1998

The role of management in the movement towards sustainability: Perceived responsibilities, challenges, and opportunities

Martin Brueckner

Edith Cowan University

Recommended Citation

This Thesis is posted at Research Online.
https://ro.ecu.edu.au/theses/120
Edith Cowan University

Copyright Warning

You may print or download ONE copy of this document for the purpose of your own research or study.

The University does not authorize you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site.

You are reminded of the following:

- Copyright owners are entitled to take legal action against persons who infringe their copyright.

- A reproduction of material that is protected by copyright may be a copyright infringement. Where the reproduction of such material is done without attribution of authorship, with false attribution of authorship or the authorship is treated in a derogatory manner, this may be a breach of the author’s moral rights contained in Part IX of the Copyright Act 1968 (Cth).

- Courts have the power to impose a wide range of civil and criminal sanctions for infringement of copyright, infringement of moral rights and other offences under the Copyright Act 1968 (Cth). Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.
USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.
The Role of Management in the Movement Towards Sustainability: Perceived Responsibilities, Challenges, and Opportunities

by

Martin Brueckner
(BBus)

This thesis is presented for the degree of Master of Business at Edith Cowan University

1998
Abstract
The aim of this thesis was to explore the role of management in the movement towards ecologically sustainable development (ESD), investigating perceived responsibilities, challenges, and opportunities facing business management today. The point of departure for this study was the acknowledgement of the present paucity of references to ESD within the management literature, widespread amoral business conduct, and the dominance of economic rationalism within business science.

This research provided an analytical review of ESD related literature, concentrating on the history and rise of the ESD paradigm, its ethical underpinnings, and economic implications to management practice. The paper highlighted the importance of ESD to management theory and practice, urging for a re-conceptualisation of business core values and a redirection of economic systems onto a development path that is economically, socially, and ecologically sustainable in the long-term.

The focal point of this study was a bilateral comparison between Germany and Australia, concentrating on the extent to which ESD has been operationalised within these two countries. Literature reviews and exploratory case study research revealed that lessons can be learned from the German example in view of ESD. In this context, Germany was recognised as a world-leader in many aspects of environmental protection. In contrast, Australia was found to be lagging behind international trends of moving ESD theory into practice.

Based on the literature reviews and case study analysis, traditional economy-ecology relations were re-conceptualised to aid the development of an environmental management model that reflects the ethical demands of the ESD paradigm. Finally, introducing ten sustainability benchmarks, a comparative model was devised to enable measurement and analysis of progress in relation to the operationalisation of ESD principles.

The findings of this study highlighted the implications of ESD to management theory and practice and may serve as a theoretical basis for future research on the inculcation of ESD into the business community and society at large.
Declaration

I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any situation of higher education; and that to the best of my knowledge and belief it does not contain any material previously published or written by a person except where due reference is made in the text.

Signature.

Date 27.11.1998
Acknowledgements

I would like to express my great appreciation to my supervisors Richard McKenna and Dr Pierre Horwitz, both of Edith Cowan University, for their knowledge, advice, and support which were invaluable. Without their ability to monitor and correct my path of work this thesis would have never been finished.

I would like to thank Sarah for her love, help, and most of all her understanding, and I wish to apologise to her and my daughter Arie for I have been an invisible and difficult family member during this project. I would also like to express my gratitude to my father Manfred Brueckner whose help and assistance were crucial for the completion of this thesis. The outside opinions of Marjorie Collins and Catherine Collins were also of great help in composing this work. Furthermore, I am indebted to ‘Schwager Schmaal’ whose practical insights and commentary were invaluable for the completion of Chapter Seven.

Finally, I would like to thank all participating German and Australian companies who provided much needed information for the case study analysis in Chapter Six.
# Table of Contents

Abstract ii
Declaration iii
Acknowledgements iv
Table of Contents v
List of Figures viii
List of Tables ix
Acronyms x

**Chapter One**

**General Introduction**

1.0 Thesis Introduction 1
1.1 Thesis Structure 5

**Chapter Two**

**Ecologically Sustainable Development: History – Definition – Controversy**

2.0 Introduction 7
2.1 The History of Ecologically Sustainable Development 8
2.2 The Nature and Scope of Ecologically Sustainable Development 13
2.3 Sustainable Development: A Management Interpretation 18
2.4 Conclusion 19

**Chapter Three**

**Sustainability, Ethics, and Paradigms in Business Theory**

3.0 Introduction 20
3.1 The Moral Controversy 22
  3.1.1 Kantianism 23
  3.1.2 Rawlsian Ethics 25
  3.1.3 Utilitarianism 27
3.2 Moral Theory Support for Future Obligations 29
3.3 Paradigms and Business Theory 31
  3.3.1 Anthropocentrism 32
  3.3.2 Ecocentrism 34
  3.3.3 Sustaincentrism 36
3.4 The Need for an Integrative Paradigm in Business Theory 39
3.5 Conclusion 40

v
Chapter Four
The Economics of Sustainable Development

4.0 Introduction 42

4.1 The Economic, Political, and Environmental Crises 43
  4.1.1 The Economic Crisis 44
  4.1.2 The Political Crisis 46
  4.1.3 The Environmental Crisis 48

4.2 Conventional Economics: A Critique 49
  4.2.1 Economic Growth: The Problem of Measuring Wealth and Standard of Living 50
  4.2.2 The Myth of Economic Growth and the Growing Income Gap 51
  4.2.3 Externalities: Failure of Markets and the Price Mechanism 53
  4.2.4 Discounting the Future 56

4.3 The Neo-Classic Economics Paradigm 57

4.4 Ecological Economics: The Schism with Neo-Classic 59

4.5 Working Towards a Sustainable Economy 61
  4.5.1 Environmental Evaluation 61
  4.5.2 Polluter Pays Principle (PPP) 63
  4.5.3 Environmental Taxation 64
  4.5.4 Tradable Pollution Permits 68
  4.5.5 The Moral Economy: Changing Values and Behaviour 69
    4.5.5.1 The Steady-State Economy 70
  4.5.6 The Measurement of Sustainability: Perceived Problems 71

4.6 Ecological Economics: Management Implications 72

4.7 Conclusion 74

Chapter Five
Australia – Germany: A Bilateral Comparison on the Operationalisation of Sustainability Principles

5.0 Introduction 76

5.1 National Differences and the Operationalisation of ESD 77
  5.1.1 The Political Factor 79
  5.1.2 The Legal Factor 80
  5.1.3 The Economic Factor 83
  5.1.4 The Cultural Factor 86

5.2 National Differences and the Decision-Making Environment of Business Enterprises 88

5.3 Conclusion 91

Chapter Six
The Environmental Management Performance of German and Australian Private Sector Enterprises: A Research Report

6.0 Introduction 92

6.1 Problem Statement 93

6.2 Research Design Details and Methodology 93
  6.2.1 Type of Study 94
  6.2.2 Nature of Study 94
  6.2.3 Study Setting 94

vi
List of Figures

Figure 2.1
The Objectives of Ecologically Sustainable Development 14

Figure 2.2
The Four Dimensions of Sustainability 16

Figure 2.3
Degrees of Commitment to Sustainability 17

Figure 4.1
Gross World Product, 1950 – 1996 44

Figure 4.2
Genuine Progress Indicator versus Gross Domestic Product 51

Figure 4.3
Commodities Price Index 54

Figure 4.4
Illustration of Conventional and Environmental Economics 58

Figure 4.5
Illustration of Ecological Economics 60

Figure 4.6
Sharing the Cost of Pollution Control 64

Figure 5.1
Climate Policies of a Selection of OECD Countries Ranked by Their Perceived Effectiveness to Stabilise Greenhouse Emissions 80

Figure 5.2
National Economic Structures and the Relationship Between Real Income and Environmental Quality 90

Figure 7.1
Conceptual Illustration of Human Economy-Ecology Relations 118

Figure 7.2
Ethical Environmental Management 126

Figure 7.3
Sustainability Progress Matrix 128

Figure 7.4
Perceived Ranking of German and Australian Efforts to Operationalise Sustainability Principles 133
List of Tables

Table 3.1
Traditional Versus Ecocentric Management 35

Table 3.2
Operational Principles and Techniques of Biophysically Sustainable Behaviour 38

Table 6.1
Corporate Environmental Commitment: A Summary of Criteria 96

Table 6.2
List of Supportive Documentation Provided by Research Participants 100

Table 7.1
Perceived Responsibilities of All Stakeholders within the Human Economy 119
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
</tr>
<tr>
<td>ACF</td>
<td>Australian Conservation Foundation</td>
</tr>
<tr>
<td>AENP</td>
<td>Approximate Environmentally Adjusted Net National Product</td>
</tr>
<tr>
<td>AIM</td>
<td>Australian Institute of Management</td>
</tr>
<tr>
<td>AUSS</td>
<td>Australian Dollar</td>
</tr>
<tr>
<td>B.A.U.M.</td>
<td>Bundesdeutscher Arbeitskreis für Umweltbewußtes Management</td>
</tr>
<tr>
<td>BFAI</td>
<td>Bundesstelle für Außenhandelsinformationen</td>
</tr>
<tr>
<td>BMB+F</td>
<td>Bundesministerium für Bildung, Wissenschaft, Forschung und Technologie</td>
</tr>
<tr>
<td>CEC</td>
<td>Commission of the European Communities</td>
</tr>
<tr>
<td>CFC</td>
<td>Chlorfluorocarbons</td>
</tr>
<tr>
<td>CO₂</td>
<td>Carbon Dioxide</td>
</tr>
<tr>
<td>DC</td>
<td>Developed Country</td>
</tr>
<tr>
<td>DiMDI</td>
<td>Deutsches Institut für Medizinische Dokumentation und Information</td>
</tr>
<tr>
<td>DM</td>
<td>Deutsche Mark</td>
</tr>
<tr>
<td>DPCSD</td>
<td>United Nations Department for Policy Coordination and Sustainable Development</td>
</tr>
<tr>
<td>EE</td>
<td>Ecological Economics</td>
</tr>
<tr>
<td>EF</td>
<td>Ecological Footprint</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>ESD</td>
<td>Ecologically Sustainable Development</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>G8</td>
<td>Group of Eight Leading Industrialised Nations</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GPI</td>
<td>Genuine Progress Indicator</td>
</tr>
<tr>
<td>GWP</td>
<td>Gross World Product</td>
</tr>
<tr>
<td>HMSO</td>
<td>Her Majesty's Stationary Office</td>
</tr>
<tr>
<td>IHK</td>
<td>Industrie und Handelskammer</td>
</tr>
<tr>
<td>IIED</td>
<td>International Institute for Environment and Development</td>
</tr>
<tr>
<td>IISD</td>
<td>International Institute for Sustainable Development</td>
</tr>
<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
</tr>
<tr>
<td>ISEW</td>
<td>Index of Sustainable Economic Welfare</td>
</tr>
<tr>
<td>IUCN</td>
<td>International Union for the Conservation of Nature</td>
</tr>
<tr>
<td>LDC</td>
<td>Lesser Developed Country</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Government Organisation</td>
</tr>
<tr>
<td>NGRS</td>
<td>The National Greenhouse Response Strategy</td>
</tr>
<tr>
<td>NHT</td>
<td>National Heritage Trust</td>
</tr>
<tr>
<td>NRA</td>
<td>Natural Resource Accounting</td>
</tr>
<tr>
<td>NRDC</td>
<td>Natural Resources Defence Council</td>
</tr>
<tr>
<td>NSES</td>
<td>National Strategy for Ecologically Sustainable Development</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Cooperation and Development</td>
</tr>
<tr>
<td>OPEC</td>
<td>Organisation of Petroleum Exporting Countries</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
</tr>
<tr>
<td>SDI</td>
<td>Sustainable Development Indicator</td>
</tr>
<tr>
<td>SMERC</td>
<td>Small and Medium Enterprise Research Centre</td>
</tr>
<tr>
<td>TQEM</td>
<td>Total Quality Environmental Management</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNCED</td>
<td>United Nations Conference on Environment and Development</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environment Programme</td>
</tr>
<tr>
<td>UNGASS</td>
<td>United Nations General Assembly</td>
</tr>
<tr>
<td>WCED</td>
<td>World Commission on Environment and Development</td>
</tr>
</tbody>
</table>
Chapter One
General Introduction

1.0 Thesis Introduction

During this century business science has failed to free itself from its simplistic concepts of economy-ecology relations. The longstanding dominance of economic rationalism within business, which advocates the unconditional maximisation of profit and utility, has resulted in an exclusive emphasis on a narrow selection of economic, social, political and technological concepts within this academic discipline (Buchholz, 1992; Gladwin, Kennelly, & Krause, 1995a; 1996a; Shrivastava, 1994a; Westley & Vredenburg, 1996). The stronghold of the economics paradigm within business has caused the business community at large to be (a) separate from the bio-physical environment (Gladwin et al., 1995a; 1996a; Shrivastava, 1994a; 1994b; 1995), (b) lacking moral grounding (McKenna & Brueckner, 1998; Shaw & Barry, 1992), and (c) in part responsible for today’s pressing political, economic, and ecological problems world-wide (Grey, 1993; Purser, Park, & Montuori, 1995; Shrivastava, 1995; 1996).

Global industrialisation and economic expansion have strengthened the influence of business science and helped the proliferation of the Western worldview which reflects the underlying assumptions of the conventional economics paradigm (Gladwin et al., 1995a; Milbrath, 1994). However, in the last 20 years the global economy has grown beyond the physical carrying capacity of the planet earth on which all life depends. Unrestricted economic expansion, compounded by continuous population growth and resultant pressure on resources, has been responsible for unprecedented levels of resource depletion, waste discharge, and subsequent ecological decline (Jacobs, 1991; Porter & Brown, 1991; Sugal, 1997; Tuxill, 1997).

Today, the world is witnessing a growth in political, economic, and ecological instability around the world (Marglin, 1990; Trainer, 1996; Walter, 1996; Weerasinghe & Tepperman, 1994) which is attributed to the following factors:
unethical business conduct and unbalanced international trade relations (George, 1988; Korten, 1995; Kurz, 1995; Porter & Brown, 1991),
consumerism (Suzuki, 1997),
maldistribution of wealth (Kane, 1997),
social inequity (Gladwin, Krause, & Kennelly, 1995b),
poverty and unemployment (Hanson, 1990; Manske, 1995; Coombs, 1990)

In response to growing environmental, economic and social problems the concept of ecologically sustainable development (ESD) has emerged over the past 30 years, assuming an increasingly higher profile (Jayasuriya, 1992; Zarsky, 1990). Today, ESD represents a key concern in the national and international political arenas, focusing public attention on resource conservation, environmental protection and social equity, as well as inter- and intra-generational justice (Barbier, 1987; Basagio, 1995; Daly & Cobb, 1989; Faucheux & O'Conner, 1995; Hamilton, 1996; Lele, 1991; Palmer, Cooper, & van der Vorst, 1997; Pell, 1996; Schäfer, 1996). This new development paradigm requires a dramatic turnaround of humankind to sustainable political, social, and economic arrangements (Gladwin et al., 1995b; Trainer, 1996). In view of uncertainty relating to environmental thresholds, the concept of ESD not only demands changes in current patterns of consumption and resource use, it also requires attitudinal and behavioural shifts away from the maxim that more is better, and that this be reflected in all human activities (Barbier, 1987; Basagio, 1995; Hurka, 1992; Palmer et al., 1997; Trainer, 1996). Until today, ESD has remained largely an issue of academic debate and political rhetoric (Major, 1997). However, the last five years have seen this concept gaining momentum and witnessed mounting public pressure on politicians, academics, and the business community to seriously engage in environmental discourses and move sustainability from theory into practice.

For business science, the rise of the sustainability paradigm means that changes need to be made to the ways economy-ecology relations have been traditionally conceptualised (Gladwin et al., 1995a; Purser et al., 1995; Shrivastava, 1994a; 1994b; 1995). This challenge is an interdisciplinary one, meaning that concepts need to be developed that help “bridge the conceptual gap between … economic and managerial theories and a scientific understanding of the dynamics of natural environments” (Westley & Vredenburg, 1996, p. 105). The global community has become
increasingly aware of the world's environmental predicament, insisting on changes to the traditional business-as-usual approach in the market place. The growing demand for 'green' products and ethical investment opportunities is indicative of changes occurring in the public perception of environmental issues (Vinten, 1994). As businesses shape the lives of communities at local, national, regional and global levels they have not only the potential but also the responsibility to act as agents of positive social change towards sustainable development (Beaumont, 1992; Franks, 1996; Schäfer, 1996; Vinten, 1994). In view of the changes occurring in the business environment and the growing understanding of the interconnectivity between the human economy and the natural environment, business theorists and practitioners need to take responsibility and proactively respond to the sustainability challenge.

Despite the apparent demand for intellectual tools, models, and concepts that could guide business managers and their organisations onto the pathway of sustainability, there still is a paucity of business scholars addressing ESD (Gladwin et al., 1995b; Lang, 1995; Shrivastava, 1994a). In fact, until today only little progress has been made to accommodate ESD within business science, leaving business practitioners devoid of needed guidance and missing the opportunity to develop a new generation of eco-sensitive managers.

In view of the fact that the 'greening' of business theory and management practice has remained an unenlightened area it is the aim of this thesis to explore and define the role of management in the movement towards sustainability, looking at perceived responsibilities, challenges, and opportunities. This thesis endeavours to provide input to the underdeveloped discourse on business-environment relations, to aid the development of workable solutions for business practitioners facing the ESD challenge, and to establish a theoretical basis for related future research. To achieve this aim, the objectives of this study are:

- To provide an overview of the concept of ESD and elaborate on the current debate on scope and definition for the development of an operational interpretation of ESD for business management.
- To determine the ethical demands of sustainability and explore moral obligations of business management within the context of ESD.
To review the economics of sustainability and examine possible implications for management practice.

To compare contemporary environmental management practices in Australia with current practices in Germany, a perceived leader on environmental issues.

To devise a management model that encompasses managerial responsibilities, as well as challenges and opportunities that could arise in the course of implementing sustainability principles.

This study provides a comprehensive overview of the concept of ESD in order to demonstrate its relevance to management theory and practice. For this reason, a large part of this thesis focuses on developing an analysis of relevant literature. This analysis interacted with the search for and selection of literature, which was chiefly drawn from sources such as the United Nations (UN), Organisation for Economic Cooperation and Development (OECD), government authorities, non-government organisations (NGOs), academic commentary, and environmental conservation groups. The literature search was carried out, using Australian library catalogues and on-line reference databases such as FirstSearch, Dialog, Uncover, and Deutsches Institut für Medizinische Dokumentation und Information (DIMDI). The list of terms below summarises the keywords used for the purpose of the literature search (The higher the level of intersection between keywords the more relevant they were to the thesis formulation).

- Ecologically Sustainable Development or Sustainability
- Business Management and Ecology
- Environmental Protection*
- Environmental Policy and Legislation
- Greening of Business
- Environmental Taxation and Accounting
- Environmental Ethics and Morality*

* where relevant to business management

Based on the methodology outlined above, a wide selection of literature has been chosen to enable an accurate description of the scope of ESD and the assessment of its implications to business management.
1.1 Thesis Structure

This thesis is divided into eight chapters, including this introductory chapter. Additional information is included in three appendices.

