the end of the design process
- as resource/social systems are dynamic not linear and static, simulation modelling and policy design is selected to reflect these features
- managers, ecological and social scientists and others involved in policy formation, interact at the beginning and throughout the process of synthesis, problem identification, design, implementation, monitoring and review, so that learning is as much part of the process as problem solving
- the direction and design of policy and practice is initiated by those in the region who analyse, select and endure their consequences, rather than at the hands of those who have an inadequate knowledge of local needs and who lack responsibility and accountability to the local community
- policies are designed and implemented in order to explore opportunities and test new alternatives, as much as to meet immediate needs.

The nature of development advocated in this dissertation, concurs with the five key aspects of AEAM listed above. The analysis of fundamental cause-effect relationships in the socio-economic environment (and their context-specific elaboration 'downstream') as proposed in

the Natural Step Concept (Robért, 1995) and the identification of common socio-ecological constraints to the fulfilment of individual potential (Cole, 1994), facilitates the incorporation of ecological knowledge with sociological knowledge at the stage of strategic analysis. Furthermore, implementation of the Natural Step Concept calls for the simulation modelling of socio-ecological systems, both at a broad level based on fundamental principles and at the context-specific level in which community knowledge plays an important role.

As the nature of research supported in this dissertation is focused on developing ways to create resources and overcome common constraints, it is intrinsically linked to the experiences and problems of those who implement its findings. The terms of reference for research projects, therefore, are informed by the needs of the community. These two characteristics of research supported in this dissertation, then,
reflect key aspects four and five of AEAM, listed above.

Finally, the procedure developed exhibits characteristics of the process of Integrated Resource Management (IRM). Gardner (n.d:50) states that

> " This is a strategic approach to management that attempts to bring a wider range of needs and values into the decision-making process (Lang, 1986) and to deal with planning, assessment, and implementation in concert".

This is reflected in the resource framework proposed by the manner in which the review process feeds into evaluation (See Appendix B). Review of projects, for example feeds into the evaluation of programs. Furthermore, after implementation the auditing of projects, for example, feeds into monitoring of programs (See Appendix C). Furthermore, planning and assessment is linked to implementation by the process of converting, through implementation, the international strategies for the maintenance and enhancement of resources into context-specific resource strategies (See Appendix A). These resource strategies then become the alternatives for assessment of future hypotheses.

The focus of the framework on resource maintenance and enhancement and on the prioritisation of shared socio-ecological constraints to individual development in local communities, also echoes the principles of IRM. As Gardner (n.d:50) states when describing IRM, "Emphasis on ecosystem maintenance, social priorities for resource use, and the devolution of responsibilities to communities suggests support for substantive principles as well."

These approaches are explained in more detail in Gardner (n.d). Gardner (n.d), however, criticises the approaches for paying little direct attention to the satisfaction on human needs, the issue of equity and social justice and the provision of social self-determination and cultural diversity. In the framework proposed, the issue of satisfaction of human needs is addressed through the support of bioregionalism and endogenous development which focuses on meeting the basic needs, but not only basic needs, of the local community. Furthermore, the emphasis on the identification of socio-ecological constraints to the fulfilment of individual potential (for example, a lack of water), not only addresses human needs but makes provision for social self-determination. Finally, the identification *shared* socio-ecological constraints of various interest groups implies the need to identify these groups and to elicit their active participation in development. This facilitates a recognition of cultural diversity. As Gardner (n.d:57) states, "The missing components may be found in alternatives such as bioregionalism, deep ecology, ecosystem peoples or traditional native cultures, community-based development, co-management of common property resources ... ".

In summary then, socio-ecological constraints are addressed by the development of context-specific hypotheses, for the maintenance and/or enhancement of a priority resource. These hypotheses are tested through the implementation of PPP's. Projects 'test' the ability of actions to maintain and enhance the priority resource, while programs and policies are used to investigate alternative resource regimes, to facilitate optimum maintenance and enhancement of the priority resource. Monitoring and auditing facilitate this process of continual learning, leading to the refinement of the original hypothesis and the hypothesis development process. Furthermore, monitoring and auditing indicate the need for mitigation measures, which stimulates a new process of addressing a socio-ecological constraint, through hypothesis development and assessment.

Shared socio-ecological constraints to individual development are therefore addressed in an increasingly efficient manner. As knowledge of context-specific practices which maintain and enhance resources is increased, and resources themselves are not only maintained, but also enhanced, "broader and broader spaces in which a 'logic of life' can unfold freely ... (Gorz, 1994 : 11)" is won.

CHAPTER EIGHT

8. CHAPTER EIGHT

APPLICATION OF THE FRAMEWORK FOR RESOURCE MAINTENANCE AND ENHANCEMENT

1. INTRODUCTION

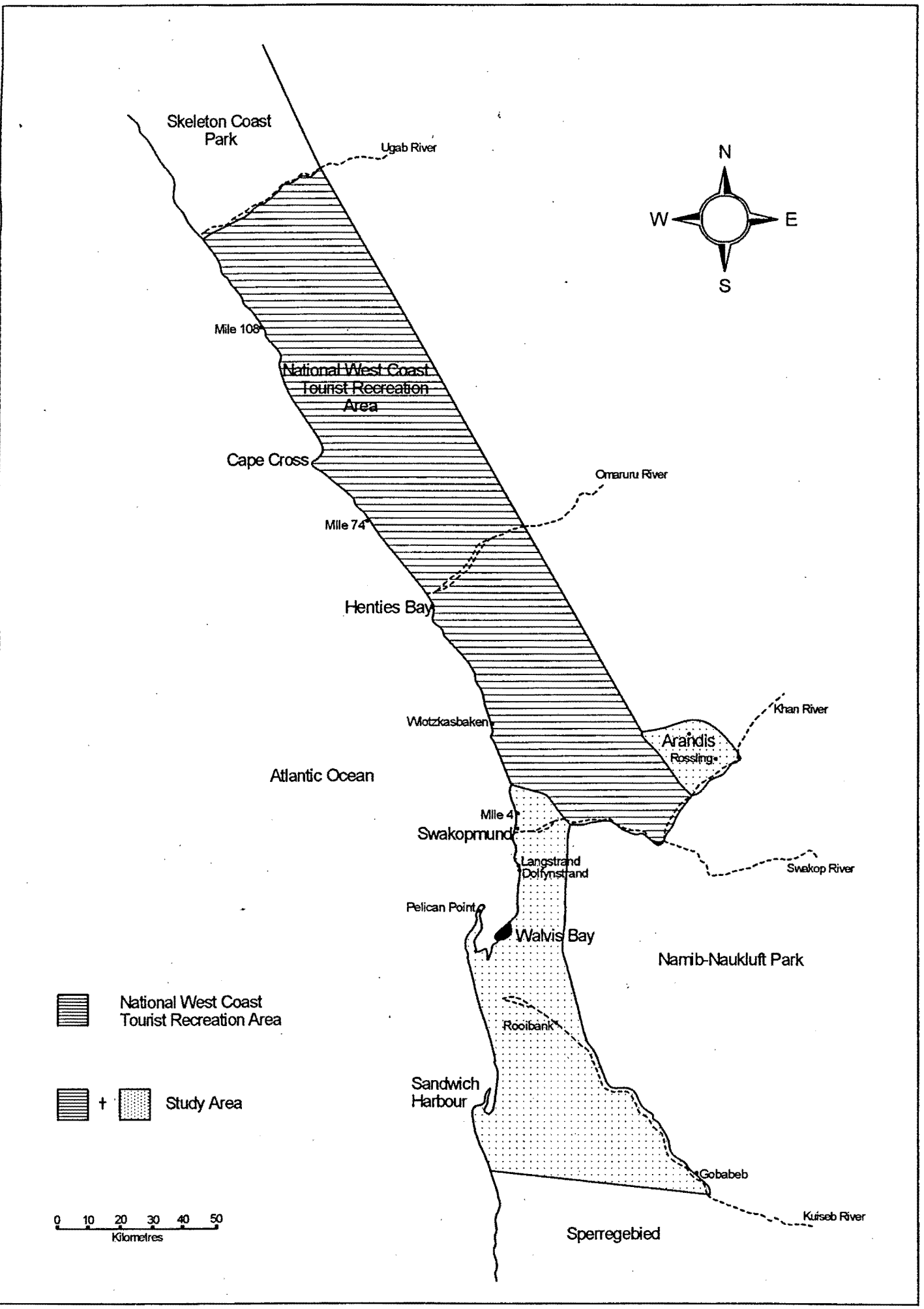
In this chapter, the framework for resource management developed in previous chapters, will be applied in an analysis of the Government of Namibia's Export Processing Zone (EPZ) Regime. EPZ's are to be established, as part of a strategy to promote economic development in the country (Kobokoane, 09/06/96, Sunday Times, See Appendix D). This application is done within the context of the Danish Co-operation for Environment and Development's (DANCED), involvement in the development of an Integrated Coastal Zone Management Plan (ICZMP), for the coastal region of Namibia (M.Phil Environmental and Geographical Science (ENGEO), University of Cape Town [UCT], 1996). A locality map indicating the DANCED Study Area and specifically Walvis Bay, is presented on the next page.