Chapter Two provides a historical overview of the rise of the concept of sustainable development, outlining the scope of this new paradigm and providing insights into the sustainability controversy. This chapter will also produce an operational interpretation of ESD in a business management context, providing a foundation for the remainder of the thesis.

Chapter Three explores the ethical dimensions of sustainability. For this purpose the utilitarian school of thought, which represents the philosophical backbone of business science, will be compared with Kantian and Rawlsian ethics in view of their congruence with the ethical demands of sustainability. It is the aim of this chapter to identify potential moral obligations owed by the business community to embrace the concept of ESD.

Chapter Four addresses the economics of sustainability. To this end, shortfalls of the conventional economics paradigm are advanced, and the concept of ecological economics is introduced. It is also the purpose of this chapter to review a selection of economic tools which are considered pertinent for the achievement of sustainability.

Chapter Five advances a bilateral comparison between Germany and Australia in the context of ESD. For this purpose analysis is made of the prevailing political, legal, economic, and cultural differences between these two countries. Their impact on these nations' progress towards sustainability is assessed.

Chapter Six reports on an empirical study, carried out for the purpose of this thesis, which looked at potential differences between German and Australian private sector enterprises in their pursuit of sustainable management practice and eco-sensitive leadership.
Chapter Seven synthesises the findings of the literature review and the empirical study from previous chapters. The information gathered is used to define the role of management in the movement towards sustainability. For the purposes of theory building in business science and hypothesis generation for future research it is attempted in this chapter to devise a management model that captures the responsibilities, challenges and opportunities of management in the context of ESD and to develop sustainability benchmarks for environmental management practice.

Chapter Eight is an overview of the research findings which assesses the relevance of this study to management theory and practice. Limitations of this study are identified and suggestions made for further investigation in this area.

Appendix A comprises an English and a German version of a questionnaire which was designed for an empirical study undertaken for the purpose of this thesis. Appendix B summarises the data collected from the aforementioned research project, tabulating the responses from the data groups that were surveyed.
Chapter Two
Ecologically Sustainable Development
History – Definition – Controversy

2.0 Introduction

Throughout the last 30 years a quiet revolution has been under way, as ecologically sustainable development has gradually become a key concern for researchers and policy makers world-wide (Jayasuriya, 1992). Since the 1960s, scientists have made persistent warnings about the impact of human economies on the global environment (e.g. Carson, 1962; Ehrlich, 1970; Meadows, Meadows, Randers, & Behrens, 1972). These warnings imply that contemporary society needs to take note of the state of the environment and critically look at the root causes of ecological decline. Today, the ESD paradigm is given centrality on many development agendas of countries around the world, as it offers the hope “that the ... world’s most pressing problems, [these being] wide-spread poverty and the degradation of ... [the] global environment, can be addressed effectively [by this new approach]” (Zarsky, 1990, p. 1). This is because ESD conceptualises the concerns about human economy-ecology relations and offers guidance for the development of political, social, and economic remedies.

Despite its wide use, however, the term ‘ecologically sustainable development’ is a contested concept (Basagio, 1995). This is evidenced by the fact that a multitude of definitions have been offered (Pearce, Markandya, & Barbier, 1989; Steer & Wade-Gery, 1993) to explain and describe its complexities. The prevailing contradictions, which are a consequence of the differences in perception of this concept, in turn prove problematic for the development of intellectual tools needed for the operationalisation of sustainability principles (Barbier, 1987). In particular, the perception of ‘development’ and its synonymous use with ‘economic growth’ potentially create inconsistencies in goal definition and lead to controversy among theorists and practitioners from the ecological and the economic factions. It therefore stands to reason that there is an apparent need for an operable definition of ESD to enable its integration into human activities.
In view of the foregoing, it is the aim of this chapter to provide a historical overview of the rise of the concept of ESD in Section 2.1 in order to create an understanding of the reasons behind its growth in popularity and momentum. Section 2.2 will give insights into a selection of definitions of ESD and combine workable explanations of this new paradigm with the aim of devising an operational interpretation in Section 2.3 as the point of departure for this thesis. At this stage, it should also be noted that the term 'ecologically sustainable development' will be used synonymously with terms such as 'sustainable development' and 'sustainability'.

2.1 The History of Ecologically Sustainable Development

There is disunity in the literature as to where the origins of the term 'ecologically sustainable development' lie (Barbier, 1987). However, the year 1962 is generally considered the seminal year in which first public concern about environment and development were expressed (Suzuki, 1997). At the time, public awareness was raised through the publication of 'Silent Spring' (Carson, 1962), a book on toxicology, ecology and epidemology which highlighted the earth’s limited capacity to absorb pollutants.

In 1968, 'The Population Bomb' (Ehrlich, 1970) illustrated the connection between human population, resource exploitation and the environment, raising the issue of resource scarcity and the planet’s carrying capacity. The following debate on environmental considerations in the context of policy making and development planning was also the subject of the Paris 'Biosphere Conference' and the Washington, DC, Conference on the Ecological Aspects of International Development the same year. Nonetheless, Environmental issues did not receive international recognition at large until the United Nations Conference on Human Environment in 1972, in Stockholm. This conference focused on the rights of humanity to a healthy and productive environment and addressed transboundary pollution and co-operative management of shared resources (Basagio, 1995). Although its eco-agenda has been rejected by most conference delegates, the Stockholm Conference can be credited with popularising the concept of ecologically sustainable development and setting the stage for later treaties on environmental protection (International Institute for Sustainable Development (IISD), 1997b). The following years witnessed the establishment of numerous international environmental protection agencies such as
the United Nations Environment Programme (UNEP), the Environmental Liaison Centre, the International Institute for Environment and Development (IIED), the Worldwatch Institute, as well as national environmental protection agencies (EPAs) predominately in the USA and Northern Europe (International Institute for Sustainable Development (IISD), 1997b).

Fears of resource depletion and ecological collapse were further heightened by ‘The Limits to Growth’ Report (Meadows et al., 1972) to the Club of Rome at a time when public concern about resource scarcity was fuelled by the OPEC (Organisation of Petroleum Exporting Countries) oil crisis. The Limits to Growth Report suggested the exhaustion of natural resources by the end of the next century if economic development was not slowed, a conclusion which was then criticised by the developed and the developing world. It was argued that the study ignored technological advancements to solve environmental problems and that its perceived abandonment of economic growth threatened prospects of prosperity in Third World countries. In spite of the widespread critique directed against The Limits to Growth Report at the time, the study successfully highlighted the environmental consequences to be paid for indiscriminate economic expansion and created awareness of the interconnections between several global problems such as the ‘North-South’ gap, overpopulation, and persistent poverty in Third World countries (International Institute for Sustainable Development (IISD), 1997b).

In response to growing numbers of environmental studies and available scientific data about the state of the world, the 1970s witnessed numerous environmental programmes being initiated. Programmes such as the Indian Chipko Movement and the Greenbelt Movement in Kenya were based on environmental data that stressed the need to protect biodiversity and ecosystem integrity (International Institute for Sustainable Development (IISD), 1997b).

In the context of further ecological decline and environmental catastrophes like the Amoco oil spill and the Three Mile Island nuclear reactor leak in the late 1970s the World Conservation Union released the World Conservation Strategy (cited in International Union for the Conservation of Nature (IUCN), 1981). This strategy identified the main agents of habitat destruction (e.g. poverty, social inequity, terms of
trade) and advocated a new international modus operandi to redress inequities and counter the impacts of poverty through a more dynamic and stable world economy.

The 1980s saw another series of global environmental disasters such as the Bhopal accident, famines in Africa, rainforest destruction in Latin America, the discovery of the ozone hole over Antarctica, and the radioactive explosion at Chernobyl. These incidences shocked an increasingly environmentally aware public and triggered further research on social, economic, cultural, and environmental issues.

In 1987, 'Our Common Future', the report by the UN World Commission on Environment and Development (WCED, also known as the Brundtland Commission), was the first attempt to tie global problems together and give directions for comprehensive global solutions. This Commission report also provided the first coherent definition of ecologically sustainable development and described ESD as:

"a development that meets the needs of the present without compromising the ability of future generations to meet their own needs"

(World Commission on Environment and Development (WCED), 1987, p. 40).

The Brundtland Commission popularised the concept of ESD and placed the environment as a key concern on political agendas world-wide. This was evidenced by international initiatives such as the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer.

Intensified global and regional environmental research was carried out by non-profit organisations, governments, non-governmental organisations (NGOs), businesses and other environmental stakeholders in the following years. The process of international research efforts and political debate on environmental initiatives culminated in the 1992 UN Conference on Environment and Development held in Rio de Janeiro, Brazil (International Institute for Sustainable Development (IISD), 1997b). The assembled government leaders signed the Convention on Climate Change and the Convention on Biological Diversity, endorsed the Rio Declaration and the Forest Principle, and adopted Agenda 21, an action plan for achieving sustainable development in the 21st

Agenda 21 focused on four areas:

- Social and Economic Dimension
- Conservation and Management of Resources for Development
- Strengthening the Role of Major Groups (key players)
- Means of Implementation

(Environment Protection Group, 1995)

While Agenda 21 could not itself impose binding legal commitments on governments, it represented a global programme for environmental restoration, preservation and social development which, if adopted, gave its recommendations the force of a political commitment at the highest possible level. Parallel to the 'Earth Summit' in Rio, a non-government organisations forum adopted a full set of alternative treaties (International Institute for Sustainable Development (IISD), 1997b) and proposed the adoption of environmental conservation and sustainable development principles (Rockefeller, 1996). The European Union (EU) and the United States were among the first industrialised countries to take action towards the integration of sustainability principles calling for the harmonisation of economic and ecological forces and for changes in current growth patterns in the Western World (Basagio, 1995; Commission of the European Communities (CEC), 1993). By 1997 more than 100 countries had prepared national environmental strategies of which half could demonstrate tangible changes in addressing environmental issues (Steer, 1996).

The year 1997 marked the five year anniversary of the UN Conference in Rio de Janeiro. In order to monitor the progress being made by governments, businesses and communities under Agenda 21 and to revitalise the commitment to sustainable development, the United Nations and other interest groups from the Rio Convention agreed to re-join in a global Rio+5 campaign throughout 1997 (International Institute for Sustainable Development (IISD), 1997a). At the Rio+5 Forum in Brazil attempts were made to agree on innovative strategies, policies, plans and programmes for moving sustainability from ‘Agenda to Action’ (Earth Network for Sustainable Development, 1997). At the 5th Session of the UN Commission on Sustainable
Development which was created to monitor and report on the implementation of the 1992 UN Summit agreements, governments negotiated proposals to be adopted at the 19th Special Session of the UN General Assembly (UNGASS) – termed Earth Summit+5 - later that year.

The Earth Summit+5 was the largest conference convened on sustainable development since the Rio Conference in 1992. Summit delegates adopted a ‘Programme for the Further Implementation of Agenda 21’ and expressed commitment to enhanced efforts towards the achievement of sustainability (United Nations Department for Policy Coordination and Sustainable Development (DPCSD), 1997). However, the lack of substantial progress made by governments towards sustainable development since the 1992 Earth Summit provoked strong disappointment and critique from participating NGOs, the media and other observers (Major, 1997). In particular, Rio+5 attracted major criticism in relation to the financial commitments that were made by Earth Summit delegates in 1992 for the funding of international projects which largely have not been met. In fact, the Group of Eight Leading Industrialised Nations (G8) as well as most other industrialised countries have failed to provide the needed funds for the operationalisation of the sustainability principles that were agreed on at the Rio Conference (Major, 1997).

A further meeting of UN members was held in December 1997 in Kyoto, Japan. This encounter addressed a unified, internationally binding legislative framework for environmental targets under the umbrella of the Convention on Climate Change from 1992 (Natural Resources Defence Council (NRDC), 1997). After five years of planning and eleven days of intense negotiations, the Kyoto Summit produced an agreement on greenhouse gas reductions which was regarded by most environmental groups as being inadequate for slowing the environmental impacts of climate change by most environmental groups (Kinrade, 1998; Roenitz, 1997). In fact, under the agreement, countries like the USA, Japan and the member states of the European Union only committed to decrease greenhouse gas emissions below 1990 levels by 2012 by 7 per cent, 6 per cent and 9 per cent respectively. Other industrialised countries were granted either no decrease or increases in emission levels: New Zealand for instance would stabilise emissions at 1990 levels, while Australia and Iceland were granted increases of 8 per cent and 10 per cent respectively (United
Nations (UN), 1997). Australia’s position to the Kyoto Protocol will be explored in more detail in Chapter Five. In summary, the Kyoto Climate Summit has failed to produce a comprehensive international agreement on the protection of the global climate system which is indicative of the problematique involved in moving sustainability from theory into practice.

This section has shown that the concept of ESD has slowly emerged over the last 30 years and has become the focal point in the international arena for economic and environmental policy. The historical review has also shown that the world community has reached a point where demands are being made for ESD principles to be translated and put into action. This however has not been achieved at an international level since the Earth Summit in 1992. In other words, there still is a need for profound political and attitudinal shifts world-wide before tangible economic and ecological changes can be expected to occur.

In the following section, the nature and the scope of ESD will be addressed and its implications for management theory and practice will be explored.

2.2 The Nature and Scope of Ecologically Sustainable Development

Based on the Brundtland Commission Report, it can be suggested that the primary objective of ESD is to provide lasting and secure livelihoods that minimise resource depletion, environmental degradation, and social instability. This means that the concept of ESD can be understood as a process involving an interaction between the biological and resource system, the economic system, and the social system, as shown in Figure 2.1 (dark shaded area), with the general aim of maximising the goals of these three systems through the achievement of trade-offs (Barbier, 1987).

The human ascribed goals of the biological system aim at genetic diversity and resilience as well as biological productivity, while economic goals focus on the reduction of poverty and the equitable distribution of useful goods and services. Social goals, however, are concerned with cultural diversity, institutional stability, social justice, and public participation (Barbier, 1987).
"Our Common Future' suggests that ecologically sustainable development is:

"a process in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change [will] ... all ... [be] in harmony, and enhance both the current and future potential to meet human needs and aspirations"

(World Commission on Environment and Development (WCED), 1987, p. 53).

**Figure 2.1**
The Objectives of Ecologically Sustainable Development
(Source: Adapted from Barbier, 1987, p. 104)

<table>
<thead>
<tr>
<th>Biological System</th>
<th>Economic System</th>
<th>Social System</th>
</tr>
</thead>
</table>

However, it seems impossible to joint-maximise the objectives of all systems. In fact, it could be argued that intellectual tools need to be developed in order to analyse the trade-offs required between the potentially conflicting goals or needs of the three systems.

The scope of the concept of ESD has constantly been widened over the last 30 years (Palmer et al., 1997). Early references to sustainability are predominantly concerned with the protection of ecosystems and the conservation of resources to redress the environmental impact of the industrial way of life in First World countries (e.g. The Ecologist, 1972). The notion of humanity's right to a clean and productive environment was added to the concept of sustainable development by the 1972 UN Conference in Stockholm and extended to future generations by the 1980 World Conservation Strategy (cited in International Union for the Conservation of Nature
The protection of the rights of future generations (futurity) has also received notable emphasis in the Brundtland Commission Report (World Commission on Environment and Development (WCED), 1987) where the issue of future human welfare was defined as a main goal for ecologically sustainable development. Finally, public participation was included as a sustainability principle by the Rio Declaration on Environment and Development (United Nations Conference on Environment and Development (UNCED), 1992, p. 10):

"Environmental issues are best handled with the participation of all concerned citizens ... each individual should have ... the opportunity to participate in decision-making processes"

This statement highlights the importance of this additional social aspect, emphasising the need for widespread support for the process of change towards sustainability (Palmer & Cooper, 1995).

From the foregoing, it is clear that the original goal of sustainable development, meaning the protection of natural resources, has been expanded beyond biophysical or ecological domains. The scope of ESD has changed to the effect that it now includes socio-economic (Fauceux & O'Conner, 1995) and ethical dimensions (eco-justice) (Daly & Cobb, 1989). Accordingly, today there are (at least) four dimensions to sustainability as shown in Figure 2.2. The diagram illustrates that ESD not only attempts to foster the protection of ecosystem integrity but also seeks to balance the ethical demands of futurity and intergenerational equity, as well as initiate social and institutional change through public participation (Franks, 1996; Palmer et al., 1997). This means that the term has come to be used to describe a wide variety of ecological and social concerns.

The wide currency of sustainability, however, is not at all unproblematic. On the one hand, there is a general consensus on the paradigm of sustainability in principle, meaning that a full account of the impacts of human activities on the environment should be taken and that equity and futurity are desirable goals for humanity (Pell, 1996). Nonetheless, on the other hand, considerable disunity remains regarding the actual definition of ESD (Barbier, 1987; Basagio, 1995). Across the sciences, there
appear to be great differences in the perception of ethical responsibilities towards future generations (e.g. Cousteau, 1980), the value of the environment (e.g. Costanza et al., 1997; Pierce & Turner, 1990; Repetto, 1992) and the need for paradigm shifts towards sustainable societies and a sustainable future (e.g. Gladwin, Newbury, & Reiskin, 1996b; Milbrath, 1989). The ethical underpinnings of sustainability will be advanced in Chapter Three.

Figure 2.2
The Four Dimensions of Sustainability
(Source: Palmer et al., 1997, p. 88)

The wide scope of ESD and the degree of difference in perceptions about it can perhaps be best illustrated by the fact that there are currently more than 70 different definitions of sustainable development (Steer & Wade-Gery, 1993). They vary greatly depending on the paradigm from which they come. Biologists, for instance, would refer, in the context of sustainability, to the interaction between human and natural systems. Economists, on the other hand, may define sustainable development as means to ensure continuous increases in per capita income, while environmental ethicists would speak of sustainability when they refer to rights of ecosystems and species (Basagio, 1995). These differences in perception are attributable to the fact that there is no precise definition of sustainable development currently available (e.g. World Commission on Environment and Development (WCED), 1987). Furthermore,
the widely differing emphases on ESD suggest that differences in perception of its scope reflect various degrees of commitment to the sustainability challenge.

As mentioned earlier, the term 'sustainability' has been broadened over time, however, a number of academic disciplines (e.g. business science) seem to have failed to adapt to its newer, wider definition (Cooper, 1996). In order to facilitate inter-group dialogue on sustainability issues and avoid confusion across disciplines a measurement seems necessary to be applied to one's commitment to ESD, meaning a distinction should be made between weak and strong sustainability (see Figure 2.3). A differentiation such as could be made by measuring individual’s or groups’ commitment to sustainability on their stance in relation to each of the four sustainability dimensions - environment - futurity - equity - public participation (Palmer et al., 1997).

![Figure 2.3 Degrees of Commitment to Sustainability](Source: Palmer et al., 1997, p. 92)

Although the mapping of different kinds of commitment to sustainability potentially allows for a more fruitful debate on ESD, its operationalisation is still problematic, as the actual meaning of the term remains contested ground. Today, the aforementioned interpretation of the Brundtland Commission is the most widely accepted definition of sustainable development (Franks, 1996). The Commission describes ESD as a development that can be continued in the future and enhances both current and future potential to meet human needs and aspirations. Although this definition represents a case of strong sustainability (after Palmer et al., 1997), its ambiguous wording proves impractical for its operationalisation for it can be considered incomplete and
contradicting (Lele, 1991). The conceptual vagueness of the term relating to
development which is used synonymously with economic growth leaves open the
question as to what exactly is supposed to be sustained. In fact, it could be argued
that to include a reference to 'development' in a moral ideal fatally compromises one's
commitment to environmental protection (Hurka, 1992). Furthermore, the Brundtland
Commission fails to distinguish between ecological and social sustainability and
largely ignores the role of participation for the operationalisation of ESD (Basagio,

From the foregoing, it can be suggested that a concise as well as operable translation
of sustainability should incorporate the optimisation of ecological, economic, and
social aspects; the promotion of inter- and intra-generational equity; the protection of
the environment; as well as an emphasis on the notion of public participation. An
approach such as this could then be used by practitioners as a guide for moving
sustainability from theory into practice. Assuming the need for an operable
interpretation of ESD within the business community, the following section will
advance a practical translation of this concept from a business (management)
perspective.

2.3 Sustainable Development: A Management Interpretation

From a management perspective, the concept of sustainability highlights the
dependence of business enterprises on the integrity and productivity of ecosystems
and the stability of social structures. ESD stipulates that in addition to physical and
financial capital, human as well as ‘natural’ capital are crucial for the survival of
profit seeking organisations. In fact, the new paradigm of sustainability demands that
business practitioners recognise that without stable ecological and social systems
there will be no economy and hence no business. In other words, economic
sustainability (not necessarily expansion) entirely depends on ecological and social
sustainability. Based on this acknowledgement, for the business community,
sustainable development could mean:

Adopting long-term business strategies and activities that meet the needs of the
enterprise as well as those of today's and tomorrow's stakeholders while
protecting and enhancing human and 'natural' resources.
This interpretation not only captures the spirit of the concept proposed in the report of the WCED (1987) but also overcomes its theoretical and abstract nature by articulating it in terms that are familiar to the business community. This version will therefore be adopted for the purpose of this thesis and provide the point of departure for further analysis and discussion. It represents a workable translation of ESD for management practitioners, and it implies a strong commitment to sustainability (after Palmer et al., 1997). This is because it incorporates the earlier mentioned dimensions of sustainability - environment - futurity - equity - public participation. The dimensions relating to equity and public participation are implied by the ESD interpretation stated above and refer to the enhancement of human resources and the respect for all organisational stakeholders. They are to be understood as the vehicles for an extended strategic stakeholder approach that goes beyond traditional organisational stakeholder theory. This concept will be addressed in more detail in Chapter Seven.

2.4 Conclusion

This chapter has shown that the concept of ESD has become broader in scope over the last 30 years. It has also been suggested that despite general agreement on the sustainability paradigm, disunity has remained about its actual meaning notwithstanding the apparent need for a concrete definition. In this context, a workable interpretation of sustainability for the business community has been derived. This interpretation of ESD is aimed to assist the development of intellectual tools for the operationalisation of sustainability in the business context as well as help businesses applying this concept to existing operations and systems. Overall, the relevance of ESD to business theory and practice could be established.

The following chapter will explore the ethics of sustainability, and the attempt will be made to posit an environmental ethic for the inculcation and operationalisation of ESD within business.
Chapter Three
Sustainability, Ethics, and Paradigms in Business Theory

3.0 Introduction

Concurrent with the rise of the theme of ecologically sustainable development has been a growing concern for the livelihood of future generations. This concern is based on the belief that the actions of present generations - resource depletion, pollution, over-population, land exhaustion, ozone depletion and global warming, to mention only a few of today’s prominent environmental problems – will have an effect on those still to be born as well as on people living now (Davison & Barns, 1992).

Within moral philosophy arguments can be found to support the notion that humans ought to be concerned about society and humans in general (Kant, trans. 1909; Rawls, 1971). If this concern towards the well-being of others can be assumed, the question arises as to whether humans have an obligation to be concerned not only about close friends but also physically remote strangers. Should an obligation such as this exist, it could then be suggested that “just as remoteness over space in the case of contemporary strangers does not lessen the obligation to generations of the same age, remoteness over time should not lessen obligations to future generations either” (Martell, 1995, p. 81).

The impact of the activities of present generations on the livelihoods of those yet to be born has been recognised by The World Commission on Environment and Development (WCED) (1987). In view of the Commission’s definition of ESD (stated in Chapter Two), it can be argued that sustainability generally implies consideration of a longer time horizon than the expected life span of the current generation. In other words, the notion of sustainability implies that people who are presently alive ought to consider future as well as present generations. As it stands today, the view has become increasingly accepted, that current generations indeed have an ethical responsibility to consider economic and environmental aspects in view of future generations’ welfare (Porter & Brown, 1991).
The concept of ESD and its ethical underpinnings have generated strong contention within the various schools in the social science area (Grey, 1993; Shannon, 1991). The key issues revolve around the notion of ethical responsibilities towards future generations (e.g. Cousteau, 1980), the intrinsic value of the environment (e.g. Starik, 1995) and the need for paradigm shifts within the social sciences to accommodate for the concept of ESD (e.g. Gladwin, Kennelly, & Krause, 1995; Milbrath, 1989).

Within business theory too, the ethics of sustainability are currently being debated. The ongoing ESD-controversy is rooted in a paradigmatic discourse in which anthropocentrism and ecocentrism represent the two respective extremes at either end of the paradigm spectrum. This anthropocentric-ecocentric dualism represents an ethical gridlock between utilitarianism and egalitarianism (Grey, 1993; Myers & Simon, 1994) which has long been the subject of attention in various other disciplines such as sociology, psychology and systems theory (Gladwin et al., 1995a). The state of mutual negation between the two opposing paradigms has prompted the development of alternative approaches. These alternative paradigms propose to either balance or synthesise the two competing views in order to foster the needed theoretical development to accommodate sustainability within business theory.

In order to explore the ethics of ecologically sustainable development, it is the aim of this chapter to discuss the argument relating to obligations owed to future generations in the light of possible moral justifications. For this purpose, attention will be directed to the moral reasoning of Kantian and Rawlsian ethics which will be compared and contrasted with the utilitarian school of thought; utilitarianism represents the ethical foundation of business science. This analysis will determine whether the claim relating to moral obligations to future generations as an issue of inter-generational justice can be justified. To ascertain any moral justification for such duties, a number of arguments directed against the notion of obligations owed to future generations will be introduced and examined in the light of the three philosophical approaches.

Attention will also be directed to the paradigm debate within business theory. Focus will be placed on the dualism between anthropocentrism and ecocentrism as well as emerging alternative perspectives. It will be attempted in this chapter to establish an
ethical foundation for sustainability within business theory. To this end, analysis will be made of the paradigms in question to assess their suitability in view of the goals of sustainability, particularly, in regards to inter- and intra-generational equity and the protection of the natural environment.

3.1 The Moral Controversy

Within moral philosophy there is the ancient ethical principle "to endeavor not to cause any unwarranted harm" (Hoffman, Frederick, & Petry (Jr.), 1990, p. iv). This so-called 'harm principle' implies a moral right of an individual not be harmed and in turn assumes a moral duty not to violate an individual's inalienable right to be unharmed. This principle applies to any human activity that causes unwarranted harm. As suggested in the introduction of this chapter, the impact of present generations on the natural environment foreseeably causes unwarranted harm (physically, socially, and economically) to future generations (Davison & Barns, 1992). It can therefore be argued that not to harm future generations is, too, a moral maxim and should rank as highly as the observance of the harm principle among present generations. This notion, however, is contested ground, as there is considerable opposition among ethicists and moral philosophers to the idea that humankind has a moral obligation to consider future generations.

According to Martell (1995) most of this criticism directed against a duty such as this is related to the futurity (future state or condition) involved in obligations to future generations, particularly, because of the current non-existence of people yet to be born. Firstly, it is argued that people who do not exist do not have rights or entitlements; hence there is no obligation to them (see Kavka, 1978). Secondly, there are arguments that deny any obligations to future generations on the basis of reciprocity. Based on the notion that future generations cannot reciprocate, it is suggested that we do not have obligations to them (see Barry, 1977). Thirdly, it is argued that we cannot owe obligations to future generations if we do not know what their wants or needs will be (see Golding, 1972) due to changing historical and social circumstances.
The following analysis of the arguments in favour of and against obligations owed to present generations’ offspring considers this controversy in the light of Kantian, Rawlsian and utilitarian ethics.

3.1.1 Kantianism

Kantianism emphasises the intrinsic dignity of all human beings based on the belief that every human being has an inherent worth resulting from their possession of rationality (Kant, trans. 1909). Consequently, people should always be treated as ends but never merely as means. In other words, one must always act in a way that respects humanity in others and in oneself.

Non-existence

When applying the aforementioned argument to the notion that future generations do not have rights because of their current non-existence it could be reasoned, even if it is agreed that people do not have rights unless they exist, that actions in the present potentially transgress those rights in advance of their foreseeable realisation. This means that rights can be transgressed now even though they do not presently exist; they will exist later. The transgression of rights of human beings can be viewed as disrespect for humanity and therefore as morally unacceptable. Although within Kantianism the morality of an action is not evaluated on the basis of its potential, the inherent disrespect for humanity within the potential transgression of future rights of future generations gives reason to question the moral worth of such action. Furthermore, Kant’s dependence on rational consistency demands that respect for humanity is a universal law which applies to all rational agents. Universality, meaning general applicability to all cases and circumstances (Hornby, Cowie, & Gimson, 1986), implies that a condition is always valid, notwithstanding temporal conditions. Therefore, rational consistency would demand that the inalienable rights of human beings ought not to be transgressed, either in the present or in the future.

Reciprocity

The issue of reciprocity relates to the idea that obligations “arise out of membership … [within] a community in which … [rights] are held reciprocally” (Martell, 1995, p. 83); therefore, there can be no reciprocity in relation to future generations. According to Kant (trans. 1909), to be fair and honest, an action must be carried out
from a sense of duty. Kantian ethics are non-consequential; this means that emphasis is rather placed on the motivation than the outcome of an action. Accordingly, our actions should not be determined by whether we can reasonably expect to receive reciprocal obligations from people but rather by a sense of duty. This means that we would have an obligation to future generations as we need to respect their intrinsic dignity without anticipating anything in return. In other words, actions of present generations need to express respect for humankind universally; meaning in the future as well as today, for them to be considered morally permissible. The destruction of the natural environment through unsustainable behaviour in the form of resource depletion and pollution does not show respect for humanity, as humans are part of the natural environment. In contrast, a sustainable conduct indeed displays this respect for humanity, and it could therefore be argued that we are obliged to act in accordance with sustainability principles and protect the rights of future generations out of a sense of duty to be fair and honest. Finally, in view of universality, Kant’s imperative of universal law would require future generations to also exercise this respect for others (including future others), which in turn can be understood as a form of reciprocity.

Uncertainty
The concept of universal acceptability can also be applied to the third argument denying obligations to future generations. The notion that we do not know what to have obligations to do or not to do, because future generations’ needs and wants may come to be different from ours, is inconsistent. As rational beings we have a fair idea of what will be essential for the survival of future generations, such as clean air and drinking water. Despite the consequentialist nature of this argument, again the underlying motivation needs to be considered. As Kant demands future generations to be treated respectfully as ends but never merely as means, the pollution of essential natural resources would not qualify as universally acceptable. Furthermore, a clean environment is intrinsically significant to the human sense of well-being in the present, and it would therefore be a contradiction to respect this aspect of present generations without respecting the survival of the off-spring (Botkin, 1990). In other words, the destruction of the essential means for human survival is morally impermissible, notwithstanding temporal conditions. Based on this argument, the negation of obligations to future generations on the grounds of ignorance to future generations’ wants and needs is inconsistent, and it excludes future generations from
the notion of universality. As rationality demands us, as rational beings, to be aware of the existence of fundamental future needs (air, water, resources etc.) combined with our moral obligation to treat people respectfully, the notion of uncertainty concerning future wants and needs can be morally discounted as an objection.

All three arguments directed against moral obligations towards future generations cannot be justified using Kantian ethics. Principally, universality cannot be established for any of the three objections, as they are proven to be inconsistent and hence to be at odds with Kant’s categorical imperative.

3.1.2 Rawlsian Ethics

Rawls’ theory of justice (1971) suggests that justice entails taking an approach based on the hypothesis that every individual could have been born into the situation of any other. Moreover, this approach assumes that everyone in a hypothetical original position involving a ‘veil of ignorance’ would be uncertain of when and in what situation they would be born. This means that principles of justice derived from the original position would indirectly be to the benefit of the least advantaged group of individuals, as no group is assumed to have any business to be better off than any other group.

When adopting Rawls’ approach in order to determine the validity of the three arguments directed against moral obligations to future generations - non-existence, reciprocity, and uncertainty - one must consider the question of what people would opt for whilst in the original position.

Non-existence

Non-existence can be considered a ‘chance element’ within the original position and therefore does not appear to be a valid argument against future obligations. The term chance element refers to the fact that individuals in the original position face uncertainty as to when they will be born. In other words each individual in the original position will need to decide on moral principles and guidelines for human conduct in the context of their hypothetical non-existence whilst in the original position. This is because they are assumed to be unaware of their present situation
and existence. Hence the fact that, hypothetically, they have not yet been born cannot be used to negate any rights or obligations.

Reciprocity
The issue of reciprocity can also be related to the construct of the original position. It can be argued that individuals in the original position would always opt for a type of human conduct that would be most advantageous for both present and future generations. Again, due to the uncertainty of the original position, it could be suggested that individuals would decide to embrace the notion of sustainability as otherwise they could be adversely affected when being born in the distant future. Equality in terms of meeting the basic needs of living (air, water, arable land) now as well as in the future would be to the advantage of all in the original position. In other words, the basic needs of all should be met because of the chance circumstances we all face or may face. It would therefore be fair and just to honour the hypothetical original contract.

Uncertainty
Similar to non-existence, future wants and needs are part of the chance criteria within the original position. It must therefore be determined as to what could be reasonably (see Rawls, 1971) expected to qualify as future wants and needs by those in the original position. Again, meeting of basic needs of living could be regarded a fundamental criterion. This in turn implies that in order to allow the meeting of future basic needs, the notion of sustainability is likely to be opted for in the original position, which would give it the status of a moral principle of justice.

It is necessary to point out that decisions made within the original position are considered free of psychological motivations, which excludes the possibility of individuals speculating on future probabilities. The notion of chance is not to be understood as individuals playing the odds in the lottery of life. In fact, the moral acceptance of decisions reached in the original position as general principles of justice follows from the full description of the original position (see Rawls, 1992, p.147).

Provided that future generations are accepted as legitimate participants in the decision making processes within the original position, Rawlsian ethics can be considered
supportive of the notion relating to moral obligations owed to future generations and congruent with the ethical demands of ESD.

3.1.3 Utilitarianism

Within a utilitarian frame of reference the rightness of moral acts is to be found in the pursuit of the greatest happiness for all, as in the interests of the human community as a whole (Mill, 1861/1864). Following from this, an action is perceived right and morally permissible when it adds to the happiness of the whole community and promotes human welfare (Solomon & Murphy, 1990). Moral decision making and evaluation of alternative decisions are made by appealing to a uniform standard, a rule-of-thumb approach which is based on human experience. Utilitarianism focuses on the outcomes of decisions and actions and is therefore considered a consequentialist theory. As mentioned earlier, this approach represents the philosophical anchor of business science. It is therefore of interest whether this theoretical foundation can accommodate fundamental principles of sustainability, as this has serious implications for the ethics and the future role of business science in the context of ESD.

Non-existence

Within utilitarianism the moral worth of an action is judged in terms of the greatest utility for the greatest number. Time, however, is considered linear and utility accumulative. This means that, because the value of the future is discounted, the way to maximise utility is to maximise current utility (McKenna, personal communication, February 20, 1998). In other words, the pursuit of maximum utility is limited to a given point in time, so that future utility is an issue to be considered by future generations only. The notion of non-existence within utilitarianism, therefore, is a valid objection towards obligations owed to future generations, as the focus is placed exclusively on ends rather than means. It is also interesting to note that utilitarianism considers ‘gambling’ with future utility, in view of uncertainty, as morally unjustifiable (Shaw & Barry, 1992). Still, “our duty is to strive to maximize total happiness, even where it may seem difficult to know what action is likely to promote the good effectively” (Shaw & Barry, 1992, p. 64). Put differently, when faced with uncertainty, human experience and ingenuity will guide us in our decision making processes. This indicates that utilitarian ethics exhibit a certain optimism about future
wellbeing. This means that attempts to maximise utility at present are based on a strong faith in human problem-solving abilities, which are considered intellectual building blocks for the pursuit of maximising future utility. This kind of optimism, however, may indeed prove to undermine future wellbeing and inter-generational equity, as it potentially leads to the overstatement of human potential which in turn provides a breeding ground for egocentric behaviour. The problems that are associated with the egoistic maximisation of self-interest will be addressed in Section 3.2.

Reciprocity

The notion of reciprocity also proves difficult to refute using utilitarian arguments because the issue of membership of a certain community in relation to obligations is not sufficiently addressed within utilitarianism (Bowden, 1993). This difficulty becomes apparent also in view of the notion that present generations owe an obligation to future generations even though there does not appear to be the possibility for future generations to ‘owe back’ this kind of obligation. It could be argued that future generations can reciprocate obligations to past generations by remembering them accurately and favourably or carrying on with their work (e.g. ANZAC Day in Australia) (Martell, 1995). It is questionable, however, whether this would add to the utility of past generations and/or to the utility of humankind at large. In other words, the issue of reciprocity cannot be discounted as an objection to future obligations using utilitarian ethics.

Uncertainty

Finally, the argument of uncertainty relating to future wants and needs of the generations to come needs addressing in the light of utilitarianism. As stated earlier, the utilitarian ethic believes in human ingenuity and ability to learn from experience. Experience leads to the acknowledgement of future needs and basic future means of survival. In essence, humanity knows today what will be required for future wellbeing. Human ingenuity, however, as mentioned earlier, may be interpreted as a safeguard against uncertainty relating to the wellbeing of future generations. This is to say that the present pursuit of utility maximisation may indeed erode the basis for future welfare, but human ingenuity is believed to solve future problems, for instance, by overcoming scarcity of resources through substitution (refer to discount rates in
Section 4.2.4). In other words, the postulate of utility maximisation essentially overrules potential problems regarding the realisation of future happiness, based on the belief that human skill and ability will provide the means for generations to come to maximise their own utility. Overall, it seems reasonable to suggest that uncertainty relating to future wants and needs cannot be rejected as an objection to obligations owed to future generations within the utilitarian school of thought.

3.2 Moral Theory Support for Future Obligations

Although the analysis presented above cannot be considered exhaustive, it sheds light onto the discussion about the morality of sustainability and the implied obligation to future generations to preserve the environment. The arguments brought forward to discount the notion of obligations owed to future generations could be refuted when applied to Kantian and Rawlsian ethics. In contrast, it was shown that, using utilitarian rationale, the arguments brought forward against any moral duties concerning future generations, could not be discounted.

Firstly, the Kantian approach provided support for obligations owed to present and future generations based on the idea that humankind should act from a sense of duty in accordance with the categorical imperative. The arguments directed against such obligations could be discounted as they appeared inconsistent and not universally acceptable to all rational agents, which is a moral maxim within Kantian ethics.