In response to Agenda 21 (United Nations Conference on Environment and Development (UNCED), Rio de Janeiro, 1992), DANCED has identified Integrated Coastal Zone Management (ICZM) as one of its key areas of interest (M. Phil ENGEO, UCT, 1996). Consequently, the organisation has offered its assistance in the formulation of an ICZMP for the Erongo Region in Namibia (M.Phil ENGEO, UCT, 1996).

The University of Cape Town's Masters students, from the Environmental and Geographical Science Department (1995/1996), were commissioned to investigate prevalent issues, which should be addressed in the ICZMP. This resulted in the compilation of a baseline report detailing these issues, which were initially identified by representatives from Namibia and UCT's Environmental Evaluation Unit (EEU). This group was coordinated by the Ministry of Environment and Tourism (MET) in Namibia (M.Phil ENGEO, UCT, 1996). Map 1 delineates the study area which formed the spatial boundaries for the investigation.

An issue identified as having an important influence on the development of an ICZMP, is the EPZ regime to be implemented in the study area (Walvis Bay, Arandis and Henties Bay) (M.Phil ENGEO, UCT, 1996; Ministry of Environment and Tourism, 1995). An EPZ regime, is a set of legal and administrative regulations, which are adopted in countries with a restricted foreign trade sector, offering exporters a range of internationally competitive advantages (M.Phil ENGEO, UCT, 1996; Ministry of Trade and Industry, 1995). The objectives of the Namibian EPZ Regime, as stated in the Export Processing Zone Act 9, promulgated in 1995, are as follows:

- to attract, promote or increase the manufacture of export goods;
- to create or increase industrial employment;
- to create or expand export earnings;
- to create or expand industrial investment, including foreign investment; and
- to encourage technology transfer and the development of management and labour skills. (Export Processing Zones Act 9 of 1995)



Map 1 Study Area

At present, the focus is on marketing Namibia's infant EPZ regime abroad (M.Phil, ENGEO, UCT, 1996). The emphasis of this strategy is on the political and labour stability offered to potential investors and on the access to foreign markets facilitated by the country's membership of the Southern African Development Community (SADC). This access is enhanced by Namibia's participation in various trade agreements, such as the Lome Convention (M. Phil, ENGEO, UCT, 1996). Furthermore, Namibia offers the following incentives to investors:

- exemption from corporate tax;
- exemption from import duties on imported, intermediate and capital goods;
- exemption from sales tax and stamp and transfer duties on goods and services required for EPZ activities;
- a 75% wage subsidy for all EPZ enterprises until no longer required; and
- a subsidy on 75% of the direct costs of on-the-job and institutional training. (M.Phil, ENGEO, UCT, 1996:47)

EPZ industries benefit, not only from certain mandatory services (for example, water and electricity), but also from accessory services offered by the EPZ management company (M.Phil, ENGEO, UCT, 1996). These include: health care, construction services and security services (M.Phil, ENGEO, UCT, 1996). The incentives and services offered, are explained in greater detail in the Export Processing Zone Act 9 of 1995.

Figure Four below, illustrates the institutional framework for the management of EPZ's in Namibia. The broad functions of each institutional body is summarised in the diagram, however, the reader's attention is drawn to the specific role of the following: the Ministry of Trade and Industry, the Offshore Development Company (ODC) and the Export Processing Zone Management Company.

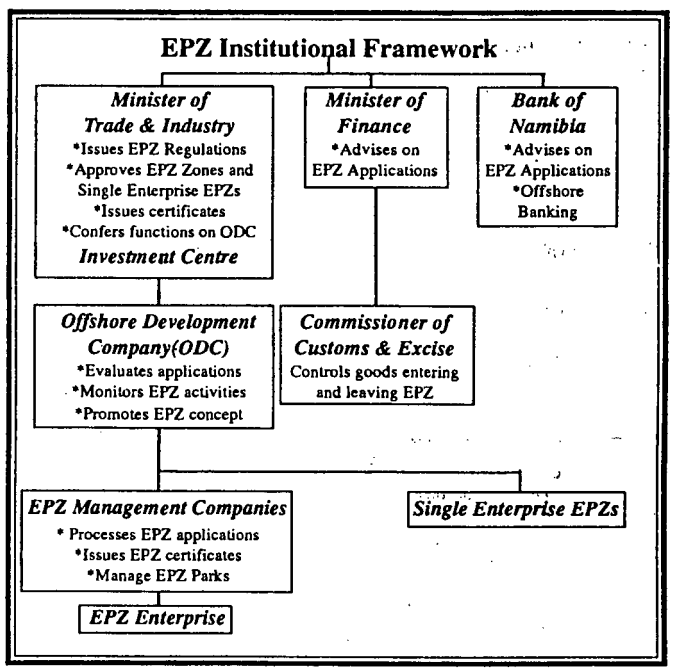


FIGURE 4: EPZ INSTITUTIONAL FRAMEWORK

Source: Ministry of Trade and Industry (1995 : 7)

1.1 THE MINISTRY OF TRADE AND INDUSTRY

This Ministry has the most authority in terms of EPZ's in Namibia, and the Minister is empowered to:

- issue regulations in terms of the Export Processing Zone Act 9 of 1995;
- approve EPZ zones and single-enterprise EPZ's;
- issue and cancel certificates relating to the establishment of EPZ management companies and single-enterprise EPZ's;
- delegate powers, duties and functions to the Offshore Development Company;
- authorise local sales by an export processing zone enterprise; and
- veto, when the public interest demands, the issue of an EPZ enterprise certificate, by an EPZ management company (de Leon, 1995).

(M.Phil ENGEO, UCT, 1996 : 47)

1.2 THE OFFSHORE DEVELOPMENT COMPANY (ODC)

The ODC is established in terms of the Export Processing Zone Act 9 of 1995 (M.Phil ENGEO, UCT, 1996). According to the Export Processing Zone Act 9 of 1995, Part IX, Section 26(3), the purpose of this limited liability company is to, "promote, market, coordinate and monitor all approved activities, including export processing ..." (M.Phil ENGEO, UCT, 1996). In order to achieve this objective, in terms of the Export Processing Zone Act 9 of 1995, Part IX, Section 26 [3]), the ODC aims to:

- provide an umbrella service and liaison with the Minister on behalf of all enterprises;
- implement a marketing and promotional program for the whole Namibian offshore industry;
- advise and assist the Minister in drafting new legislation relating to export processing and amending existing legislation; and
- co-ordinate with other ministries to ensure the labour and infrustructural development required, in order to maximise the advantages gained from export processing.

(M.Phil ENGEO, UCT, 1996 : 47)

Section 29 of the said Act, facilitates the implementation of the aims mentioned above, through the following activities:

- the marketing and promotion of Namibia's EPZ activities;
- the establishment of growth objectives for the Offshore Industry, which are used to facilitate monitoring of progress in achieving the general aims described above;
- the establishment of design criteria for the approval of EPZ enterprises; and
- the signing of agreements and the initiation of activities which can generate an income for the ODC.

(M.Phil ENGEO, UCT, 1996 : 48)

The government is to hold at least nine percent of the total shareholdings of the company at all times (M.Phil ENGEO, UCT, 1996). Furthermore, the government is also entitled, in terms of the Export Processing Zone Act 9 of 1995, to have at least one representative on the company's board of directors (M.Phil ENGEO, UCT, 1996).

1.3 EXPORT PROCESSING ZONE MANAGEMENT COMPANY (EPZMC)

An EPZMC has jurisdiction over the area of land assigned to it in a certificate by the Minister of Trade and Industry (M.Phil ENGEO, UCT, 1996). It provides this area with the infrastructure it requires to host EPZ industries, and then sells or rents the developed land and buildings to companies within the EPZ (M.Phil ENGEO, UCT, 1996). The EPZMC continues to provide accessory services, such as catering facilities, garbage removal and transportation, to the industries (M.Phil ENGEO, UCT, 1996).

Namibia's Export Processing Zone Act 9 of 1995, distinguishes between a single-enterprise EPZ and an EPZ industrial park (M.Phil, ENGEO, UCT, 1996). A single-enterprise EPZ is an individually situated industry, which benefits from EPZ concessions, but which is located in terms of the economic viability of an area (M.Phil, ENGEO, UCT, 1996). The area of operations becomes an EPZ in itself (de Leon, 1995). An EPZ industrial park is a geographically demarcated zone in which the fiscal incentives apply (M.Phil ENGEO, UCT, 1996).

Provisions have been made for an evaluation of each EPZ applicant in terms of environmental factors, before a decision is made as to wether a full Environmental Impact Assessment is required (M.Phil, ENGEO, UCT, 1996). Although a general policy on environmental assessment was passed by the Cabinet in 1994, no specific guidelines exist for the environmental evaluation of industries applying for EPZ status in the country (M.Phil, ENGEO, UCT, 1996; Tarr, Pers.Comm., 08/02/96). This undermines the provisions made in Section 4 and 14 of the Export Processing Zone Act 9 of 1995, in which activities which have a "deleterious impact on the environment" are refused the export processing zone enterprise certificates, required for operation in terms of the EPZ regime (M.Phil, ENGEO, UCT, 1996). The need has been expressed for guidelines on environmental assessment of EPZ's in Namibia, which would aid in making such zones more sustainable, and in determining if the recommendations implemented were effective (Tarr, Pers.Comm., 08/02/96).

It is argued here, that a focus on the maintenance and enhancement of resources, within the framework proposed in the previous chapters, would facilitate a proactive approach to the assessment and evaluation of applicants for EPZ status. At present there is no strategic framework within which *specific* industries, which maintain and enhance the resources of Namibia, are actively encouraged to be a part of the EPZ regime (Tarr, Pers. Comm., 08/02/96). Each applicant is assessed separately in terms of criteria which facilitate the maintenance, through preventative measures, of certain resources, but does not lead specifically to their enhancement in order to address socio-ecological constraints to development. These criteria include, for example, the prevention of excessive strain on public infrastructure, prevention of damages to health and the environment and prevention of violation of the Export Processing Zone Act 9 of 1995 (de Leon, 1995).

Kobokoane (Sunday Times, 09/06/96) states that:

> "Namibia, in an attempt to 'lure' foreign investors, diversify its economy and reduce the long-standing financial dependence on South Africa and fuel economic growth' has established its first export processing zone (EPZ) in Walvis Bay."

This is done while trying to ensure the prevention of environmental degradation, as explained above. The focus of the EPZ Regime is, therefore, on promoting economic development, while preventing socio-ecological damage; rather than on subjecting economic gains to addressing socio-ecological constraints to the fulfilment of human potential. This emphasis on the effects of economic development on the socio-ecological environment, rather than on the way in which development can enhance this environment, leads to the contradictions to sustainable development, detailed in Chapter Two of this dissertation.

Setting approval conditions according to the resource demands of addressing local socio-ecological constraints to development, would aid in ensuring that the EPZ Regime, not only serves the specific needs of the community, but also prevents the exploitation of Namibian resources. Furthermore, such an approach would help to scope and focus the marketing of the EPZ regime internationally and enable the EPZMC to tailor its services more closely to the needs of successful applicants. This could lead to Namibia developing a strategic advantage, in terms of service provision for specific resource sectors. Furthermore, a strategic advantage over other EPZ's could also be gained, in terms of the socio-ecological resources which are being maintained and enhanced to address local socio-ecological constraints to development.

The focus of investigations, then, would not be on the way in which to conduct environmental assessments related to EPZ's, but rather on ways in which local socio-ecological resources can be maintained and enhanced, in the formulation of the sectorial, institutional and legislative nature of the EPZ (since this is the strategy already chosen). The sectorial nature of the EPZ, is therefore not developed in a reactionary way, being formulated in response to the nature of applicants interested in EPZ status in Namibia. Rather, applying the resource framework, would lead to a more positive and proactive identification, promotion, encouragement and servicing, of specific industrial sectors - sectors which would maintain and enhance those resources required in addressing local socio-ecological constraints to development. Such an approach could also result in socio-ecological and economic resource savings, due to the more strategic and efficient use of resources it facilitates.

The first EPZ to be established in the country, is an industrial park located at the strategic port area of Walvis Bay (Kobokane, Sunday Times, 09/06/96). Although the EPZ Regime is applicable country-wide, Walvis Bay is the only designated spatial zone (EPZ industrial park), for the application of EPZ concessions (M.Phil, ENGEO, UCT, 1996). For these reasons, Walvis Bay will form the focus of this analysis of the EPZ Regime in Namibia. The framework for resource maintenance and enhancement described in the previous chapters, will be applied to Walvis Bay in the section which follows.

Ideally, an EPZ strategy should be part of an assessment and evaluation of alternative ways in which to address socio-ecological constraints to development. These would be obtained from the broad international knowledge base for the maintenance and enhancement of resources. However, the EPZ Regime in Namibia, and specifically Walvis Bay, has already approved and applications received. This means, that in terms of the resource framework, the hypothesis development stage has already completed one iteration (it would be altered as experience concerning the EPZ in Walvis Bay increases, leading to several iterations of the hypothesis). This example will therefore focus on the management of the EPZ, rather than

on a strategic analysis of the desirability of export processing *per se*. This will be done in terms of the resource framework developed.

The following application of the framework for resource maintenance and enhancement, is illustrative rather than substantively comprehensive. It aims to demonstrate the following:

- a manner in which the resource framework can be applied. It indicates a positive and proactive way in which the EPZ Regime in Namibia, can be strategically managed from a socio-ecological perspective; and

- the strategy proposed for the management of Walvis Bay's EPZ.

The specific methods and techniques, which could be used in implementing the framework, are not discussed below, but have been briefly mentioned in the previous chapter.