Secondly, the consideration of the principles of justice laid down by Rawls were supportive of moral obligations owed to future generations. By arguing that people in the original position would opt for sustainability while facing uncertainty - this entails the notion of inter-generational equity - the obligation to consider the welfare of future generations can be regarded a moral principle.

Finally, utilitarianism was shown to be less supportive of the notion relating to obligations owed to future generations. In fact, using utilitarian rationale, a duty such as this could not be established. The maxim of utility maximisation at any given point in time proved difficult to be applied to the welfare of future generations, as short-term objectives potentially override future uncertainty. The belief that human ingenuity will enable future generations to successfully pursue happiness can
therefore be considered potentially troublesome because it inherently allows the overstatement of human potential, ignoring human-environment interdependencies and relationships.

The exclusive focus on humanity, however, was common to all three approaches investigated. In fact, the moral grounds for the notion of intra- and inter-generational justice derived from the arguments presented above were chiefly for the protection of human interests. However, the scope of the concept of ecologically sustainable development, as presented in Chapter Two, goes beyond an exclusively human ethic. In fact, it stands to reason that in order to satisfy all dimensions of ESD, an environmental ethic is needed for the recognition of intrinsic environmental values. So far, environmental protection was merely portrayed as a means to secure the livelihoods of future generations either out of respect for all rational agents (Kantianism) or because of uncertainty within the original position (Rawlsian ethics). In fact, the philosophical perspectives outlined above, utilitarianism in particular, seem to ignore any intrinsic values of the biophysical environment as part of a human ethic and can therefore be considered anthropocentric due to their exclusive focus on human welfare. Although it is virtually impossible to provide a genuinely non-anthropocentric set of values and preferences (Grey, 1993), a more ecocentric orientation is required within moral philosophy in order to allow for the including of environmental values within philosophical perspectives (Buchholz, 1992; Nash, 1989; Starik, 1995; Stone, 1974). In other words, the notion of rights should be extended to nature, as this would help to more effectively protect the environment and to reflect the view that "nature needs to be preserved for its own sake and not just for the interests of human beings" (Buchholz, 1992, p. 65). This notion of moral extensionism will be adopted for the purpose of this thesis, supporting the expansion of the concept of rights to include nature's intrinsic values into the realm of moral eligibility.

The current lack of recognition of the biophysical world is the central theme in the debate on the ethics of sustainability among business theorists. The controversy is highly polarised and is carried out between proponents of the ecocentric and anthropocentric factions. Within this paradigmatic discourse the longstanding dominance of anthropocentrism within business science is questioned, and emerging
alternative perspectives challenge traditional assumptions and beliefs. In the context of sustainable development, following a brief summary of the rise of anthropocentrism and its impact on business science, attention will be drawn to the current state of contention between the competing paradigms within business theory.

3.3 Paradigms and Business Theory

In the course of the last few centuries, humankind has gradually dissociated itself from the biophysical environment. This dissociation was the result of dramatic breakthroughs in the sciences such as physics and biology which have created a growing understanding of the magnitude of the universe and in turn widened humanity's outlook on its temporal and physical situation (Gladwin et al., 1995a). Scientific breakthroughs impacted greatly on human-environment relations (Grey, 1993), as the development of new perspectives led to the conceptualisation of the environment and placed human beings in the position of nature's analytical observer (Purser et al., 1995); giving birth to the Age of Reason (Eckersley, 1992). Intellectual revolutions such as the Renaissance, The Enlightenment, as well as the Industrial Revolution have contributed to this progressive disassociation of humanity from the non-human world (Gladwin et al., 1995a).

The development and refinement of scientific abstraction has led to the belief that the non-human world is under the domain of natural laws, which can be discovered and analysed and that, by simply understanding these laws, nature can ultimately be controlled for the benefit of humankind (Descartes, trans. 1912; Peat, 1991). This mechanistic, utilitarian worldview gave rise to the anthropocentric perspective, a nature-as-object position characterised by human control and domination over the natural world (Gladwin et al., 1995a). Due to its emphasis on technological knowing and science, the anthropocentric paradigm became the ethical foundation of economic science (for more detail see Chapter Four) which in turn sanctioned the unlimited exploitation of natural resources in the name of growth and profit maximisation. Economic rationalism has actively been shaping the Western world for more than 200 years and continues to gain momentum in the present movement towards globalisation. Until recently, anthropocentrism (taken here to mean economic rationalism) went almost unchallenged, as it has largely been accepted for generations as the dominant social paradigm without question (McKenna & Brueckner, 1998).
However, as it stands today, the validity of the anthropocentric perspective is being challenged. In fact, critics suggest a direct relationship between rapid environmental decline and the human-nature dualism. In view of current environmental decline, opponents of anthropocentrism argue that the perspective of humankind being separate from and superior to nature is deficient for providing a satisfactory ethic of obligation and concern for the non-human as well as the human world, considering humanity’s biological inter-connectiveness with ecological systems (Grey, 1993).

Proponents of the traditional managerial paradigm admit to flaws within anthropocentrism, but argue against the need to replace this perspective with a more ecocentric alternative (Hanna, 1995) claiming that it denies the value of human ingenuity in solving world problems (Pauchant & Fortier, 1990). Essentially, this argument proposes that environmental concerns should simply be integrated into current business theory and practice. This means that the integration of environmentalism should occur within the anthropocentric paradigm with the hope to synergistically attain profits and productivity with a simultaneous reduction of environmental risks (Hanna & Newman, 1995).

3.3.1 Anthropocentrism

Anthropocentrism represents an utilitarian, atomistic view of the world. This perspective rests on the premise that humans have inalienable rights, and that the protection of these rights is the sole measure of social and environmental policy (Shannon, 1991) which “legitimizes human welfare as the central purpose of societal institutions” (Shrivastava, 1995, p. 126). Nature is valued merely instrumentally rather than intrinsically (Johnson, 1996), to the extent that environmental protection is only considered on the basis of its future potential to further human interests (Shannon, 1991). In other words, within anthropocentrism there is no moral obligation to minimise the human impact on nature (Nash, 1989), as resource exploitation is considered a human right (Shrivastava, 1995). For the remediation of any ecological imbalances that may occur as a result of human activities, anthropocentrism relies exclusively on natural processes (Pauchant & Fortier, 1990) based on the belief that nature has an unlimited capacity to absorb and assimilate pollution and can provide a virtually inexhaustible stock of resources (Davis, 1996).
The anthropocentric nature-as-object position implies that humankind is separate from and superior to nature. Humans are believed to be the unique, exclusive locus of intrinsic value (Gladwin et al., 1995a), meaning that humankind is the only principal source of value and meaning in the world. Emphasis is placed on rationality, as human activities are guided by the faith that control and domination of the natural world will lead to progress and human welfare (Purser et al., 1995). This functionalist orientation implies that the world at large can be managed with the appropriate knowledge (Morgan, 1986).

This positivistic view of knowing and managing nature has provided the ethical basis for business science and has traditionally shaped business theory and management practice (Gladwin et al., 1995a). Within business science, anthropocentrism has led to a narrow concept of the organisational environment, concentrating merely on political, technological, social and economic aspects. Organisations are viewed as, “neutral, rational, technological systems of production” (Shrivastava, 1995, p. 125) aiming to produce maximum output for unconstrained consumption. All organisational decision making processes are embedded in economic rationality (Daly & Cobb, 1989) which in turn proliferates uncontrolled exploitation of natural resources by business enterprises (Shrivastava, 1995).

Critics of anthropocentrism argue that this dominant perspective within business theory is responsible for the paucity of acknowledgement of the non-human environment (Emery & Trist, 1965) and indeed can be held accountable in part for current environmental problems (Grey, 1993; Purser et al., 1995; Shrivastava, 1995; 1996). The lack of recognition of the bio-physical world in business theory is said to have resulted in an inability to adequately address the notion of sustainability (Purser et al., 1995; Shrivastava, 1995) and that efforts to reform anthropocentrism (i.e. greening business science) are unlikely to produce any significant results (Purser et al., 1995). Furthermore, current assumptions about business organisations and the business environment as well as firms’ production bias cause environmentally destructive aspects of organisations to be ignored and be treated as externalities (Shrivastava, 1995). In other words, instrumental values such as profits win over nature’s intrinsic or intangible values by default (Des Jardins, 1993), as egoism causes
organisational ventures to be economically advantageous in the short term rather than environmentally sound in the long-run.

The growing rejection of anthropocentrism among business theorists has produced a rather egalitarian ethic towards human-environment relations (Purser et al., 1995), termed ecocentrism or deep ecology. This approach places nature at the centre of management/organisational concerns.

3.3.2 Ecocentrism
Supporters of the ecocentric perspective refute the ‘denatured’ (Shrivastava, 1994a) instrumental approach of anthropocentrism which they describe as the arrogance of humanism (Ehrenfeld, 1981), anthropocentric parochialism or human chauvinism (Grey, 1993). The ecocentric paradigm, also referred to as an ‘environmental ontology’ (Shrivastava, 1996) rejects the human domination over nature and advocates a holistic view of ecological interdependence. As everything within nature is considered connected with everything else, internal relations and processes are ascribed a primary status. Humans do not take a privileged place in nature, and therefore non-interference in natural systems is regarded a moral maxim. Ecocentrism strives to emancipate nature from the effects of human environmental degradation and exploitation (Purser et al., 1995) and, in contrast to anthropocentrism, ascribes intrinsic values to nature (Shannon, 1991). In fact, ecocentrism can be seen as a responsibility paradigm which aims at maintaining, preserving and restoring the health of ecosystems.

Within the social sciences, over the last 30 years, a growth in ‘modernisation risks’ has been observed. These risks, which include toxic production waste and other so-called ‘techno-environmental hazards’ (Shrivastava, 1995), have been generated concomitantly with global economic expansion. In other words, economic development or modernisation can be considered the root source of modern risks (Beck, 1986). In this context, ecocentric business theorists have taken on board the notion of the modern risk society and added ecological risks to the traditional sources of uncertainty such as market risks and liquidity risks. By this, risk has been placed in the centre of organisational theory and practice for it to be treated as a core
management problem. Ecocentric risk assessment procedures incorporate technoenvironmental risks and view nature as companies’ largest stakeholder.

This wider risk-perspective has led proponents of ecocentrism to suggest an industrial re-orientation towards an organisation type that operates as a part of bioregional ecosystems adapting operational scope, strategies, cost structures and management strategies to ecological sensitivities (Shrivastava, 1995). This type of organisational management focuses on the environmental impact of business enterprises and embraces what is referred to as Total Quality Environmental Management (TQEM). TQEM has the general aim to align firms with their natural environment and cater for all organisational stakeholders with nature taking a privileged position (Shrivastava, 1995; Shrivastava & Hart, 1994; Starik, 1995). A detailed description of ecocentric management principles is shown below in Table 3.1 which contrasts this new management paradigm with the traditional, anthropocentric approach to management.

**Table 3.1**

**Traditional Versus Ecocentric Management**
(Source: Adapted from Shrivastava, 1995, p. 131)

<table>
<thead>
<tr>
<th>Category</th>
<th>Traditional Management</th>
<th>Ecocentric Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goals:</strong></td>
<td>Economic growth &amp; profits</td>
<td>Sustainability and quality of life</td>
</tr>
<tr>
<td></td>
<td>Shareholder wealth</td>
<td>Stakeholder welfare</td>
</tr>
<tr>
<td><strong>Values:</strong></td>
<td>Anthropocentric</td>
<td>Biocentric or ecocentric</td>
</tr>
<tr>
<td></td>
<td>Rationality and packaged knowledge</td>
<td>Intuition and understanding</td>
</tr>
<tr>
<td></td>
<td>Patriarchal values</td>
<td>Postpatriarchal feminist values</td>
</tr>
<tr>
<td><strong>Products:</strong></td>
<td>Designed for function, style, &amp; price</td>
<td>Designed to be environmentally friendly</td>
</tr>
<tr>
<td></td>
<td>Wasteful packaging</td>
<td></td>
</tr>
<tr>
<td><strong>Production System:</strong></td>
<td>Energy &amp; resource intensive</td>
<td>Low energy &amp; resource use</td>
</tr>
<tr>
<td></td>
<td>Technical efficiency</td>
<td>Environmental efficiency</td>
</tr>
<tr>
<td><strong>Organisation:</strong></td>
<td>Hierarchical structure</td>
<td>Nonhierarchical structure</td>
</tr>
<tr>
<td></td>
<td>Top-down decision making</td>
<td>Participative decision making</td>
</tr>
<tr>
<td></td>
<td>Centralised authority</td>
<td>Decentralised authority</td>
</tr>
<tr>
<td></td>
<td>High income differentials</td>
<td>Low income differentials</td>
</tr>
<tr>
<td><strong>Environment:</strong></td>
<td>Domination over nature</td>
<td>Harmony with nature</td>
</tr>
<tr>
<td></td>
<td>Environment managed as a resource</td>
<td>Resources regarded as strictly finite</td>
</tr>
<tr>
<td></td>
<td>Pollution and waste are externalities</td>
<td>Pollution/waste elimination and management</td>
</tr>
<tr>
<td><strong>Business Functions:</strong></td>
<td>Marketing aims at increasing consumption</td>
<td>Marketing for consumer education</td>
</tr>
<tr>
<td></td>
<td>Finance aims at short-term profit maximisation</td>
<td>Finance aims at long-term sustainable growth</td>
</tr>
<tr>
<td></td>
<td>Accounting focuses on conventional costs</td>
<td>Accounting focuses on environmental costs</td>
</tr>
<tr>
<td></td>
<td>Human resource management aims at increasing labour productivity</td>
<td>Human resource management aims to make work meaningful &amp; the workload safe and healthy</td>
</tr>
</tbody>
</table>

The ecocentric emphasis on sustainability and stakeholder welfare breaks with traditional assumptions and organisational maxims and gives new directions to business theory and practice. Ecocentrism sheds a new light on the image of
organisations, viewing traditionally managed enterprises as 'systems of destruction' as opposed to 'innocent systems of production' (Shrivastava, 1995).

The radical, new vision of ecocentric management is uncompromisable with the traditional management paradigm, causing a paradigmatic gridlock between the two competing views within business theory. However, the ongoing debate on how different organisation-environment relationships should be organised has produced a number of alternative concepts (e.g. sustaincentrism), which suggest a compromise between, or synthesis of, ecocentrism and anthropocentrism. The intent of these approaches is to overcome the state of contention between deep ecology and the traditional management paradigm (Gladwin et al., 1995a; Purser et al., 1995).

These alternatives attempt to strike a balance between two extreme views, and it is therefore probable that they may provide a possible solution to the current epistemological crisis in business theory. This is because a less extreme orientation (in the short term) may be perceived as less threatening to the business community which in turn may accelerate the translation of new business theories into practice.

3.3.3 Sustaincentrism
Sustaincentrism has emerged as a synthesis of anthropocentrism and ecocentrism and is already attracting a large number of supporters including many environmental groups, the US National Academy of Sciences, and the United Nations (Gladwin et al., 1995a). The sustaincentric perspective views human beings as part of the biosphere in organic terms but as being above the biosphere intellectually, which places humans in the position of stewards of life's continuity on earth. This concept acknowledges nature's physical limits to cope with human material and energy growth and suggests a re-orientation of human kind towards non-material growth. In other words, sustaincentrism recognises that a prosperous economy depends on a healthy ecology (i.e. No Ecology - No Economy - No Business).

Sustaincentrism posits an ethic that is people centred as well as conservation based. Its emphasis on a triad of economy, ecology and ethics makes this approach more effective than anthropocentrism in terms of protecting ecosystem integrity and more
appropriate than ecocentrism in considering pressing socio-economic issues such as poverty and unemployment (Gladwin et al., 1995a).

The sustaincentric focus on social stability, which depends to a large degree on the health of economic systems, does not require a radical mind shift towards harmony with nature as proposed by ecocentrism due to high short-term social and economic costs. Nonetheless, the move away from anthropocentric instrumentalism and reductionism makes sustaincentrism a viable ethical foundation for environmental protection, as opposed to anthropocentrism, and in fact may provide a theoretical starting point for significant changes within business science and in the conduct of business enterprises.

The operational principles and techniques of biophysically sustainable behaviour, laid down by Gladwin, Kennelly, and Krause (1995a) and shown in Table 3.2, are considered an action guide for the minimisation of environmental harm by industries. This guide illustrates the operationalisation of sustainability principles, as it gives examples of alternatives to current business practice (e.g. solar energy/wind power rather than coal energy) and can therefore be seen as a possible basis for decision making processes in the future. The principles presented in Table 3.2 are congruent with the demands of sustainable development.

The ecological aspects of ESD are addressed through reductions in throughput and material input as well as wiser use of resources. Economic demands are met by the introduction of new 'smart' technologies such as wind and solar power, which are examples of potential growth industries providing sources for employment growth which in turn could aid reversing socio-economic imbalances (This will be developed in Chapter Four). In other words, sustaincentrism can be considered a pro-environmental approach which acknowledges the socio-economic needs of present generations and provides the basis for human welfare continuation in the future without compromising ecosystem integrity.
<table>
<thead>
<tr>
<th>Sustainability Principles</th>
<th>Operational Principles</th>
<th>Sample Technique</th>
</tr>
</thead>
</table>
| Assimilation              | Waste emissions        | Pollution prevention
|                           |                        | Natural products  |
|                           |                        | Detoxification    |
|                           |                        | Biodegradability  |
|                           |                        | Low input agriculture  |
|                           |                        | Synthetic reduction|
| Regeneration              | Renewable harvest rate  | Sustained yield management |
|                           | $\leq$                  | Sate minimum standards |
|                           | Natural regeneration  | Harvest certification |
|                           | rate                   | Access restriction |
|                           |                        | Exclusive harvest zones |
|                           |                        | Resource right systems |
| Diversification          | Biodiversity loss      | Biosphere reserves |
|                           | $\leq$                  | Extractive reserves |
|                           | Biodiversity preservation| Buffer zones    |
|                           |                        | Polyculture farming|
|                           |                        | Ecotourism        |
|                           |                        | Debt for nature swaps|
| Restoration               | Ecosystem damage       | Reforestation     |
|                           | $\leq$                  | Mine reclamation  |
|                           | Ecosystem rehabilitation| Site decontamination|
| Conservation              | Energy-matter throughput per unit of output (time 2) | Fuel efficiency |
|                           | $\leq$                  | Mass transit      |
|                           | Energy-matter throughput per unit of output (time 1) | Cogeneration      |
|                           |                        | Computer controls |
|                           |                        | Demand side management |
|                           |                        | Smart buildings   |
| Dissipation               | Energy-matter throughput (time 2) | Depackaging       |
|                           | $\leq$                  | Durable design    |
|                           | Energy-matter throughput (time 1)| Repair/reconditioning |
|                           |                        | Telecommuting     |
|                           |                        | Bioregional sourcing|
|                           |                        | Dematerialisation |
| Perpetuation              | Non-renewable resource depletion $\leq$ Renewable resource substitution |
|                           |                        | Solar energy      |
|                           |                        | Wind power        |
|                           |                        | Hydrogen fuel      |
|                           |                        | Bioenergy          |
|                           |                        | Hydropower         |
|                           |                        | Geothermal energy  |
| Circulation               | Virgin + recycled material use (time 2) $\leq$ Virgin + recycled material use (time 1) |
|                           |                        | Closed-loop manufacturing |
|                           |                        | Industrial ecosystems|
|                           |                        | Internal recycling |
|                           |                        | Waste recovery     |
|                           |                        | Design for disassembly |
|                           |                        | Water circulation  |
3.4 The Need for an Integrative Paradigm in Business Theory

The current paradigm debate provides a useful stimulus for business theory development. However, the ongoing paradigm debate does not seem to produce needed solutions for management practitioners in the context of ESD, as the state of mutual negation between anthropocentrism and ecocentrism paralyses the translation of ESD principles into action. Admittedly, there is agreement in the debate that sustainability is a desirable goal and that immediate action towards sustainability should be taken. However, the question remains as to which approach would best provide a sound theoretical framework to address ESD.