2. APPLICATION OF THE FRAMEWORK

In the tables below, the aspects highlighted are the decisions (assumptions) made here, in the absence of a democratic process facilitated by the coordinating insitution. The socio-ecological constraint identified as the priority is unemployment.

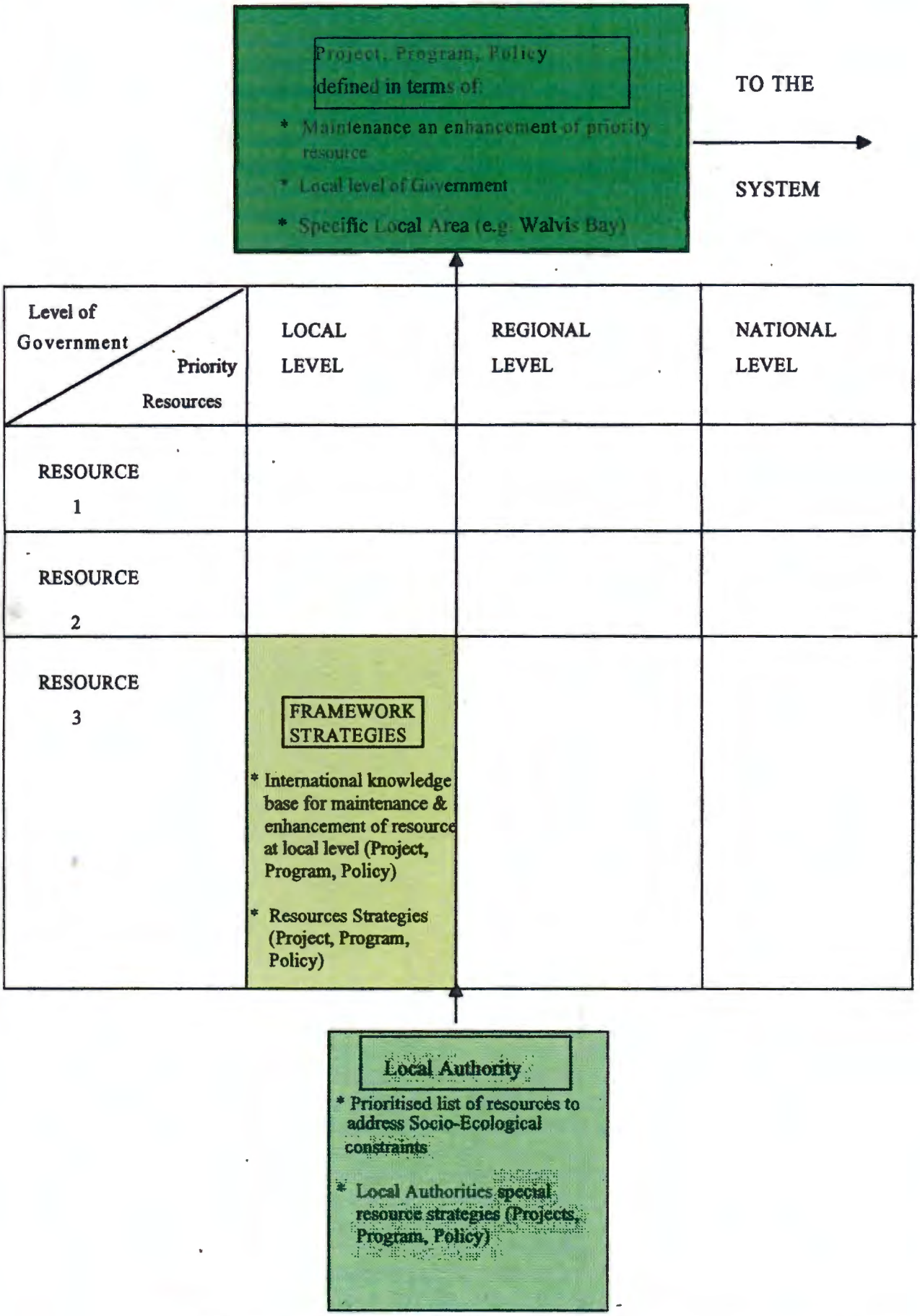
The following reports have been used in the compilation of the table below:

- M.Phil, Environmental and Geographical Science (1995-96), Baseline Report: Coastal Zone Management Plan for the Erongo Region, Namibia, UCT, Cape Town.

- UNIDO (nd), Export Processing Zones: Principles and Practice.

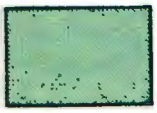
- de Leon (1995), Guide to Export Processing Operations, prepared for the Ministry of Trade and Industry and the Offshore Development Company, PTY. of Namibia, unpublished, Windhoek.

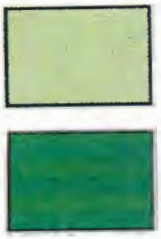
- Sherborne, R. (1993), Export Processing Zones and their relevance to Namibia, NEPRU Research Report No.8, The Namibian Economic Policy Research Unit, Windhoek.



FRAMEWORK FOR RESOURCE MAINTENANCE AND ENHANCEMENT

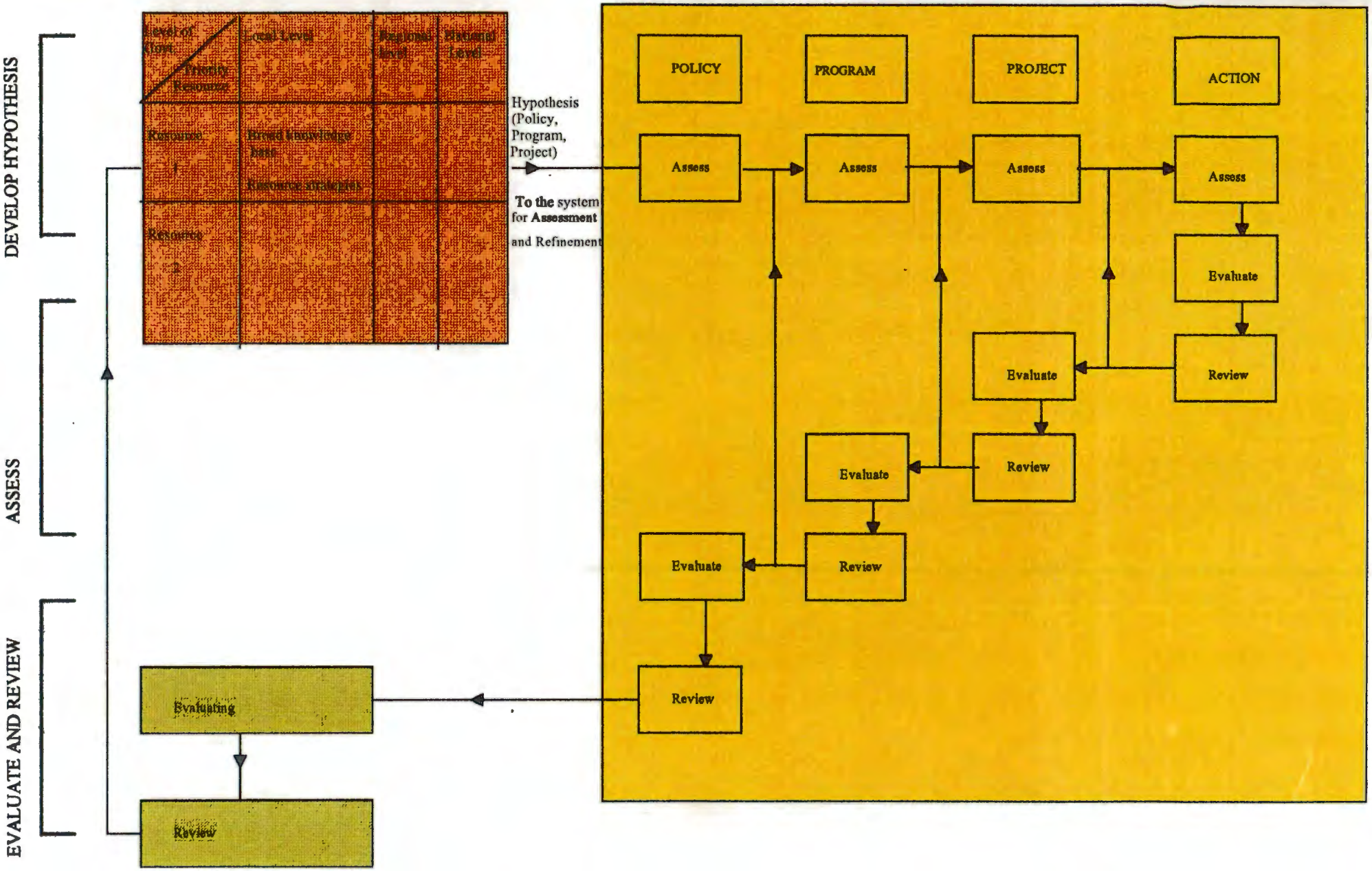
(Hypothesis Development) (A)