Currently, neither anthropocentrism nor ecocentrism seem to provide the needed theoretical basis within business theory. In search for pragmatic solutions, the gridlock between the two competing views has possibly prevented any action from being taken, for this debate could be considered premature and in fact counterproductive (Gladwin et al., 1996a; Johnson, 1996; Myers & Simon, 1994). This controversy may not even be meaningful unless a more fundamental problem has been solved; the problem of egocentrism based on the maximisation of self-interest (Gladwin et al., 1996a). Egocentrism, as mentioned earlier, can be held responsible for the current disassociation of humanity from the environment as well as humans’ amorality and indifference to social injustice. As the effects of egocentrism are currently manifested in business theory and practice (Gladwin et al., 1996b), it is reasonable to suggest that business theory needs to place greater emphasis on re-defining its core values and assessing the impact of these values on human and non-human life in general; otherwise a debate on the proper ethics of sustainability cannot gain significance. In other words, it is too early to engage in paradigm debates, as the groundwork of re-defining the human role as an integral part of the biosphere has not yet been resolved. Within the context of current, pressing environmental problems, however, the question remains as to whether management practitioners can address ESD without a persuasive theoretical framework available.

Although still in its infancy, sustaincentrism, which has emerged as an integrative approach out of the paradigm debate, may provide such a framework. Despite the fact that the ethical underpinnings of this paradigm remain contested ground,
sustaincentrism provides operable, preliminary guidelines for business conduct congruent with the requirements for ESD. In environmental terms, sustaincentrism breaks with the anthropocentric business-as-usual approach, and provides operational principles (see Table 3.2) which are largely compatible with ecocentric demands on organisational ‘environmental’ management (see Table 3.1). Nonetheless, sustaincentrism and ecocentrism differ in terms of their underlying assumptions about human-environment relations. Ecocentrism calls for radical shifts in the social and economic construction of society, a notion that has only limited appeal to business decision makers faced with economic realities. Sustaincentrism, too, acknowledges the need for change within economies and businesses, but it recognises the lack of policy guidance within ecocentrism which may “completely paralyze pragmatic action of any sort” (Gladwin et al., 1995, p. 889). Sustaincentrism takes account of socio-economic issues as well as environmental concerns and gives directions for manageable change within business, but it also calls for economic reorientation towards non-material growth and equity, which are two requirements for long-term social stability.

The paradigm debate is ongoing, and in the future it is likely that more concepts will be developed to fuel this discussion. However, the business community may be running out of time. This is because the nature of environmental thresholds is an unknown quantity. Moreover, there is mounting pressure on businesses to respond to pending ecological crises. Therefore, in the absence of established decisional paradigms within business theory, an integrative approach, such as sustaincentrism, is most likely to be successful in the task of re-directing business theory and practice towards sustainability in the short term. The author contends that sustaincentrism represents a sound, preliminary basis for the implementation of ESD into business theory. The sustaincentric approach will be used as a decisional paradigm for the purpose of this thesis and will be employed as the basis for the development of a strategic management model in Chapter Seven.

3.5 Conclusion

This chapter has advanced a number of moral arguments to explore the notion of obligations owed to future generations. Based on the findings presented in Section 3.1.4, this thesis expresses the view that moral consideration ought be extended to
future generations as a logical consequence of an already existing obligation to people living today. This in turn implies that present generations have an obligation to preserve resources and eco-systems and keep them intact for future generations. In essence, corresponding with sustainability principles, we should leave enough and as good for those that follow us, due to a moral obligation. Using the arguments of extensionism, it was suggested that we should widen this scope of obligation to include the non-human environment into the realm of moral eligibility.

Although the ethics of ESD could not be described exhaustively in this chapter, it stands to reason that mindshifts need to occur within business theory to overcome the main obstacle for sustainability within business science, that of egocentrism. Utilitarianism, which has been accepted as the ethical grounding of business disciplines, has failed to provide a foundation for ESD. In contrast, Kantian or Rawlsian ethics seemed to be more appropriate vehicles for this approach.

With regards to the paradigmatic discourse within business theory, it can be concluded that both anthropocentrism as well as ecocentrism fail to provide a theoretical basis upon which sustainability can be achieved. Sustaincentrism, a synthesis of the two competing views, was found to be the most viable theoretical framework available within business theory to accommodate the concept of sustainability, as it represents an ethic which pragmatically includes the non-human environment. The sustaincentric perspective will therefore be used for the purpose of this thesis in the following chapters.

It has been suggested in Section 3.3 that business as a science needs to redefine its core values, and in view of the current epistemological crisis within business theory a re-orientation such as this seems inevitable, for this academic discipline to play a vital role within the movement towards sustainability. The need to overcome the anthropocentric sentiment of self-centredness within business will be exemplified in Chapter Four. This chapter will illustrate the ecological and socio-economic consequences of indiscriminate economic expansion, which is an manifestation of the egoistic maximisation of self-interest. It will also comment on the shortfalls of conventional economic rationale in the light of the new school of ecological economics.
Chapter Four
The Economics of Sustainable Development

4.0 Introduction

Since the early 1960s there has been a growing concern for the impact of human activities on the physical environment. Rapid economic expansion and development were considered responsible for the widespread environmental and ecological damage at the time (Carson, 1962; Meadows et al., 1972; Schuhmacher, 1973). More recent studies on economic development and the environment (e.g. Cline, 1991; Houghton, Jenkins, & Ephraums, 1990; Meadows, Meadows, & Randers, 1992) support those earlier conclusions and suggest that a continuation of unconditional economic expansion will lead to the destruction of large parts of the world’s life support system and is ultimately unsustainable.

Within the discipline of (neo-classic) economics, however, current environmental problems are not sufficiently addressed. This is because these problems are treated merely as economic problems, which means that they are treated as externalities (Rosewarne, 1993). Externalities represent the costs of production or consumption which are not borne by the agents involved in the transaction but instead affect third parties (Jacobs, 1991). Moreover, conventional economic theory endorses the free unfettered market system and the use of market-based mechanisms as the most efficient means for allocating resources right across the economy and the most rational instruments for securing sustainable development (Jacobs, 1991; Kinrade, 1995). These two hallmarks of economic theory have attracted considerable criticism from opponents of this conventional approach. In fact, critics of the traditional economics paradigm argue that due to the externalisation of environmental issues and the conviction in the unfettered free market economy, conventional economics fails to explain and develop solutions to environmental issues (Davis, 1996; Hamilton, 1997c; Jacobs, 1991; Kinrade, 1995). This is chiefly because some of the underlying assumptions and beliefs of conventional economic development are flawed (Schuhmacher, 1973) and can directly be related to today’s pending environmental problems (Bennis, Parikh, & Lessem, 1996; Hamilton, 1997a; 1997b).
The realisation of the causal relationship between economic growth and environmental degradation has led to a maturing critique of traditional economic assumptions and beliefs which currently provide the basis for most economic activities world-wide (Bennis et al., 1996; Daly, 1973; 1974; 1977; 1980; 1997; Daly & Cobb, 1989). Present alternative concepts to the traditional approach, however, have remained largely theoretical, as it has proven very difficult to alter an established conventional economic mindset that has actively been shaping the Western world’s economic reality for more than 200 years. Consequently, the inculcation of sustainability principles into economic theory and practice has been slow, as only little progress has been made towards a shared understanding of how to analyse and work towards an ecologically and economically sustainable, and socially equitable society (Jayasuriya, 1992). In other words, the current debate on the economics of sustainability has remained highly controversial and primarily academic, while the conventional, Western economics paradigm has continued to dominate the world’s economies, thus affecting the environment.

This chapter will look at the schism between conventional economics and emerging alternative approaches. For this, the perceived shortfalls of the traditional economics paradigm will be identified in Sections 4.1 and 4.2 and examples provided of circumstances where failures of conventional neo-classic rationale are evident. In Section 4.3, the fundamental assumptions of neo-classic economic theory will be introduced. Section 4.4 will concentrate on the new school of ecological economics and contrast its views with the conventional economics paradigm. Section 4.5 will look at a selection of economic policy instruments in the context of sustainable development. Finally, the implications of emerging economics paradigms for sustainable management practice will be discussed in Section 4.6.

4.1 The Economic, Political, and Environmental Crises

The postulate of economic growth is actively shaping the current business and political environment world-wide, as most countries strive to exploit their natural resources for the sake of economic expansion. However, the international pursuit of such development has come at a great social and environmental cost. Despite steady positive economic growth figures which generally imply an increase in a nation’s wealth and standards of living, countries presently experience substantial rates of
unemployment, poverty, resource depletion, and pollution (Jacobs, 1991; Rosewarne, 1993). Hence, it stands to reason that economic growth alone does not warrant socially equitable results, let alone produce environmentally optimal outcomes.

In order to establish a point of departure for a discussion on the economics of sustainability, this section will draw attention to the current state of the world in view of political, economic, and environmental problems that have arisen out of indiscriminate economic growth.

### 4.1.1 The Economic Crisis

For at least the past half century, the world output of goods and services (Gross World Product (GWP)) has generally been growing (see Figure 4.1). The year 1996, for instance, witnessed an increase in GWP of 3.8 per cent, lifting per capita income to an average of US$4,856 (Brown, 1997b).

**Figure 4.1**

**Gross World Product, 1950 – 1996**

(Source: Brown, 1997a, p. 67)

![Gross World Product, 1950 – 1996](chart.png)

According to conventional economic theory, such increases in output, measured in Gross Domestic Product (GDP) at a national level, lead to increases in a nation’s wealth and standards of living. This is the “invisible hand” which Adam Smith argued brought general prosperity, and indeed, since World War II sustained growth in production and living standards has taken place in countries like Australia, and the nations of Japan, Western Europe, and North America (McTaggart, Findlay, & Parkin, 44...
1996). However, the relative affluence enjoyed by those countries has resulted in a considerable degree of maldistribution of wealth and prosperity between and within developed countries (DCs) and lesser developed countries (LDCs) (Welch, 1994).

The inequality between DCs and LDCs is most apparent when considering the distribution of wealth measured in per-capita income. This gap in income distribution has continuously grown since the middle of the twentieth century (Porter & Brown, 1991). By 1996, the poorest one fifth of the world population saw their share of global income drop down to 1.4 per cent, whereas that of the richest one fifth rose up to 85 per cent (Kane, 1997). This degree of maldistribution is believed to be perpetuating the current situation in which wealthy countries seem to be becoming wealthier and poor nations seem unable to escape the downward spiral of poverty. There is evidence that the so-called North-South gap is the result of economic relations between DCs and LDCs that have been maintained over the last 30 years. Current trade relations are characterised by persistent terms of trade imbalances, high levels of protectionism, uncontrolled flow of capital, the dominance of transnational corporations, and speculation (European Environment Agency, 1996b; George, 1988; Korten, 1995; Porter & Brown, 1991). The resulting inequality in income has led to immense imbalances in global consumption and wealth by the early 1990s where only 26 per cent of the world population who lived in industrialised countries consumed more than 80 per cent of the world commercial energy, 86 per cent of metals and over 85 per cent of paper (Jacobs, 1991). Due to the steadily increasing market power of industrialised countries this disequilibrium of consumption and prosperity has continued to grow (Korten, 1995).

Another contributing factor to the inefficiency of world markets is subsidies. This form of financial assistance has led not only to immense environmental destruction such as overfishing, deforestation, soil erosion, ozone depletion, and global warming but also to immense market distortions. Environmentally destructive subsidies cost taxpayers around the world more than US$500 – 700 billion a year (Roodman, 1996; Workshop am Wuppertal Institut zur Ökologischen Steuerreform, 1997), although many of those subsidies that are still being paid today are obsolete and ineffective. Annually, ecologically counterproductive subsidies to fossil fuels and electricity world-wide amount to more than US$300 billion (Earth Council, 1997). For instance,
private and commercial transport are heavily subsidised in many OECD countries (e.g. USA: US$111 billion (Roodman, 1996)), providing perverse incentives for car owners and freight transport companies which in turn undermine environmental awareness programmes (Earth Council, 1997). In view of the current situation, it is fair to say that global warming is subsidised by governments world-wide.

4.1.2 The Political Crisis

Current economic problems such as low growth figures in Western economies and high unemployment have placed great pressure on political systems. The difficulty of balancing economic goals of growth, low inflation and low unemployment as well as maintaining a socially stable society is facing most industrialised countries today. This difficulty is compounded by the fact that the macroeconomic targets of low inflation and low unemployment are incompatible (Phillips-Curve-Phenomenon). Low inflation is considered pertinent for sustained economic expansion (McTaggart et al., 1996) which turn proves highly problematic for political leaders who attempt to reduce unemployment figures. Due to the perceived importance of maintaining the growth of a nation’s GDP, countries like Australia have paid and are still paying high social and economic costs which are related to persistent, high unemployment (Coombs, 1990).

Unemployment figures in various Western economies reached record highs during 1996 providing a hive for social unrest and political chaos, as experienced in France and Germany in early 1997. In Germany alone unemployment rose by 60 per cent during the last 15 years (Spiegel, 1997). There are currently more than 18.2 million people unemployed in the European Union, which mirrors the global unemployment rate of approximately 11 per cent (Organisation for Economic Cooperation and Development (OECD), 1996). According to OECD predictions, unemployment figures are likely to stabilise globally above the 10 per cent mark despite continued economic growth and employment growth of approximately 1 per cent. Such high levels of unemployment will continue to pose a tremendous strain on economic systems and social structures (Hanson, 1990; Manske, 1995).

Fluctuations in the business cycle were traditionally accountable for high unemployment figures. However, in most industrialised countries today
unemployment is no longer cyclical but rather structural, meaning that skills have become obsolete and that labour markets have become inflexible (Dodds, 1997). This has led to the phenomenon of long-term unemployment. In contrast, actual working hours and stress levels for the employed have increased due to rises in workloads and overtime while real income in most Western economies has been declining (McTaggart et al., 1996). With a situation such as this, governments find it increasingly more difficult to satisfy the social expectation of adequate and improving real incomes and quality of life (Coombs, 1990).

Labour market reforms, deregulation, and other microeconomic reform programmes, all intended means to increase productivity, efficiency and international competitiveness, are the current strategies of many Western governments for continued economic development. However, it seems that such reform programmes fall short of reducing the persistent high levels of unemployment and fail to reverse the moral decline within societies (Marglin, 1990). The concomitants of these labour market crises find expression in social unrest, suicide, mental illness, depression, and the alienation of the youth, all slowly undermining the authority of the State (Economic Planning and Advisory Council, 1992; Marglin, 1990; Trainer, 1996; Walter, 1996; Weerasinghe & Tepperman, 1994).

The growing influence of transnational corporations also contributes to current political crises (Casagrande, 1996; Korten, 1995). Although governments have the power to intervene in the market place, the dominance of transnational corporations has led, in many developed and developing countries, to the crippling paradox of unmet social needs and available but unutilised solutions and resources. Due to the governments' dependence on tax revenue, many environmental and labour market projects have never been implemented, as corporate interests have taken priority in environmental and market policy (Korten, 1995; Porritt, 1984). In countries, such as Nigeria and Indonesia, where governments have degenerated to mere economic agents, high levels of environmental degradation, human right violations, and social decay can be witnessed today (Casagrande, 1996; Korten, 1995).
4.1.3 The Environmental Crisis

The expeditious economic expansion world-wide within the last 100 years has caused immense environmental damage. The loss of arable land and drinking water, deforestation and the decline in biodiversity are only a few examples of the impact of human economic activities on the bio-physical environment.

Since the early 1970s, large loan-based development projects have been funded by the International Monetary Fund (IMF), the World Bank and leading industrialised nations in countries like Brazil, Indonesia, and India. Such projects included electric power and irrigation programmes that have proven to cause immense environmental damage (George, 1988; Jacobs, 1991). The ineffectiveness of such projects combined with their high capital intensity has resulted in extremely severe external payment problems in developing countries such as Brazil. The rising debt-service obligations of the developing world have forced most developing countries to resort to environmentally counterproductive debt-servicing methods like timber and minerals trade, beef production and the growing of cash crops in order to earn foreign exchange (Porter & Brown, 1991; World Commission on Environment and Development (WCED), 1987).

Deforestation and livestock depletion are the most prominent examples of resulting environmental decline (Jacobs, 1991; Sugal, 1997; Tuxill, 1997). Exponential population growth in developing countries along with adverse price trends for primary produce and deteriorating terms of trade as well as protectionism and stagnating aid flows compound the burden of debt servicing in the Third World and lead to further environmental damage and growing political instability (French, 1997; Gardner, 1997; George, 1988; Porter & Brown, 1991; World Commission on Environment and Development (WCED), 1987). The persistent asymmetry in international economic relations, as mentioned earlier, poses a major threat to the achievement of sustainability and the prevention of further environmental decline (Hanson, 1990).

The environmental impact of current economic activities is evident, as yearly statistics send 'sobering' data on environmental decline around the world. For instance, Carbon Dioxide (CO₂) emissions throughout 1996 climbed to new record levels of
6.25 billion tons due to a sharp increase in fossil fuel use, which represented the highest level of fossil fuel dependence ever (Flavin, 1997). The resulting air pollution is currently leading to 300,000 to 700,000 premature deaths of city dwellers annually and causing chronic lung problems in at least 50 million children a year (Roodman, 1997). In 1996, the world lost 11.3 million hectares (annual average since 1991) of net forest area (Sugal, 1997). World food security has deteriorated, evidenced by a decline of carryover stocks of grain despite record harvests during 1996 (Brown, 1997a) and a slight decrease in population growth (Mitchell, 1997). Furthermore, ecosystem conversion in the form of land degradation, fragmentation, and simplification of ecosystems has reached new highs. In fact, in many countries already more than half of the original territory has been converted to other uses, much of it unsustainably and irreversibly (Abramovitz, 1997). These ecosystem alterations have led in turn to severe habitat loss contributing to the decline in biodiversity of flora and fauna (Tuxill, 1997).

These examples of human impact on the environment are alarming, and it can be reasonably assumed that without immediate action being taken to reduce current levels of environmental degradation, severe ecological and, as a result, economic and social problems are soon to be felt world-wide.

4.2 Conventional Economics: A Critique

The problems relating to the growing inequality in prosperity within and between countries, political and socio-economic problems, and the rapid environmental degradation outlined above have been depicted inter alia as a consequence of the global indiscriminate economic expansion throughout the last two centuries. In this context, the following section will direct attention to a number of assumptions within conventional economics that provide the basis for almost all economic activities world-wide. It will be shown that parts of the conventional economic belief system are flawed and that the conventional economics paradigm is actively contributing to world problems rather than providing viable and sustainable solutions.
4.2.1 Economic Growth: The Problem of Measuring Wealth and Standard of Living

Today, national economic performance is measured in Gross Domestic Product (GDP) per capita as a means of indicating the average income and economic growth of countries. GDP is also commonly used as an indicator of welfare and of standards of living (Samuelson & Scott, 1975). Originally, GDP was developed as a measure of economic output during World War II and used later as a tool for the management of the business cycle (Dodds, 1997). For this reason, it is not surprising that GDP does not deliver an accurate account of living standards, as it cannot distinguish between different kinds of expenditures, account for externalities, or consider non-market activities and income distribution (Hanson, 1997). In other words, GDP merely represents a gross tally of products and services bought and sold and therefore disregards half of the economy (Trainer, 1996). Furthermore, GDP records every monetary transaction as positive so that even costs of social decay and natural disasters are portrayed as economic advances. Due to these shortcomings, economies may be growing in GDP, however, may experience environmental destruction, poor health, crime or even war at the same time. In other words, economic expansion, meaning growth in GDP, does not necessarily lead to improvements in human welfare and standards of living but may actually lead to social problems and environmental harm (Wilkinson, 1973).

Alternative measures of economic well-being have been developed in the last 20 years to broaden the conventional accounting framework of GDP through the inclusion of factors such as income distribution and unpaid work, as well as crime and pollution costs (Hamilton, 1997c). The Genuine Progress Indicator (GPI), for instance, computes economic data for the USA from 1950 to the present as shown in Figure 4.2 below. The diagram reveals that GDP has more than doubled from 1950 until today, whereas the GPI has declined since the 1970s with a current rate of decline of more than 6 per cent per annum (Cobb, Halstead, & Rowe, 1998; Hanson, 1997). When applied to the respective economic data of Australia, the GPI reveals results that are similar to the US readings, suggesting the offset of economic growth by high social and environmental costs (Hamilton, 1997b). Both findings in fact attest to a reduction in well-being currently in the US and Australia. The degree of divergence between
GDP and GPI is alarming, as until today GDP has remained the foremost economic indicator.

GDP has proven to be an inaccurate barometer of nations' well-being, as despite continued economic growth environmental decline and social costs have started to pose a serious threat to ecological and social sustainability. It stands to reason that a re-conceptualisation of the measurement of well-being and the standard of living are essential in order to more accurately determine the social and environmental impact of current economic activities. A more accurate measurement of true economic performance would also give political leaders and citizens a better understanding of their economic path.

Figure 4.2
Genuine Progress Indicator versus Gross Domestic Product
(Source: Hanson, 1997)

4.2.2 The Myth of Economic Growth and the Growing Income Gap
The neo-classic economics paradigm permits growth forever, but it does not mandate it. The postulate of economic growth was actually being articulated in response to the problems raised by Malthus, Marx and Keynes who were concerned with issues such as overpopulation, equity questions and involuntary unemployment (Jayasuriya, 1992). As economic expansion was believed to level off these imbalances in theory,
growth has been endorsed as the foremost economic maxim for countries world-wide, based on the assumption that it will produce prosperity and wealth for all. The credo of expansion has led to the notion that growth will provide the answers for all economic problems. The strength of the existing reliance on growth can be demonstrated using as an example The World Development Report from 1992 which states that further economic expansion will solve the world’s environmental problems (Daly, 1997).

The initial ‘growth-cure’ for unemployment, inequity and environmental problems has seemingly lost its potency. The scale of economic activity world-wide has come close to the physical limits of global eco-systems, and historic problems of overpopulation, equity and unemployment have re-emerged (Daly, 1997). In fact growth has become uneconomic, as it has been proven that infinite growth within a finite system is ultimately unsustainable (Daly, 1997). In other words, the social and economic costs of growth outstrip the benefits (utility) gained through expansion. The decline in net benefits of economic expansion, however, should not come as a surprise, considering the law of diminishing returns within microeconomics according to which the marginal benefit of output growth declines over time (McTaggart et al., 1996). This means that within microeconomics growth in production and consumption is considered desirable only to the point where marginal benefit equals marginal cost. Macroeconomic theory, however, does not have a concept of optimal size of an economy over the long term (Goodland & Ledec, 1987), and it is therefore assumed that growth of the macroeconomy always gives benefits without costs (Daly, 1997).

Despite technological progress and resource substitution, the scarcity of resources will determine the limits of economic growth (Hawken, 1997), and so will growing toxicity, meaning the increasing scarcity of environmental services such as clean air and drinking water. In other words, sustainable economic expansion is an illusion because the existence of limited (clean) resources will not allow for unlimited growth of the macroeconomy (Daly, 1973; 1997).

Due to the limits to growth and already existing maldistribution of wealth, neo-classic theory can neither provide solutions for growing income gaps within and between
nations nor help to reduce persistent high unemployment (Manske, 1995). Inequalities such as these are in fact inevitable within neo-classic economics. The "theory of income takes ... differences in endowments of skills and other assets" as given (Hamilton, 1997a, p. 38), which means that inequality in financial rewards is presumed within the neo-classic rationale. Income gaps are basically considered the result of markets rewarding certain capabilities of market agents in relation to the demand for them. In other words, markets determine the distribution of income and are therefore responsible for existing income distortions.

In summary, infinite growth cannot be achieved, and the equitable distribution of wealth through the free market system cannot be assured. It therefore seems reasonable to question the efficiency and equity of the market system, particularly in view of the fact that it has remained the main agent for resource allocation and distribution.

4.2.3 Externalities: Failure of Markets and the Price Mechanism
Since the time of Adam Smith, economists have favoured the unfettered market system. It is argued that a system such as this leads to the efficient allocation of resources between competing needs, efficiencies in production and in the utilisation of resources (McTaggart et al., 1996; Samuelson & Scott, 1975). The market place is assumed to provide the arena for individuals to exercise their right of maximising consumption, stimulating producers into meeting their needs by producing in accordance to actual demand. The existence of competition between producers is said to help minimise the costs of production and resource use (Rosewarne, 1993; Samuelson & Scott, 1975). Economic well-being is thought to be maximised through the interactions between all market agents.

The main feature of the market system is the price mechanism. Prices are presumed to carry information about the cost of producing a particular product. The price sends a signal to markets where consumers allocate their income to their utility maximising product choice (Gravelle & Rees, 1992). There is however a major shortfall in the price mechanism, as environmental services such as air and water fall outside economic valuation. In fact, these goods are considered 'free' goods, meaning that they attract a monetary value of zero (Costanza, 1991), although these goods should
attract positive prices. In other words, the price of environmental goods is wrongly recorded in the marketplace. For cost-benefit reasons, free goods are used excessively by market agents which in turn leads to the overuse of such resources (Pearce et al., 1989). The consequence of price distortions is immense environmental degradation due to over-consumption of resources, which also intensifies the problem of resource scarcity and increases costs of waste disposal (Schmidheiny, 1992).

Neo-classic theory suggests that in situations where scarcity of a commodity is experienced, increases in the price level will prompt for the substitution of that particular commodity and prevent its overuse (Pearce et al., 1989). This assumption has however proven to be untrue. Since the 1970s, as shown in Figure 4.3, resource prices have fallen drastically despite a continuous, cumulative increase of resource consumption world-wide (von Weizsäcker, Lovins, & Hunter Lovins, 1997).

**Figure 4.3**

**Commodities Price Index**

(Source: von Weizsäcker et al., 1997, p. 199)

The actual behaviour of commodity prices demonstrates that the price mechanism fails to reflect the true value of the totality of resources being used. Instead, prices send a message of unlimited resource availability. The price problem is also compounded by subsidies being paid for the use of non-renewable resources as
already noted, economies of scale, and the move towards low labour cost countries for supplies.

Market failure is another perceived shortfall of the free-market system. Market failure can be defined as the inability of unregulated markets to achieve either economically or socially equitable outcomes (McTaggart et al., 1996). The failure of markets commonly occurs due to the existence of externalities, effects which are external to economic decision makers (Jacobs, 1991). Externalities can be effects of consumption and production which pose a cost and/or a benefit to third parties but are not taken into account by those economic agents who undertake the transaction (Jacobs, 1991). Carbon dioxide emissions from the burning of fossil fuel and the use of chlorofluorocarbons are two examples of external costs. Both stem from private consumption and production, such as the use of motor vehicles and the production of refrigerators and aerosol cans, but the environmental impact of these actions are largely borne by third parties that have not benefited from them. Governments can redress market failure through intervention in the form of taxes and charges on polluting activities (Pearce et al., 1989). However, as it has been pointed out earlier, the difficulties of balancing economic, social, and environmental concerns facing governments today often result in political leaders not interfering with the market place in favour of macroeconomic goals. This inability to rectify market failure inhibits the internalisation of external costs by industries, so that the general public commonly has to face the consequences of externalities.

Overall, the free market system\(^1\) can be considered a major source of today's pending economic, political and environmental problems (Trainer, 1996). The market system contributes to the widening gap between rich and poor, as the market only attends to 'effective' demand, meaning that it favours market agents with the highest bid. The law of diminishing returns dictates short-term goals for markets which in turn translates into maximum consumption in the short-term, as utility of consumption is assumed to decline in the long-term. The absence of long-term foci jeopardises the welfare of future generations and future ecosystem integrity (Jacobs, 1991). In other

\(^1\)Whilst attention has been focused on the free market system, more severe environmental problems are evident within controlled economies.
words, the free market system exacerbates the problem of inter-generational equity as it is contributing to the depletion of resources.

In view of price distortions and market failure which contribute to environmental degradation and provide barriers to environmental policy making, the effectiveness and efficiency of the unfettered market system is at least questionable. It seems that the free market system requires government intervention in order to rectify the shortcomings of the free market economy (Porritt, 1984). However, it should be noted that market-based initiatives such as taxation, charges and incentives alone will not guarantee the prevention of further environmental decline, as markets are unable to capture the dynamics of ecological processes and the pressures that economic activity places on ecological systems (Costanza, 1991). Furthermore, high discount rates, poor information and price inconsistencies often lead to the failure of market-based incentives and charges (see Pearce et al., 1989).

4.2.4 Discounting the Future

The cost-benefit analysis within the economic accounting framework has often been criticised for paying little attention to the welfare of future generations. The law of diminishing returns suggests that time preference should be given to the present rather than the future, as this would yield maximum aggregate utility (Quiggin, 1992). The preference for the present over the future is expressed by the discount rate, a rate of return on foregone consumption (Hamilton, 1997a).

Although discount rates may not generally reflect societies’ attitude towards the issue of inter-generational equity, current high levels of resource depletion and pollution indicate that high discount rates are in use either with or without the consent and knowledge of market agents (Costanza, 1991). The equity problem rests on the fact that any discount rate that is greater than the natural rate of regeneration of natural resources will lead to resource depletion and compromise future welfare (Pearce et al., 1989). Based on this definition, current discount rates are set far too high for inter-generational equity to be achieved, as present scales of consumption and production are beyond the natural rate of regeneration (Jayasuriya, 1992).
Inter-generational equity is a long-term goal which is not addressed within short-term orientated economic models. Even though the concept of equity between present and future generations is generally agreed on in principle, current economic practice continues to erode the ecological base of future generations and raises questions in relation to the morality of current economic systems in general.

Today, the world's economies are in the tight grip of conventional economic rationale. The limitations of the economics paradigm, which have been outlined above, together with the scale of current economic activity world-wide have led to enormous environmental harm and produced socially and economically inequitable systems. However, within the school of economics new ways of dealing with economy-environment relationships have been developed since the 1970s, offering alternative concepts to address pressing economic problems. The following will briefly summarise the main aspects of the conventional economic approach, as this will create an understanding of the fundamental differences between neo-classic economics and the new school of ecological economics which will be addressed in Section 4.4.

4.3 The Neo-Classic Economics Paradigm

Conventional economics is an anthropocentric approach which stresses the individual maximisation of self-interest of consumers and producers (Hamilton, 1997a). Human behaviour and the relationship of humans to the natural environment are based entirely on the utilitarian assumption that human welfare increases with growing consumption and hence resource use (Costanza, 1991; Hamilton, 1997a; Vlais, 1997). The biophysical environment is merely regarded as a resource base for human consumption, a waste sink for human discharge and a provider of various amenities to private households, as illustrated in Figure 4.4. In other words, the value of the environment derives from its current contribution to human welfare only, as the natural is world is treated as being separate from the economy (Hamilton, 1997a; Kinrade, 1995).

Natural resources are considered to be virtually infinite and therefore subject to unconditional human exploitation based on the belief that the environment has the capacity to withstand human activity in all its forms (Davis, 1996). Should resources
become scarce, however, the economy will presumably grow around that particular scarcity through substitution or the invention of new technologies. The market system is said to efficiently allocate resources through the use of the price mechanism and, if left unfettered, produce benefits and prosperity for all (Daly, 1980; 1987).

Environmental economics (green economics) was derived from the conventional, neo­classic approach throughout the 1970s in response to the experience of market failures and spreading environmental decline. This approach operates on the same, neo­classic assumptions outlined above, but recognises some degree of dependence of the economy on ecosystem integrity and continuity (Costanza, 1991; Hamilton, 1997a).

**Figure 4.4**
Illustration of Conventional and Environmental Economics
(Source: Hamilton, 1997a, p. 43)

Environmental economics attributes the failure of markets in the early 1970s to the inaccuracy of the prices for environmental goods. It is argued that environmental services, such as clean air, were treated as free goods and their value hence not captured by the market system (Pearce et al., 1989). Therefore, the correct pricing of
environmental services is considered vital, as this would ensure that environmental costs would be internalised by companies and passed on to the market. New price structures would be determined by supply and demand (Pearce et al., 1989). Private ownership by industries over the environment is said to give greater incentives for companies to internalise costs of pollution and lead to an overall reduction of pollution by industry down to an 'efficient' level of waste (see Coase theorem\(^2\)) (McTaggart et al., 1996). In other words, the creation of markets for environmental property is believed to give birth to enhanced environmental responsibility taken by companies (Pearce et al., 1989), although such environmental responsibility would only be driven by cost-benefit analysis.

Although environmental economics addresses the environmental impact of economic activity, it still gives exclusive status to the market economy. The assumed profit motive of market agents together with adjusted prices that account for environmental costs are considered appropriate and sufficient by green economists to reduce pollution and resource depletion to an 'economically optimal' level. However the treatment of the environment in terms of 'sources' and 'sinks' (refer to Figure 4.4) still fails to consider the scale of human activity in relation to the earth's capacity to withstand it.

4.4 Ecological Economics: The Schism with Neo-Classic

Ecological economics (EE) is embedded in the ecocentric paradigm and aspires to balance economic and ecological goals (Common, 1997). It represents a transdisciplinary approach that recognises the interdependence of ecological and economic systems and acknowledges the physical limits to economic activity which are determined by the earth's carrying capacity (Krishnan, Harris, & Goodwin, 1996; Perrings, Turner, & Folke, 1995). The term carrying capacity refers to the world's resource base and the ability of ecosystems to assimilate and absorb discharges from human economic activities (Costanza, 1991). The impact of economic activity on the biophysical environment is recognised in the sense that environmental feedbacks, such as ozone layer depletion and increases in global surface temperatures, are regarded as results of human production and consumption that will affect future

\(^2\) If property rights exist and transaction costs are low, the private transactions are efficient (McTaggart et al., 1996, p. G-2).
human activities (Costanza, 1991; Hamilton, 1997a). Furthermore, the physical environment is ascribed intrinsic value and considered a locus for human spirituality, providing psychological links to humankind (Hamilton, 1997a). The embeddedness of the human economy in the global ecology is illustrated in Figure 4.5.

Inter-generational equity is also of particular concern to EE. It gives the impetus for the long-term goal of preservation of ecosystems and protection of non-renewable resources for the equitable distribution of resources between present generations and those yet to come (Krishnan et al., 1996). Moreover, EE recognises the human obligation of stewardship, demanding the global community take responsibility for environmental protection. This new discipline therefore advocates that economic decision making be placed in the political arena and into the hands of local communities (Hamilton, 1997a; 1997b), as this would aid the development of local solutions to global environmental and economic problems.

**Figure 4.5**

**Illustration of Ecological Economics**

(Source: Hamilton, 1997a, p. 46)

It becomes apparent that ecological economics differs from conventional economics in several ways in terms of scope of its perception of problems and the importance it
attaches to environment-economy interactions (Costanza, 1991; Vlais, 1997). In fact, EE is critical towards the effectiveness of markets as the sole means of ensuring the efficient, equitable and sustainable use and distribution of resources and the protection of ecosystems. While neo-classic theory is primarily concerned with short-term profit maximisation, giving little attention to economy-ecology interconnections and relationships, the aim of ecological economics is to broaden the narrow scope of conventional economics in order to develop economic approaches to sustainability that preserve the bio-physical environment and produce a socially equitable society (Hamilton, 1997c). For this end, EE places emphasis on the conservation of biodiversity and ecological integrity. At the same time, individual and community well-being are respected and safeguarded through the development of economic tools designed to conserve cultural diversity and social equity for all members of present and future generations.

Ecological economics is an anticipatory and preventive approach, which deals with future-related uncertainty and risk in a precautionary manner (Vlais, 1997). This new economics paradigm considers that the possible irreversibility of damage to ecological life support systems may be irreversible; hence there is a need to take preventive action to maintain the resilience and functional integrity of ecosystems (Common, 1997; Costanza, 1991; Krishnan et al., 1996).

4.5 Working Towards a Sustainable Economy

The concept of ecological economics, as shown above, challenges established assumptions within the conventional economics paradigm. The re-conceptualisation of economy-environment relationships has prompted the development of new economic tools, a new environmental ethic and policy principles to address current world problems. These tools will be addressed in the following section, providing insights into a new vision of sustainable economies.

4.5.1 Environmental Evaluation

It was argued earlier that price distortions occur in the free market system. It was then shown that prices of polluting products are often set too low. New studies suggest, although contested (Common, 1997), US$16 – 54 trillion as a minimum estimate for the total value of the entire biosphere (e.g. Costanza et al., 1997). Although these
figures indicate unimaginable ecological wealth, most environmental services still fall
outside monetary evaluation (Hamilton, 1997a; Vlais, 1997). Therefore, market
prices need to be corrected in order to reduce pollution and prevent the
overconsumption of so far ‘free’ environmental services.

The valuation of the environment can be used to demonstrate that environmental
resources have value in the same sense as marketed goods and services have values.
By attaching prices to environmental services, rational decisions can be made by
market agents in consideration of gains and losses which would include the
environment (Pearce et al., 1989).

The economic value of environmental services includes explicit use benefits as well
as implicit non-use benefits. Use benefits represent those that are obtained from the
physical use of environmental resources such as by agriculture, fisheries or visiting of
national parks. Non-use benefits comprise benefits that individuals may gain from
environmental resources without directly using or experiencing them (Costanza et al.,
1997; Department of the Environment Sport and Territories, 1996). This, for
instance, would include the indirect consumption of environmental resources (e.g.
books). These benefits, either explicit or implicit, both contribute to the well-being of
individuals. The individual gain in well-being can in turn be expressed in economic
terms, meaning that gains in satisfaction have economic value. Similar to goods and
services that are exchanged in the market place, the value of environmental amenities
would have to be expressed in either qualitative or quantitative terms. As markets
would then be able to attend to environmental resources through the price mechanism,
a more complete cost-benefit analysis could be carried out, incorporating all costs and
benefits from environmental changes (Department of the Environment Sport and
Territories, 1996). The concept of price adjustments is illustrated in Figure 4.6 in
Section 4.5.2.