Colour Codes	Issues addressed	Assumptions and Requirements
	Socio-ecological constraints: • **lack of employment opportunities** • lack of housing • inadequate educational facilities • inadequate health facilities • depletion of groundwater resources within the Kuiseb River • inadequate electrical supply • inadequate water resources • inadequate bulk handling facilities, at the harbour • inadequate waste disposal facilities • loss of vegetation, causing ingress of sand into Walvis Bay. Socio-ecological resources: • **labour** • deep sea harbour • good transportation linkages to rest of Namibia, Botswana and South Africa • infrastructure • groundwater resources in Kuiseb Delta • Walvis lagoon and associated wetlands • archaeological sites • dunes to the north and of the Kuiseb River • vegetation on dunes hindering sand movement • location along the west coast.	• The constraints should be identified by the coordinating institution, driven forward by the Walvis Bay Town Council. This institution would include representatives from interest groups such as the Namibian Housing Action Group, the Chamber of Commerce and Industry in Walvis Bay, the National Union of Namibian workers (NUNW) and representatives from the academic and professional world. • The constraints should be prioritised in terms of the following: - the importance the interest groups place on each one - the status of knowledge on ways to address the constraints (strategic framework). • **The assumption is made that a lack of job opportunities is the highest priority socio-ecological constraint in Walvis Bay.** • Resources are identified (or created) in terms of their potential to address the socio-ecological constraint in question . • These resources should be identified and prioritised by the coordinating institution. • Criteria for prioritisation relate to factors such as: the availability of the resource; the values of the interest groups; the quality of the resource and its uniqueness to Walvis Bay . • The most highly prioritised resource, is called the priority resource. • Project, program and policy action, focuses on the maintenance and/or enhancement of the priority resource identified. • Not only the priority resource, but all resources identified as having the potential to address the constraint, are maintained and enhanced. However, the phased allocation of time and resources to the projects, programs and policies, reflects the prioritisation's allocated to address the constraint. • **The assumption is made that the labour supply evolved as the priority resource.** • **Therefore, to address the lack of employment opportunities, the labour supply will be maintained (job creation) and enhanced (skills development.**

Colour Codes	Issues addressed	Assumptions and Requirements
	**Project framework strategies** • Examples of project framework strategies (obtained from international experience), which have a bearing on the nature of employment creation, and therefore influence the projects selected as part of the Walvis Bay EPZ include: - the male/female ratio of industries - the domestic/foreign firm ratio • The type of employment created depends, to an extent, on the industry mix. The garment industry, for example, employs the highest number of women, while residual data processing employs the highest number of men. The lack of employment, as the constraint being addressed, should therefore be specifically defined in terms of the male/female ratio of unemployment. This means that the EPZ in Walvis Bay would not only aim to maintain and enhance the labour supply in general, but would target at a specific sector of unemployed population. • The total percentage of domestic investors in EPZ's internationally, is 43%, 24% are foreign/domestic joint ventures and only 33% are foreign projects. The foreign/domestic industry mix has implications for employment creation. For example, foreign industries tend to buy from other industries of the same nationality, affecting economic linkages to the domestic economy. The implications of this for employment creation in Walvis Bay should be investigated.	• As an EPZ has not been implemented in the area before, no resource strategies exist for the maintenance and enhancement of Walvis Bay resources in an EPZ. • Maintenance and enhancement of the labour force, in this context, refers to job creation and human skills development. • The framework strategies (PPP's) are therefore obtained from the international knowledge base for the maintenance and enhancement of resources. • The coordinating institution should look to projects which have shown to maintain and enhance job opportunities in international EPZ's, which are applicable to the male/female ratio of the unemployed in Walvis Bay. • **EPZ employment is concentrated in a few labour-intensive industries. It is assumed that these industries will be selected as the framework alternative projects, which will be assessed, evaluated and reviewed in terms of their effectiveness in employment creation, in the context of Walvis Bay. This context is characterised by, for example, the male/female ratio of the unemployed and the anticipated optimum domestic/foreign firm mix.** • **These labour-intensive industries are:** **- garment manufacture** **- electrical goods assembly** **- electronics**

Colour Codes	Issues addressed	Assumptions and Requirements
	**Program framework strategies** • This framework must set the requirements for maximum employment creation in the projects selected. Examples of elements of a program strategies affecting employment creation include: - provisions relating to the required ratio of local/foreign workers hired. - provisions relating to backward linkages into the domestic economy - provisions concerning training programs. • Initially, when the modern EPZ began in the 1960's, domestic sales of EPZ goods was not allowed. The current trend is a more liberal attitude to domestic sales. Nigeria, for example, places no restrictions on domestic sales. • Backward linkages relate to the proportion of raw materials sourced locally. EPZ's implemented in Mauritius, Cameroon and the Republic of Korea, use a high percentage of materials which are sourced locally. The type of projects, programs and policies implemented in these EPZ's, could therefore be examined in terms of their applicability to developing local skills and employment creation . • Provisions concerning training programs facilitate enhancement of human skills in EPZ industries.	• Alternative program requirements for the EPZ can be obtained from international strategies. These program requirements would form the framework for the access and extraction of the priority resource. • In the case of employment, access relates, for example, to whether local or foreign workers are hired in the EPZ. Extraction relates, for example, to the backward linkages into the domestic economy, which the EPZ facilitates (what the domestic economy extracts from the EPZ). This, in turn, affects the number of jobs created in Walvis Bay. • In terms of the enhancement of the potential of local labour, access and extraction issues relate to provisions concerning the availability (access) and quality (how the worker benefits) of training programes. • Alternative program "packages" should be developed, dealing with the issues listed, amongst others. • The programs are assessed, evaluated and reviewed. The one in which the selected projects are expected to create jobs and develop human skills (maintain and enhance resource), to the best effect, should be chosen for implementation. • The coordinating institution should attempt to anticipate the overall effect of alternative program alternatives on employment creation and skills enhancement. • **Specific programs cannot be named here, as they will each constitute a combination of variations in the program requirements listed alongside.**