Notwithstanding the necessity of attaching monetary value to the environment for
markets to consider ‘real’ costs and benefits, there are a number of limitations to the
economic evaluation of the environment. Firstly prices represent a mere
approximation of the actual value of a market commodity (Costanza et al., 1997) and
therefore cannot be regarded as accurate. Due to markets attending to agents whose
economic vote is highest (Porritt, 1984), there is the danger that individual preferences would determine the degree of environmental protection and resource depletion (Hamilton, 1997a). On moral grounds it can be argued that an 'environmental price tag' implies that natural resources are only of relative rather than absolute importance (Department of the Environment Sport and Territories, 1996). Furthermore, the question arises on whose values environmental evaluation should be based and how regressivity of added environmental costs can be minimised.

Despite the critique on environmental evaluation and the unanswered questions relating to the practical application of this method, within existing market structures, the valuation of resources is deemed necessary. While there may be no 'right' way to value the environment, there is a wrong way, which is to give it no value at all, as such neglect may ultimately compromise the sustainability of humans in the biosphere. Due to the lack of a complete understanding of the value of environmental services and the inaccuracy of monetary evaluation, however, a precautionary approach should be chosen. A precautionary evaluation of the environment should consider social attitudes as well as changes in the resource base and other influencing factors such as subsidies, taxes and charges. Although the monetary approach is far from being perfect, it is reasonable to suggest that it represents a temporary solution which aids in the reduction of pollution and prevention of resource depletion.

4.5.2 Polluter Pays Principle (PPP)

The Polluter Pays Principle was determined by the OECD Council in the 1970s (Organisation for Economic Cooperation and Development (OECD), 1975) in response to the realisation that prices of polluting products are set too low in free markets. The PPP was formulated in terms of making the polluter bear the costs of conforming to an established environmental standard. Such a standard is assumed to reflect an 'acceptable' environmental quality, which in turn defines 'acceptable' pollution levels for industries and households (Pearce et al., 1989). The econometrics of PPP is illustrated in Figure 4.6. As producers are inclined to pass on higher production costs (C), consumers need to partly carry the clean-up cost of polluting products (P*), which means that the cost of pollution control is shared by industries (light shaded area) and households (heavy shaded area).
In other words the cost of pollution control measures and pollution prevention, which are determined by set environmental standards, are shared by all market agents. The use of the price mechanism is assumed to ensure efficient resource allocation, as the imposed charges on polluting products and inputs are reflected in the product prices (Organisation for Economic Cooperation and Development (OECD), 1975; Pearce et al., 1989). This mechanism is said to encourage the use and development of less polluting alternatives.

4.5.3 Environmental Taxation

The concept of environmental taxation was first advocated in the 1920s by A.C. Pigou who was pointing at the hidden cost associated with sulphur and CO₂ emissions from factories and fireplaces in Manchester, England (Pigou, 1932). Pigou found that pollution victims, in essence factory workers and coal miners, were actually subsidising pollution causers, and making society as a whole poorer. He concluded that taxes should therefore be imposed by governments to make degraders of the environment pay the economic cost of the harm they were causing; meaning that polluters were to pay an environmental tax as a means to internalise the costs of pollution (Hamilton, 1997a).

Environmental taxation is a price-based policy that penalises activities that are damaging the environment by making people pay for using natural resources.
The general aim of environmental taxation is to guide the economic system in a manner consistent with basic sustainable ecosystem goals (Costanza, 1991). Based on the PPP, these taxes are designed to change behaviour in the sense that industry would be encouraged to move away from non-sustainable production towards sustainable alternatives. Accordingly, consumers would adjust their preferences according to subsequent changes in the price structures of goods and services (Robertson, 1996; Schäfer, 1996).

Environmental taxation can be revenue neutral but may also be applied to raise revenue which may then be used to improve environmental expenditures. Taxes on pollution sources can also be effective policy tools to tackle environmental priorities such as transport emissions, waste and chemicals used in agriculture (Costanza, 1991; European Environment Agency, 1996b). Environmental taxation can also provide the impetus for fundamental change within a country's tax system.

Ecological tax reforms aim at shifting the tax base from value-adding processes such as employment and investment onto value subtracting use of energy and other activities associated with the creation of wastes and pollution (Gee, 1996). In other words, a tax reform such as this is intended to reduce or eliminate taxes on income, labour and capital (especially on middle and lower income taxpayers) and tax pollution and depletion of natural resources instead. A shift in the tax base such as this would selectively free capital and lead to investment and employment growth (Bach, Kohlhaas, & Praetorius, 1995). As the tax would be passed on through the economic system, the development of products that do not consume natural capital would be encouraged and non-sustainable alternatives would be displaced (Friend, 1995). Such changes to the economic system could negatively affect some areas of industry and jeopardise many jobs in pollution intensive industries. Therefore a careful design and gradual implementation of tax reform are essential in order to allow industries and private households to adjust (European Environment Agency, 1996b; Hamilton, 1996). For a tax system to promote a rapid and equitable transition to an environmentally sustainable economy it would need to (after Hudson, 1995):
achieve a fair distribution of tax burdens,
promote the sustainable use of resources,
reduce cumulative costs of collecting revenues and compliance with environmental goals,
embrace the polluter-pays-principle,
provide adequate information to the public.

Carbon tax models that have been put on trial in the USA and Europe in an attempt to reduce greenhouse gas emissions, are examples of refined eco-taxation concepts (Economic and Social Research Council, 1994; Robertson, 1996). These tax models have been developed in response to global warming, a phenomenon which appears to be caused by the growing concentrations of greenhouse gases (CO₂, CFCs, Methane) in the earth's atmosphere, which is a perceived major threat to global sustainability (Houghton et al., 1990). Carbon taxation is designed to switch the tax base from income to carbon dioxide emissions per unit of potential energy produced by each carbon-based fuel (Alden, 1995). This would mean that gas for instance would attract a lower tax rate than oil or coal, due to its lower content of carbon. This tax can also be broadened to an energy tax, meaning that an energy consumption component is added as a charge on the use of all non-renewable forms of energy (Economic and Social Research Council, 1994; European Environment Agency, 1996b).

The use of carbon taxes and other forms of environmental taxation has increased in EU member countries such as Austria, Belgium, France, Germany and in the whole of Scandinavia (European Environment Agency, 1996a). The taxation policies of these countries comprise fiscal environmental taxes on CO₂ and Sulphur emission, charges designed to discourage water pollution, and tax differentials on unleaded petrol and cleaner diesel, as well as cost-covering or user charges on household waste and water consumption (European Environment Agency, 1996b). Although environmental taxation represents only 1.7 per cent of total EU taxes (with exception of Netherlands (5.2 per cent) and Denmark (4 per cent)) the introduction of environmental taxation had multiple environmental effects and secondary benefits that improved policy in four key areas, these being the environment, innovation and competitiveness, and employment (European Environment Agency, 1996b; Piacentino, 1994; Robertson, 1996; Roodman, 1997; Workshop am Wuppertal Institut zur Ökologischen
Steuerreform, 1997). This is also known as a ‘double dividend’ (Pearce, 1991), meaning that revenues may be used “to finance reductions in incentive-distorting taxes such as income taxes” (p. 940).

Despite the encouraging results from the examples outlined above, eco-taxation is not without its critics. Environmental taxes have been criticised for potentially imposing inflationary pressures on markets (Eckersley, 1995), stifling competitiveness and having negative impacts on employment (Goulder, 1995), on low income groups (Hamilton, 1996) and on economic growth (Pisarczyk, 1995). Indeed, low income families and people employed in pollution prone industries, like the mining and metal industries, would be adversely affected by eco-taxes. However, policymakers can mitigate regressivity of environmental taxation in several ways: through tax code adjustments, compensation programmes, and supplementary payments to low income earners (Hamilton, 1996; Roodman, 1997). Inflationary pressures can be avoided through subsidy shifts away from coal and oil intensive products to sustainable and renewable alternatives. Although some industries (e.g. the coal industry) will need to disappear altogether (Flavin & Lenssen, 1994), most industry sectors will be able to adjust to new production methods that pollute less and embrace recycling, repair and re-use (Roodman, 1997). In the Netherlands and Germany, for example, where pollution charges have gradually been implemented since the 1970s, demand for pollution control equipment has grown rapidly. This in turn enabled both countries to turn into global leaders in the market of pollution control products and services, creating growth and employment (Roodman, 1997). Similar experiences have been had with environmental taxation in the USA and in Singapore (O'Connor, 1994).

The eco-taxation examples of the past 30 years demonstrate the effectiveness of this market-based policy approach. Numerous taxation trials in the USA, Europe and Asia have also shown improvements in the efficacy of eco-taxation when introduced as an integral part of a tax reform package in combination with tax revenue recycling scenarios where tax revenues were redirected towards employment and market restructuring programmes. (European Environment Agency, 1996b; Roodman, 1997). However, until today, wide-ranging ecological tax reforms have not been implemented into national economic policies. Environmental benefits as a direct result of already existing eco-taxation, have proven to be only marginal because their
use at national levels is limited to small geographical areas (European Environment Agency, 1996b; Gee, 1996). In other words, a single handed attempt by governments to reduce pollution and resource depletion through environmental taxation can be regarded as a step in the right direction; however, because environmental problems are global in scope, such initiatives are only of limited consequence.

Although these initial advances into environmental protection through taxation have so far proven largely ineffective in terms of their tangible impact on environmental protection, the principles reported in this section demonstrate both the potential of taxation as a market-based approach and the urgent need for eco-taxation to be carried out of its experimental phase into the mainstreams of fiscal and environmental policy.

### 4.5.4 Tradable Pollution Permits

 Tradable pollution permits are a market-based alternative to the taxation of pollution and resource depletion. In contrast to taxes, where prices for pollution are set are by the authorities and pollution levels determined by the market, tradable permit systems allow societies to decide on pollution targets and resource use within specified time frames and then allow the market to determine the prices respectively (Roodman, 1997). When using permit systems, governments would establish pollution targets which in turn would determine the total of pollution entitlements issued (Birkeland, Diesendorf, & Hamilton, 1997). Governments can auction off permits to companies which are allowed to sell these pollution entitlements to other companies, provided that the results of the trading improves, or at least does not worsen the quality of the environment (Weale, 1992). In other words, firms that pollute more can purchase permits from companies that pollute less, which ensures that the costs of pollution and resource depletion are borne by the market agents responsible while environmentally friendly companies enjoy extra revenue from selling unused pollution permits (Costanza, 1991; Roodman, 1997; Weale, 1992). For this reason, marketable permits are said to provide the strongest incentives for firms to innovate in abatement activities and are therefore a highly effective administrative approach to the control of pollution (Milliman & Prince, 1989; Weale, 1992).

 Tradable permits have been implemented in the USA for sulphur emissions, and in Singapore to phase out the use of ozone-depleting substances (Roodman, 1997).
Although these established trading systems have deviated from the aforementioned ideal, as governments have been giving out permits rather than auctioning them off, the permit trade has helped to reduce pollution levels, and as studies in US have shown, at a lesser cost than uniform emission standards would have achieved (Opschoor & Vos, 1989; Tietenberg, 1985).

 Tradable permits are similar to environmental taxes, as both exploit the market in order to protect the environment (Roodman, 1997). Despite their proven effectiveness in reducing pollution levels, there are a number of political obstacles that have limited the wide use of such market-based policy approaches. The administration of transboundary pollution and international agreement on acceptable pollution levels have proven difficult to achieve in the past. High administration cost and other costs entailed in standard setting, monitoring and enforcement, which are born by the taxpayer, also provide another basis for widespread criticism opposing such pollution control schemes (Costanza, 1991; Weale, 1992). Furthermore, there is only a relative small risk for industry of being penalised for pollution due to the problematic of law enforcement. This in turn provides incentives for companies to cheat; in the absence of severe penalties, fines are affordable and non-threatening to profitable business enterprises (Birkeland et al., 1997).

4.5.5 The Moral Economy: Changing Values and Behaviour

The current world crises is evidence that the conventional economics paradigm, or the Western worldview, has failed as a development model (Kurz, 1995). As an acknowledgement of this failure the concept of the moral economy has been developed by ecological economists, environmental philosophers, and biologists (Dobson, 1991). This notion advocates an attitudinal shift from the conventional ‘more-is-better’ ideal to the ecologically sustainable maxim of ‘enough-is-enough’. Proponents of this new vision consider the protection of ecological life support systems to be a goal shared by humankind, and therefore a high moral priority and reason for changing the direction of human progress (e.g. Daly, 1973). It is argued that such a re-definition of social goals will enable countries to achieve intra- and inter-generational equity, as this shift would entail the transition from material to non-material consumption (Bennis et al., 1996). This in turn would lead to a less resource intensive economy and help preserve the ‘commons’ for future generations.
The general aim of the new, moral economy is to achieve full employment, meaningful work, and environmental protection. Furthermore, emphasis is placed on regional self-sufficiency and trade, opportunities for creative, cultural expression with the aim to produce diverse communities and an economy that contributes to the general welfare of all people as well as protects the environment (Economics Working Group, 1996). Numerous concepts have been developed to guide societies to an economically and socially equitable and ecologically sustainable future. The most prominent of these concepts is that of the steady-state-economy which will be addressed in the following.

4.5.5.1 The Steady-State Economy

The concept of the steady-state-economy or zero-growth economy has emerged in response to the exposure of the inadequacies and fallacies of growth economies (Daly, 1973; 1974; 1977). An economy such as this is characterised by a constant human population, in other words, birth rates are equal to deaths rates at a low level so that life expectancy is high. In the steady-state-economy, material growth is strictly limited (discriminating development) to the achievement of ‘appropriate’ standards of living and should always be within the bounds of sustainability. Instead non-material growth can be maximised, as there are no limits to personal and community development that is not material- or energy-intensive (e.g. arts, education, sports) (Davis, 1996). Exosomatic capital (human artefacts) is also kept constant at a sufficient level. When keeping the human population and consumption at a constant but sustainable rate, resource throughput can be kept down to the lowest feasible level. Human artefacts are designed to be long lasting (production is equal to depreciation at low levels), so that depletion and pollution are kept low (Daly, 1980). The focus of economic activities is placed on services that use low levels of throughput.

Despite of its appeal, the steady-state economy represents a concept of great political difficulty. Population stabilisation alone is a very difficult and complex issue, as moral, religious, and prevailing neo-classical economic concerns (population growth equals growth in aggregate demand) essentially hinder the introduction of quantitative or punitive measures of population control. Although its operationalisation may seem
infeasible, the steady-state economy still represents an ideal, which the global community would do wisely to pursue.

4.5.6 The Measurement of Sustainability: Perceived Problems

With the rise of the concept of ESD, problems have emerged regarding the measurement of sustainability and the design of reliable, environmental indicators. This section will elaborate on a number of these difficulties confronting today’s decision makers.

Governments and organisations who have attempted to meet their commitments under Agenda 21, after the Earth Summit in 1992, experienced difficulties due to the lack of sustainable development indicators (SDI) and environmental assessment means. This is because many indicators that are available prove to be largely incompatible and insufficiently address social equity issues and economic concerns (Mitchell, 1996). The main problems that arise when designing SDIs are related to the lack of complete understanding of ecological sustainability. The multitude of ESD definitions (Pearce et al., 1989), which has been referred to in Chapter Two, shows that sustainability principles are perceived in various ways. The development of SDIs based on different sustainability definitions may cause ESD measurements to be incompatible and contradicting. Moreover, geographic diversity can result in SDIs being inappropriate for certain localities. Furthermore, it proves difficult to incorporate social and cultural differences into SDIs, and this can be compounded by poor data availability, which may cause existing measures to be unsuitable (Mitchell, 1996). Finally, inconsistent applications of SDI programmes may also lead to inaccurate and unreliable results (Her Majesty’s Stationary Office (HMSO), 1994).

Another obstacle to SDI design, as pointed out earlier, is the problem relating to the monetary evaluation of ecological systems and natural capital stock (Mitchell, 1996). Firstly, this is because ecological complexity and social equity are not easily traceable through the market system (von Weizsäcker et al., 1997). Secondly, the financial valuation of use and non-use benefits derived from natural capital proves difficult and lacks exactitude (Costanza et al., 1997; Department of the Environment Sport and Territories, 1996). Consequently, ecosystem services are often given too little weight in comparison with economic services and manufactured capital.
Numerous SDIs have been developed within the last 20 years, such as Natural Resource Accounting (NRA) (Pearce & Warford, 1993), Approximate Environmentally Adjusted Net National Product (AENP) (Hartwick, 1990), Ecological Footprint (EF) (Rees & Wackernagel, 1994) and Index of Sustainable Economic Welfare (ISEW) (Daly & Cobb, 1989). However, at present no aggregate single index is widely used and applied (Mitchell, 1996). It seems that for SDIs to be applied at large for environmental policy design and assessment and to improve current SDI validity deficiencies, a more rigorous approach needs to be taken in SDI development.

4.6 Ecological Economics: Management Implications

The new school of ecological economics will change the business environment for many industries, as it challenges conventional ‘business-as-usual’. This new economics paradigm asks enterprises to abandon their conviction that ‘bigger is better’ and to seriously question their belief in maximum growth. Sustainability is considered a primary objective for organisations, particularly those that exploit or use natural resources. Companies are encouraged to devote their intelligence and resources to developing new science and technology and their application. This applies especially to those aspects that are directed to sustainable sources of energy and to reducing the material and resource content of what is produced and consumed. The new core values are simplicity and frugality which deprecate ostentation and waste (Coombs, 1990).

The new economic vision seems to run counter to the ideologies of most business communities and to jeopardise the existence of profit-orientated organisations. In fact, ecological economics is often thought to undermine the foundations of free business enterprise, as it is perceived by Western modernism (Davis, 1996). Such concerns, however, are unfounded. This is because within the paradigm of ecological economics there are three ways in which business enterprises are considered to be key players in the integration process of sustainability. Firstly, businesses shape the lives of communities at local, regional, national, and global levels and therefore have the potential but also the responsibility to be powerful agents of positive social change towards sustainable development (Beaumont, 1992). Secondly, the dependence of businesses on intact ecosystems and healthy communities leads to the suggestion that
commercial self-interest will ultimately result in corporate involvement in sustainability efforts. Changing attitudes and rising pressure of external regulation and monitoring may cause companies to be more aware of their status in the eyes of the public and to choose the course of compliance (Vinten, 1994). Finally, sustainable development is good business in itself. Green consumerism, environmentally and socially safe products, waste reductions, and efficiency increases not only contribute to social welfare and environmental protection, but also serve the bottom line of business enterprise. In fact, there are already many examples of companies that are finding ways to make investments that show an attractive rate of return through reducing, re-using, recycling, process redesign and the creation of new, environmentally benign, markets (e.g. Feldman, Soyka, & Ameer, 1996; Friend & Associates, 1996; Westley & Vredenburg, 1996).