Colour Codes	Issues addressed	Assumptions and Requirements
 	**Policy Framework Strategies** • Examples of elements of policy strategies (frameworks), obtained from international experience, for an EPZ include: - facilitating business relationships between EPZ industries and the domestic economy, to promote the transfer of technology (skills enhancement) and to maximise provisions relating to backward linkages. - placing EPZ companies on a par with foreign companies in selling on the domestic market - this encourages backward linkages into the local economy. In any country, foreign firms must comply with quota's and import regulations and pay customs and tariffs, but they don't need to get permission to sell their goods. EPZ investors often need such permission, placing them at a disadvantage. This could weaken backward linkages with the local economy and thereby decrease employment creation., - promulgating regulations which facilitate effective training programs. Namibia's EPZ Act 9 of 1995 provides for the payment, from the State Revenue Fund, of 75% of the direct costs incurred by the EPZ industries, in training employees.	• Policy requirements facilitate the conditions necessary for programs (through conditions for the access and extraction of resources) to facilitate project maintenance and enhancement of job opportunities and human skills. • These framework policy strategies should be assessed, evaluated and reviewed in terms of their effectiveness in achieving the above, in the context of Walvis Bay. This is a prediction on the way in which employment levels and skills development, is expected to fluctuate under alternative policy conditions. • **Specific policies cannot be named here, as they need to be developed, by the coordinating institution, as a combination of the elements described alongside.**



FRAMEWORK FOR RESOURCE MAINTENANCE AND ENHANCEMENT (Hypothesis Development) (B)

In the table above, it has been stated that the PPP's must be assessed, evaluated and reviewed. The tables below illustrate a process, in the context of the resource framework proposed in the previous chapter, in which this can be done. Although this application of the proposed process is based on the tables above, as explained in these tables, it is difficult to name these programs and policies at present. This is because they make up different variations of provisions, which need to be developed by the coordinating institution. Therefore, symbols (x,y,z, 1,2,3) will be used to describe them in the section below.

In the tables below the following is indicated:

- Assessment - this is an indication of whether the component parts of the PPP hypotheses (framework strategies applied to Walvis Bay - developed in the tables described above) are anticipated to result in an increase (+1), decrease (-1) or in no change (0) of the priority resource (labour in this case).
- Evaluation - if one or more PPP's are anticipated to result in the same overall effect on the priority resource, quantitative evaluation takes place (number of jobs created or people trained). This is indicated by the hypothetical numbers in brackets. The methods and techniques for evaluation were briefly mentioned in the Chapter Six.
- Review - this involves a critical look at the process and results of hypothesis development, assessment and evaluation. Requirements for these processes have been discussed in the previous chapter. If the review is positive, an hypothesis is selected for implementation.

Project Assessment, Evaluation and Review

GARMENT MANUFACTURE		ELECTRICAL GOODS ASSEMBLY		ELECTRONICS	
	Labour		**Labour**		**Labour**
Action 1	+1 (4)	Action 1	-1	Action 1	+1 (1)
Action 2	+1 (2)	Action 2	0	Action 2	+1 (3)
Action 3	+1 (4)	Action 3	+1	Action 3	+1 (3)
	overall increase (10)		no variation		overall increase (7)

After review of the process and the evaluation results, garment manufacture is selected as the hypothesis for testing (implementation). If any negative signs (overall decrease in the

priority resource) were indicated in the assessment of Project A, mitigation measures would have to be identified to address them, before the project was approved.

Program Assessment, Evaluation and Review

The focus of labour maintenance and enhancement (job creation and skills development) is through the development of the garment manufacturing sector. Other projects, however, will deal with local labour, such as the electrical goods assembly and electronics industries mentioned above. A program coordinating all project action, relating to a specific resource (labour), across all projects, is required.

The question to be asked when filling in the table is: In Program X , Project Garments will cause the priority resource to increase/decrease/remain constant?

PROGRAM X		PROGRAM Y	PROGRAM Z
Labour		**Labour**	**Labour**
Garments	-1	+1 (50)	+1 (20)
Electrical goods	0	+1(100)	+1 (10)
Electronics	0	+1(150)	+1 (40)
Overall decrease		Overall increase (300)	Overall increase (70)

After review of the process and the evaluation results, Program Y is selected as the hypothesis for testing (implementation). If any negative signs (overall decrease in the priority resource) were indicated in the assessment of Program Y, mitigation measures would have to be identified to address them, before the project was approved.

Policy Assessment, Evaluation and Review

Although Program Y is chosen to coordinate all projects which affect local labour, other programs, such as Program X and Z, will deal with labour. Therefore, policies are developed which coordinate all programs relating to this priority resource.

3. CONCLUSION

In this chapter, the resource framework explained in this dissertation, is applied to the development of a strategic framework for the establishment of the EPZ at Walvis Bay in Namibia. The main recommendations may be summarised as follows:

* A coordinating institution, driven by the Walvis Bay Town Council, should identify socio-ecological constraints to the fulfillment of individual potential in the town. This insitution should include representatives from interested and affected parties, such as the Namibian Housing Action Group and the Chamber of Commerce and Industry in Walvis Bay.

* These constraints should be prioritised in terms of their importance to the local community and the status of knowledge on ways in which to address them.

* Local resources should be identified in terms of their potential to address the prioritised constraints. The resources should be prioritised in terms of the values of interested and affected parties and in terms of their uniqueness to Walvis Bay. The resource identified as the first priority, is called the priority resource.

* Framework strategies (PPP) for the maintenance and enhancement of the priority resource should be selected from the international strategies for resource maintenance and enhancement, or from the local resource strategies. In developing the EPZ, for example, the international strategies should be consulted, because of the lack of resource strategies pertaining to the development and management of EPZ's in Walvis Bay. This is because EPZ's have never previously been implemented in the town.

* The framework strategies should form the basis for the development of local PPP's. Projects should aim for the maintenance and enhancement of the priority resource, which should respond the specific nature of local socio-ecological constraint it is used to address. For example, the PPP strategies in order to create jobs and develop human skills, should be applicable to the male/female ratio of Walvis Bay. Programs should be developed in order to coordinate and facilitate project action, through requirements concerning access (for example, provisions concerning local:foreign labour ratio in the EPZ) and extraction (for example, the facilitation of backward linkages from the EPZ to the local economy of Walvis Bay) of the priority resource. Local policies developed from the international framework strategies, should coordinate and facilitate programs, through requirements concerning the access and extraction of the priority resource.

* PPP's should be assessed, evaluated and reviewed according to the process described in above. Techniques and methods, not addressed here, should be developed in order to improve the effectiveness of this assessment, evaluation and review. These assessment and evaluations should facilitate the conceptualisation of the environment and the PPP, which indicates the important interactions between the ecological or social system and the proposed PPP. These interactions are traced in order to determine variations in the priority resource due to the PPP, throughout the social/ecological system. Should it be anticipated that any resource in a PPP be degraded or depleted, as a result of the PPP, mitigation measures should be identified and subjected to the same process of assessment, evaluation and review.

* All PPP's developed to address the original socio-ecological constraint (expressed in terms of a priority resource identified to address it) should be evaluated and reviewed.

* The PPP's developed and implemented, should be monitored and audited to ensure that they are reducing the original socio-ecological constraint identified.

* All applications for EPZ status should be addressed within this strategic framework, which

responds to the socio-ecological needs of the local community and the resources available locally. The EPZ is therefore designed and managed in such a way as to address community goals, through the maintenance and enhancement of local resources.

CHAPTER NINE

CHAPTER NINE

CONCLUSION

The framework for resource maintenance and enhancement presented in this dissertation, does not necessarily add new ideas to the map which guides us in addressing the current global environmental crisis, but it is rather a synthesis on contemporary streams of thought. The point of departure for this synthesis is a critical analysis of the current discourse of sustainable development, in order to identify where we can improve on current practice and benefit from the progress made to date. As Young (1990:117) states, "If the political fruit of three decades of activity is to be harvested a degree of intellectual coherence becomes an important priority."

In developing the framework for resource maintenance and enhancement, the following contributions to the contemporary discourse on integrating environmental and developmental goals is made:

- A critical analysis of the mainstream concept of sustainable development. The difficulties in practically integrating environmental and developmental goals, resulting from this concept are examined. These problems relate primarily to the passive and uncritical acceptance of the dominant socio-economic and political ideology as the basis of sustainable development.
- An analysis, through the examination of the discursive formation of sustainable development, of the socio-economic and political ideology upon which this concept rests. This lead to the conclusion that current problems in implementation of sustainable development, reflect the direction and priorities of the dominant capitalist industrialising model (Reid, 1994).
- A contribution to the discourse of integrating environmental and developmental goals. This contribution is primarily one of a synthesis of existing streams of thought. It is based on a view of humans and the environment as interrelated, as suggested by Cole (1994). This leads to the view that through collective local action, shared constraints to the development of individual potential may be identified. These form the basis for alterations in societal structure and behaviour in order to facilitate a transition to a sustainable developing society. (Cole, 1994)

Aspects of the contemporary discourse on Gaianism, ecosocialism and ecofeminism, echo the interrelated view of the human/environment relationship, forming a common thread which is reflected in the concept of bioregionalism.

The typical characteristics of endogenous development, as a means of expanding and implementing the concept of bioregionalism, form the criteria for the development of the institutional and procedural aspects of the framework for resource maintenance and enhancement. These include the following: reliance on local resources and knowledge; development which is rooted in the community's values and institutions; an awareness of local ecosystem potential and limitations; development which does not depend solely on the market; development which is tailored to the basic needs of a specific community but is not limited to meeting basic needs; and linkages (resources and knowledge) between the local, regional, national and international community in order to strengthen local institutions (Friberg and Hettne, 1985; Taylor and Mackenzie, 1992; Galtung, 1980; Timberlake, 1985).

The political implications of this view are expressed in Gorz's (1994) notion of 'transcending capitalism,' in which capital is not abolished, but we move beyond a society dominated by economic values of efficiency and profitability, to one which makes use of the economy to fulfil its own goals and objectives - to overcome what Cole (1994) calls its 'shared constraints' (Gorz, 1994).

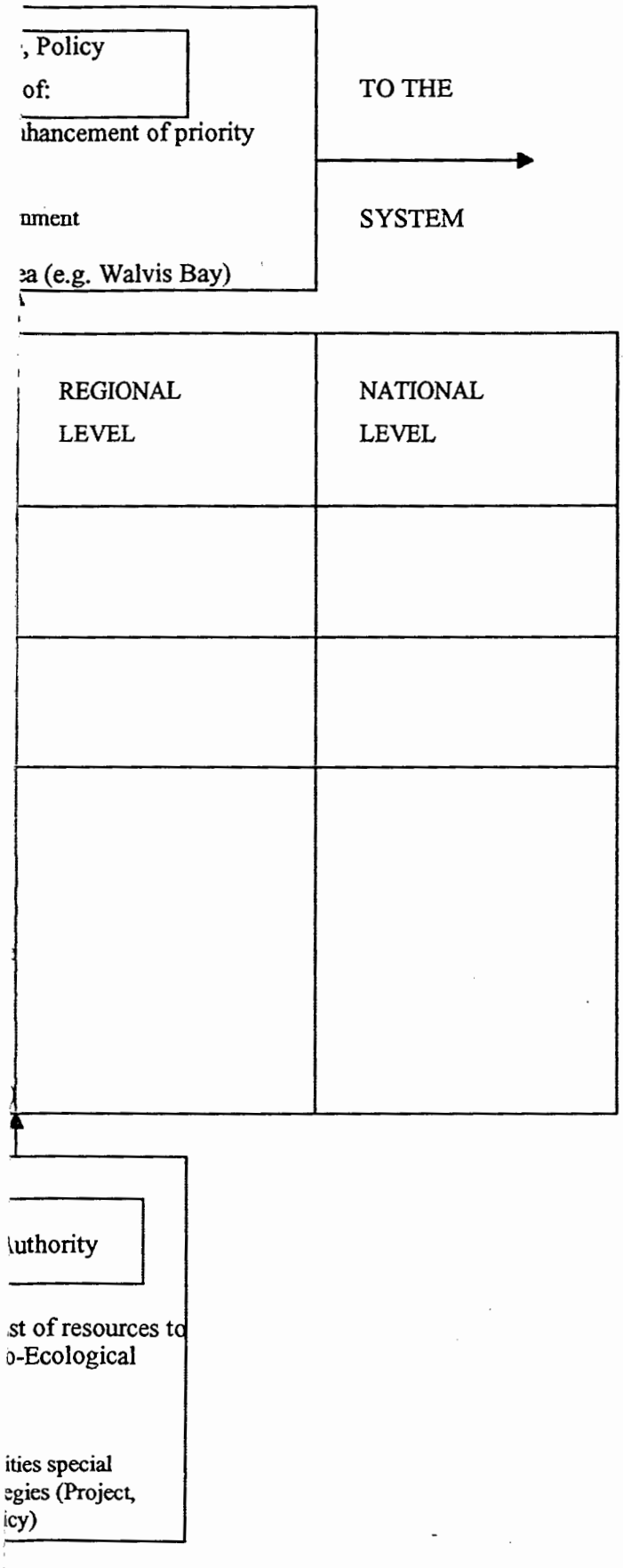
Achieving this does not involve an overthrow and elimination of the existing mode of development, but rather the preservation of the existing autonomy of the state, press and economy, while redirecting their goals towards the needs of local communities in the pursuit of sustainability (Gorz,1994). These goals should be directed towards the facilitation of two movements. Firstly, those activities which presently threaten the socio-ecological environment (socio-ecological constraints) must diminish and disappear and secondly, the socio-ecological potential to address these socio-ecological constraints must be enhanced (Gorz, 1994). In this dissertation, these two simultaneous movements are called the maintenance (addressing socio-ecological constraints (e.g air pollution) and enhancement (increasing socio-ecological potential) of resources. The institutional and procedural contributions made here are:

- A discussion on the institutional implications of this approach to development, which is based on an interrelated view of humans and the environment, and on the characteristics of endogenous development. It is proposed that current local, regional and national government view themselves as coordinating institutions for the identification of shared socio-ecological constraints within their bioregion - for practical purposes, the existing jurisdictional areas of local, regional and national government are considered to be equivalent to bioregions and it is proposed that they should be managed as such.
- A procedure based on the criteria and institutional requirements mentioned above. This procedure exhibits characteristics of the following:
  - The procedure of Impact Hypothesis developed by the Environmental and Social Systems Analysis Ltd.;
  - Beanlands and Duinker's (1983) Ecological Framework for Environmental Impact Assessment (1983);
  - Adaptive Environmental Assessment and Management (AEAM);
  - Integrated Resource Management (IRM);
  - Brown and Hill's (1995) decision-scoping process.
- an application of the framework for resource maintenance and enhancement proposed, which aims to demonstrate the following:
  - a manner in which the resource framework can be applied;
  - a positive and proactive way in which the EPZ Regime in Namibia, can be strategically managed from a socio-ecological perspective.

In this dissertation, increasing our understanding of contemporary approaches to addressing the environment/development relationship, is not only used as the guide to the development of a framework for resource maintenance and enhancement, but also as the means by which we maintain and enhance resources. It is hoped that this synthesis of current discourse into a framework for resource maintenance and enhancement, helps to make the map with which we navigate the muddy waters of the environment/development relationship, a little clearer.

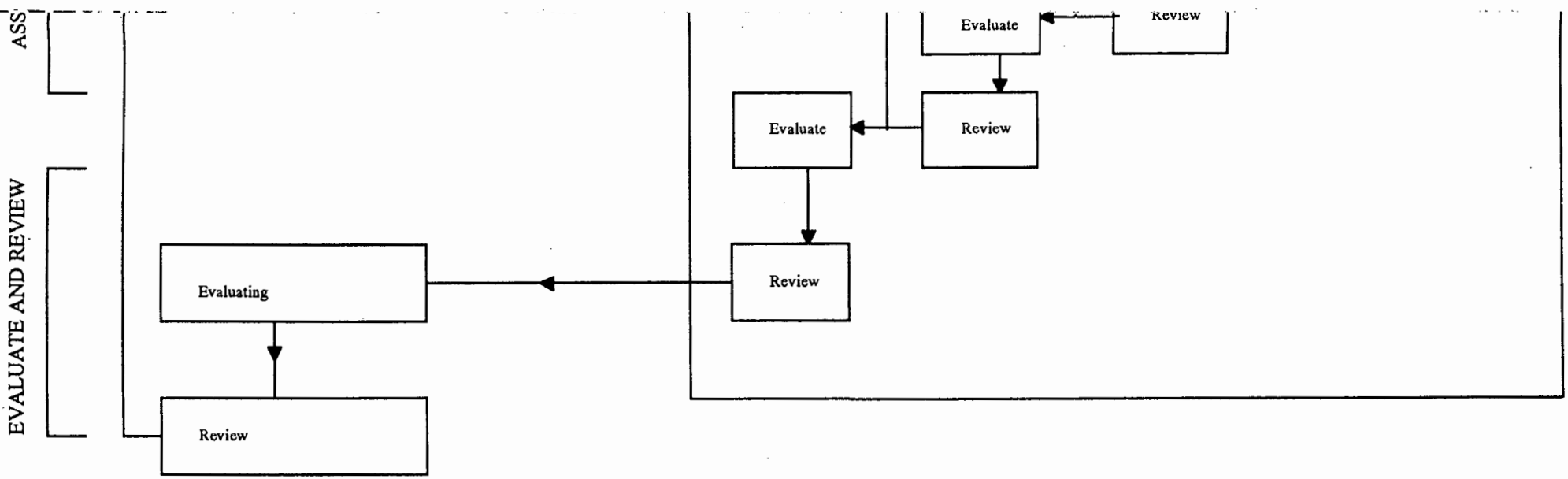
APPENDIX

APPENDIX A



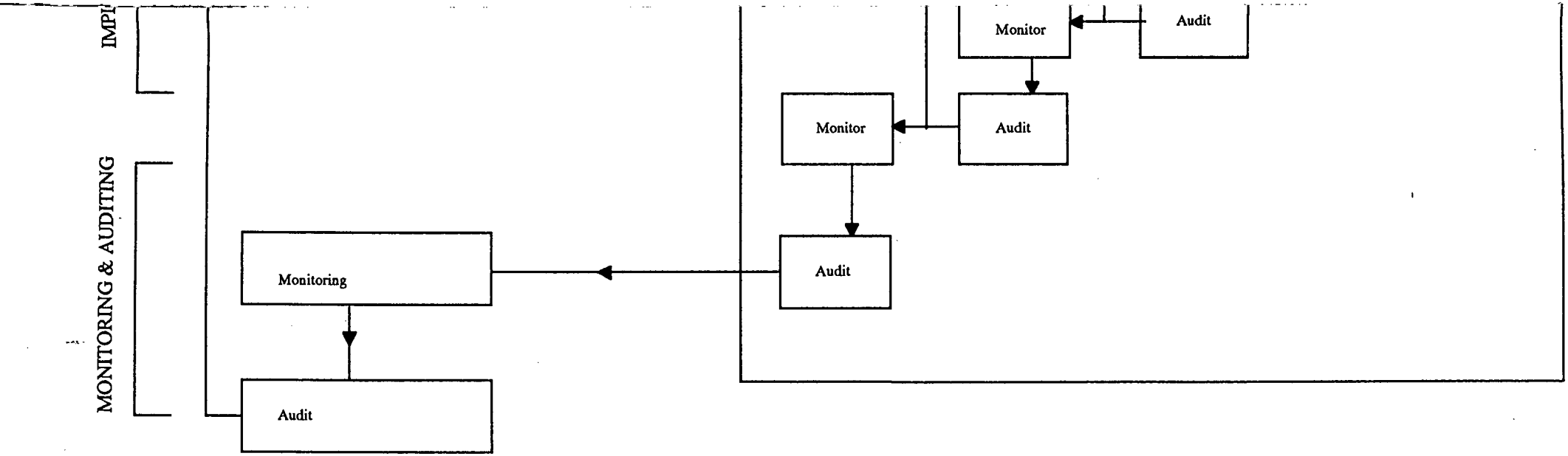
CE MAINTENANCE AND ENHANCEMENT

is Development) (A)



FRAMEWORK FOR RESOURCE MAINTENANCE AND ENHANCEMENT (Hypothesis Development) (B)

APPENDIX B



FRAMEWORK FOR RESOURCE MAINTENANCE AND ENHANCEMENT (Hypothesis Implementation)

APPENDIX C

EPZs part of new strategy to lure foreign investors

By THABO KOBOKOANE

SINCE the collapse of socialism, southern Africa has found itself increasingly isolated from the world economic community with little, if any, foreign direct investment flowing into the region.

However, with the gradual return to political stability in the region, the way has been paved for the return of foreign investment in the SADC region.

The struggle has moved towards the economic front, with many countries putting together economic plans to attract investment.

Namibia, in an attempt to "lure foreign investors, diversify its economy and reduce the long-standing financial dependence on South Africa and fuel economic growth", has established its first export processing zone (EPZ) in Walvis Bay.

Export processing zones are designed to encourage high-value export-oriented businesses, from mineral processing to warehousing and business services, and create a vibrant manufacturing sector.

According to Manuel de Castro, mayor of Walvis Bay, 10 companies' applications to invest in terms of the town's export processing zone incentives have already been approved, with investment estimates of billions of rands.

Namibia offers the following incentives to investors:

- ☐ Total exemption from corporate income tax, customs duties, sales tax, transfer taxes and stamp duties, with the exception of personal income tax.
- ☐ Foreign companies are free to repatriate capital, profits and dividends.
- ☐ All incentives are of unlimited duration and apply equally to Namibian and foreign firms.
- ☐ Investors, by choosing to upgrade the skills of their Namibian employees, can make use of the 75% reimbursement by the Namibian government of all direct expenditures incurred on approved on the job training courses.

The most controversial aspect of the EPZ, unlikely to go down well with the SA trade union movement, is the agreement that bars any strikes and lockouts by unions and business, but allows for the Labour Relations Act to apply.

The agreement was reached after negotiations between labour and government and "satisfies" both investors and unions, according to Mr de Castro.

Though starting to wane in influence, EPZs have played a fundamental role in the expansion of the Mauritian economy since the 1980s.

Last year they are estimated to have earned Mauritius 18,1-billion rupees ($919-million) in foreign exchange.

But the expansion was textile-led and has had to bear the brunt of international competition. Employment in the EPZs is estimated to have fallen to a low of 80 000 from 91 000 in 1991. The number of EPZ enterprises have dropped to 477 from 586 over the same period.

The Mauritian government has now announced steps to revamp the EPZs by focusing on high technology. This will include increasing investments in high technology, diversifying the products manufactured and giving more incentives to the operators.

"Immense opportunities are waiting for us (in high technology). Knowledge parks in the EPZ will hold immense potential," says Paul Berenger, Deputy Prime Minister of Mauritius.

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