Resource efficiency, energy savings, closed-system production processes, clean production methods and emission reductions have greatly improved the economic viability of many organisations in the USA and Europe and helped to better their position in the market place (Gesamtverband Der Deutschen Aluminiumindustrie e.V. (GDA), 1997; Vinten, 1994). Moreover, the development of intelligent and integrated technologies, such as closed systems, substitution processes and zero-emission technologies, is predicted to take more than 15 per cent of the world market by the year 2000 with a value of more than US$ 700 billion (Bundesdeutscher Arbeitskreis für Umweltbewusstes Management e.V. (B.A.U.M.), 1997a). In other words, sustainable development is a growing market for environmental solutions which offers great opportunities for businesses world-wide. Business growth through environmental initiatives is also evidenced by steady employment growth in the area of environmental industries, services, and administration (Bundesdeutscher Arbeitskreis für Umweltbewusstes Management e.V. (B.A.U.M.), 1997a).

The new economic vision has strong implications for management practice. There are many tangible advantages for companies to take on the sustainability challenge. However, the broad vision of goals and the definition of success that sustainable development brings require the development of new business tools, practices and relationships. As mentioned earlier, many companies have already started to successfully integrate sustainability principles into management systems and...
production processes, reaping resultant economic benefits. In fact, their example demonstrates that receptivity to new ideas and suggestions can pay real dividends, improve companies' overall performance, and ensure their long-term economic viability.

4.7 Conclusion

It has been argued in this chapter that the economic status quo is ultimately unsustainable. Unless appropriate changes are made to present economic systems, it is likely to result in more severe economic inequity, declining profitability of many businesses, further environmental decline and uncontrollable problems for governments to meet social expectations.

The paradigm of ecological economics offers a new mindset and economic tools to address current economic, social and environmental crises. This new approach recognizes the interdependence of human economy and ecology and serves as a theoretical foundation for the development of practical solutions for a sustainable future. This in turn provides a new bottom line for business management. Within this paradigm there is a new corporate goal: to include environmental and social aspects, besides financial returns, in the measures of business success and managerial decision-making processes. In fact, management is now facing the challenge to balance societal well-being and environmental protection which in turn opens virtually unlimited opportunities. Values and purchasing behaviours of consumers, corporations and governments are changing and a broad range of innovative technologies is advancing, creating new and rapidly expanding markets. It will be a management responsibility to tap these markets and to successfully operate within newly defined, environmentally sound regulatory frameworks. Examples of environmentally sound and economically viable businesses are proof of possible synergistic effects of balancing economics, ecology and social welfare.

The economics of sustainability provide the basis for sustainable management practice. With the aid of economic tools and re-defined business goals it will now be necessary to devise management strategies (the strategic management approach to sustainability will be discussed in Chapter Seven) to successfully implement
sustainability principles into organisations and to translate the extra costs of environmental initiatives and legal compliance into profit and competitive advantages.

In the following chapter (Chapter Five), a comparative analysis will be made of the relative reluctance of the Australian government and society to adopt the new ecological economics paradigm compared with Germany which is perceived to be more advanced in terms of environmental practices and standards.
Chapter Five

Australia – Germany

A Bilateral Comparison on the Operationalisation of Sustainability Principles

5.0 Introduction

A small number of countries have already started to redirect their economic activities towards more sustainable practices. However, in view of increasing pressure on political, social, and ecological systems world-wide, as discussed in Chapter Four, it seems obvious that intensified efforts of all countries, especially industrialised nations, are necessary to work towards a sustainable global community. Admittedly, the needed economic re-orientation of the world’s economies is a tremendous task; nonetheless, the required changes are within reach. This is because, as shown previously, the school of ecological economics offers a wide range of economic tools required for an economic re-orientation such as this, and more are currently being developed. Therefore, the ESD challenge ultimately hinges on the commitment of countries to change their current courses of development.

In terms of commitment to proactive economic policy making designed to achieve ESD, Germany is a perceived leader in many political (Singer, Treber, & Bals, 1997) and economic (Matten, 1996) aspects when compared internationally. It is for this reason that Germany will be central to the discussion in this chapter and used as a benchmark for Australia. This approach seems appropriate, as Australia’s stance towards sustainable development is controversial and characterised by a strong reluctance to change in the country’s economic and political status quo (Endre, 1992; Hamilton, 1997; Kinrade, 1997a; 1997b; 1997c; Wilkenfeld, Hamilton, & Saddler, 1995). The present political conservatism exhibited by the Australian government may cause Australia as a nation to fall behind the international movement towards ESD (Yencken, 1998). This may prove to be politically as well as economically disadvantageous, as changes in the dynamics of markets and changes in public perception of environmental issues may indeed isolate Australia in the international arena in the future. A change in the government’s stance towards the country’s economy-environment relations may therefore prove crucial for the achievement of
ecological sustainability in Australia.

To validate the claim that the German example may indeed serve as a potential role model for Australia, a bilateral comparison between Germany and Australia will be the subject of Chapters Five and Six. This comparison, which uses a two-tiered approach, comprising a literature review as well as empirical data analysis (see Chapter Six), will focus on the national efforts of both countries towards the operationalisation of sustainability principles.

For the purpose of this chapter the literature selection method described in Chapter One will be adopted, giving attention to a wide range of German, Australian, and international sources of ESD related information. It is anticipated that an approach such as this will allow for comparison between Germany and Australia from national and international perspectives and provide viewpoints from a variety of independent and authoritative sources such as UN agencies, NGOs, research institutes, government departments, and environmental protection groups. This will in turn enable a more accurate description of the extent to which the concept of ESD has gained momentum within the two countries under investigation. It needs to be acknowledged that the following analysis places exclusive emphasis on the macro level and does not attempt to critique current standards and practices at the micro level.

The focal point of this chapter will be a comparison of a selection of distinguishing factors that will help explain the differences in the Australian and German stance on sustainability. This will also guide the process of devising strategies to improve Australia’s current position within the ESD challenge. Chapter Six will then report on an empirical study carried out for the purpose of this thesis, which looked at potential differences between German and Australian private sector enterprises in their pursuit of sustainable management practice and eco-sensitive leadership.

5.1 National Differences and the Operationalisation of ESD

Prima facie, Australia would generally appear to be a country with a strong potential for the successful re-orientation towards sustainability. This nation is a continent-country with the size of 7.68 million km$^2$ (Bundesstelle für Außenhandelsinformationen (BFAI), 1997), a single government in a stable...
democratic political system with a relatively small population of approximately 18.5 million people (Australian Bureau of Statistics (ABS), 1997a) who share English as a common language. Furthermore, Australia is rich in non-renewable resources, it is self-sufficient in food and has large areas of land that can be conserved. In view of these unique features for an industrialised country, it could be suggested that Australia is in an advantageous position in the context of ESD when compared to other industrialised countries such as Germany.

The Federal Republic of Germany has a population of approximately 82 million people (Statistisches Bundesamt Deutschland, 1998) in an area of 0.356 million km² (Craighead Report Profile, 1997) which translates into a population density of 230 people per square kilometre compared with two people per square kilometre in Australia. This adds enormous pressure on resources and waste management because Germany is lacking space as well as natural assets.

Despite the uniqueness of the Australian situation, Australia retains barriers to sustainable development. Germany, on the other hand, is leading the world on a number of sustainability issues notwithstanding severe constraints on space and natural resources. It is therefore worthwhile exploring the national differences between these two countries, as this will help identify the reasons for the apparent disparity in the approaches taken towards sustainability by Australia and Germany. A large number of factors distinguish the two countries in question, including elements such as:

- Legal differences
- Economic differences
- Cultural differences
- Political differences
- Constitutional differences
- Geographic differences
- Ecological differences
- Socio-economic differences
- Historical differences
- Demographic differences

Given the scope of the research in hand, the analysis below will be limited to the political, legal, economic, and cultural differences between both countries.
5.1.1 The Political Factor

During the last decade, environmental legislation has been severely tightened in many European countries, in Japan, and in the USA (European Environment Agency, 1996a). It appears that mounting scientific evidence of environmental decline and growing environmental awareness among members of the general public have caused governments to take environmental policies seriously.

In Germany, the environment has been on the political agenda since the early 1980s. This period saw the establishment of the world's first political, environmental party called ‘Die Grünen’ (Martell, 1995). The party’s concern for the environment and acknowledgement of the causes for ecological decline in Germany raised public awareness. This in turn increased the pressure on governments to put in place ‘environmentally friendly’ policies. As a consequence, the depth of scrutiny on industrial activities increased and resulted in more proactive environmental solutions being developed by German business enterprises.

In contrast, over the last 15 years, Australia has placed greater emphasis on ‘small government and big business’ (Coombs, 1990). This has led to a disproportionate degree of protection of polluting and environment-degrading sunset industries such as coal and timber despite the lobbying efforts of environmental groups like Greenpeace and the Australian Conservation Foundation (ACF). There is ample evidence that the Australian government continues this traditional stance on economy-ecology relations. The Australian government's latest rejection of uniform greenhouse gas reduction targets in Kyoto under the euphemism of differentiation is a prime example of this trend. Today, Australia represents the only industrialised country that is effectively increasing its greenhouse gas emission levels (United Nations (UN), 1997) and is perceived to have the weakest climate policy world-wide (Flavin & Dunn, 1997; Kinrade, 1997b) as indicated below in Figure 5.1. This is an example of a policy approach which only prolongs the environmentally counterproductive
protection of industries such as coal mining and the agricultural sector both of which have disproportionately high greenhouse gas emission levels (Statistisches Bundesamt Deutschland, 1997).

Figure 5.1
Climate Policies of a Selection of OECD Countries Ranked by Their Perceived Effectiveness to Stabilise Greenhouse Emissions
(Source: Flavin & Dunn, 1997, p. 65)

As indicated in Chapter Two, all developed countries, with the exception of Australia, are currently reducing or stabilising their greenhouse gas emission levels. This change of direction of leading world economies is likely to have a great impact on international trade relations and business conduct. In fact, it is foreseeable that as a result of these changes new standards for industries will be established, favouring countries and industries with ‘clean’ environmental records. Australia may therefore potentially isolate itself from the rest of the world, politically as well as economically, because its current stance towards environmental policy is lagging behind international standards.

5.1.2 The Legal Factor
Sweden, Denmark, The Netherlands and Germany are considered to have put in place effective environmental legislation (European Environment Agency, 1996b; Piacentino, 1994; Robertson, 1996). These countries’ environmental programmes
have remained internationally unmatched and continue to set a benchmark for environmental policy world-wide.

Germany, for instance, is known for operating a comprehensive network of environmental regulation at Federal and State levels. These regulations include the Environmental Liability Law; waste water levies; The Packaging Ordinance that requires manufacturers and retailers to recycle and dispose of returned packaging material; the legislation on closed systems for industrial waste; and the Dual System for the recyclability of all packaging material (Bundesdeutscher Arbeitskreis für Umweltbewusstes Management e.V. (B.A.U.M.), 1997c; Industrie und Handelskammer (IHK), 1997). Other market-based instruments are also in place like tradable pollution credits, product eco-labelling, tax-differentials on diesel and unleaded petrol (leaded petrol was effectively phased out by January 1997) as well as subsidies for wind and solar-technology (Douglas, 1996; Matten, 1996; Roodman, 1997).

The German regulatory framework is designed to direct industry towards the internalisation of environmental costs as well as clean-up liabilities into commercial decision making processes (Matten, 1996). It also provides financial incentives to move towards environmentally sound production methods. It is therefore in the economic interest of business enterprises to proactively respond to legal requirements which in turn drives German industries towards environmentally aware business practice (Bundesdeutscher Arbeitskreis für Umweltbewusstes Management e.V. (B.A.U.M.), 1997c).

Australia, in terms of environmental regulations, has also responded to the ESD challenge. A series of policy packages have been introduced since the late 1980s to address sustainability, and a number of government departments have been established to monitor and report on Australia’s state of the environment (Department of the Environment Sport and Territories, 1997b). In order to meet its international obligations under Agenda 21, the Australian Government adopted the National Strategy for Ecologically Sustainable Development (NSES) in 1992. This strategy set the scene for Australia’s approach to ESD. The National Greenhouse Response Strategy (NGRS) was also launched in 1992 and was directed towards the reduction
of greenhouse gases in Australia (Department of the Environment Sport and Territories, 1997a). However, both strategies, the NSESD and the NGRS, are not legally binding; meaning that they are exclusively based on the voluntary cooperation of business enterprises, and solely outline an expression of governmental intent in regards to sustainability. In fact, the so-called no-regrets framework provided by the NGRS has been criticised for being weak and ineffective (Kinrade, 1997a; 1997b; 1997c; Wilkenfeld et al., 1995).

The current Howard government committed itself to invest around AUS$1.25 billion over a period of five years into environmental projects which will be overseen by the National Heritage Trust (NHT). The NHT is designed as a ‘partnership of Australians’, aiming to improve biodiversity conservation and sustainable agriculture in collaboration with State and Territory governments, regional and local community groups, local government, and individual landholders (National Heritage Trust, 1998). Although the NHT represents a promising and internationally unique attempt to encourage a shift to ecological sustainability in Australia, it has attracted criticism regarding its appropriateness and effectiveness. For instance, concerns have been raised in relation to the absence of measurable performance indicators such as environment and employment targets as well as the lack of means to critically monitor progress towards those targets (The Australian National Audit Office, 1997). Furthermore, the effectiveness of the NHT has been questioned, having regard to its ability to protect marine environments in view of government proposals for ‘multiple use areas’ and ‘marine parks’ as means of resource management (Prideaux, Horstman, & Emmett, 1998). The same applies for the prevention of vegetation loss in the context of present levels of land clearing of more than 250,000 hectares annually (Krockenberger, 1998) as well as the protection of wetlands and other ecosystems currently in decline (Wright, 1997). Given the recency of the establishment of the NHT, it seems reasonable to suggest that tangible environmental impacts resulting from NHT-funded activities are not likely to be felt before the next millennium. Hence, the country’s regulatory framework will, in the short-term, largely determine the degree of environmental protection in Australia.

The Federal government, however, has rejected a tightening of environmental legislation on grounds of high economic and social costs (Staines, 1997). The
Howard government maintains this position, although, as shown in Chapter Four, new economic models suggest that tighter regulations backed up by investment and labour incentives for employers and other market based mechanisms can create long-term employment and investment. These mechanisms would include tax credits, rebates and investment allowances, integrating environmental and social policies. Employment growth and long-term investment represent the foundation of a healthy and prosperous economy. The Australian government appears committed to achieving these goals mainly through continued growth of exploitative and degrading industries (Staines, 1997); that is through a focus on short-term profit and support of existing industries. However, by maintaining this economic wholesale approach for the sake of short-term profits, Australia is highly unlikely to improve international competitiveness and labour market stability. In fact, it seems that the Australian government should devise new economic strategies and review current environmental policies. This is because only modern industries and jobs that harmonise with nature can be sustained in the long run and provide economic and social stability (Staines, 1997).

In summary, Australia’s current environmental legislation is insufficient to address the ESD challenge, as nationally binding pollution levels, environmental taxes or tax differentials are neither in place nor planned to be implemented in the near future (Hamilton, 1997c). Furthermore, conflicting agendas and ideas in regard to economic and environmental goals between the Commonwealth, State and Local Governments compound the problem of effective environmental regulation (Horstman, 1998; Zarsky, 1990). Australia’s heavy dependence upon the vocabulary of (conventional) economics in the context of environmental regulation hinders this country from accommodating ESD.

5.1.3 The Economic Factor
The economic benefits to be gained from sustainable business practice and eco-technological inventions have started to attract the attention of governments and industries alike. Chapter Four illustrated that the production of pollution control equipment has transformed The Netherlands and Germany into global leaders in the market for pollution control technology. These two countries are only two out of a growing number of examples that stress the growth potential of markets for eco-
technological products. In order to tap these future markets governments and industries need to work together through investment and legislation to economically exploit the growth in sustainable industries while protecting the environment.

German industries have sharply increased their emphases on the development of environmental technologies since the early 1990s, taking advantage of government incentive schemes. As a result, the world market share of German enterprises in the area of environmental technology was at 19 per cent by 1996, and is predicted to further increase by the year 2000 (Bundesdeutscher Arbeitskreis für Umweltbewusstes Management e.V. (B.A.U.M.), 1997a). More than 6000 companies are currently operating in the field of environmental protection in Germany, producing a market-volume of DM73.2 billion (approximately AUS$60.4 billion) in 1996 (Bundesdeutscher Arbeitskreis für Umweltbewusstes Management e.V. (B.A.U.M.), 1997a). Germany is also an established leader in the area of wind-energy technology, and it is forecast that the country will capture one third of the world’s solar-energy market by mid 1998 (Bundesministerium für Bildung-Wissenschaft-Forschung und Technologie (BMB+F), 1997).

In terms of employment, about 3 per cent of the employed population in Germany are currently working in the area of environmental protection (Bundesdeutscher Arbeitskreis für Umweltbewusstes Management e.V. (B.A.U.M.), 1996a). This new environmental employment sector has been described as a growth area with above average growth figures for the next 20 years. The high growth figures are said to be a result of tightened environmental legislation enacted by the Federal Government (Bundesdeutscher Arbeitskreis für Umweltbewusstes Management e.V. (B.A.U.M.), 1996a) which in turn has fostered the growth of ‘green’ markets. An independent study by Helmut Kaiser Enterprise-Consultancy (Helmut Kaiser Unternehmensberatung, 1997) stated that the market for environmental and energy technology in Western Europe alone is likely to exceed DM377.30 billion (approximately AUS$30.85 billion) by the year 2010 and generate a world market volume of more than DM1281.87 billion (approximately AUS$1059.39 billion). These figures not only indicate the scope for growth of environmental industries and employment in the future but also provide the basis for further investment into Germany’s environmental industry.
Co-operation between the German government and industries has enabled Germany to become a key player in the world markets for environmental technology (Douglas, 1996). The country’s current stronghold in these new markets will not only allow Germany to maintain and increase its role in the international arena for environmental technology but also permit it to gradually phase out sunset industries such as coal without seriously disrupting the national economy.

Australia, on the other hand, has maintained rather inflexible economic and trade structures which focus largely on the export of unprocessed raw materials. The country’s high dependence on the primary sector has long been responsible for deteriorating terms of trade, increasing foreign debt, high external financing pressures, and intense resource exploitation (Coombs, 1990; Daniels, 1991; Dixon & Parmenter, 1993). This situation is being perpetuated by presently employed government macro-economic policies which prove inefficient in fostering needed structural change within the Australian economy (Daniels, 1991; Hamilton, 1997c).

Micro-economic reform programmes such as labour market reforms, waterfront reforms, and privatisation efforts are primarily designed to stimulate increases in micro-efficiency and productivity. These reforms, however, firstly fail to eradicate long-term unemployment and secondly fall short of initiating the needed shift in emphasis away from sunset industries to potential growth areas in the future. This issue, addressed by the 1997 Mortimer Report (Mortimer, 1997), highlights the need to link employment, the environment and the economy. The report contends that Australia needs to give centrality to government and business investment in its resource base, devising mutually beneficial policies that will aid employment growth while enhancing and protecting the state of the environment. Policies such as these, however, still remain to be implemented.

Australia should have long been able to capitalise from ‘first-mover advantages’ in areas like solar and wind energy. There are hardly better conditions to be found anywhere else in the world to utilise solar and wind energy technology, particularly in view of new cost-efficient methods of production which are currently being developed within Australia that allow a wide-spread commercial application of new energy-saving technologies (Staines, 1997). Unfortunately, in Australia the markets for wind
and solar energy are still in their infancy, and judging from current international
trends, Australia may have already lost the opportunity to gain a leading position for
these technologies in the global market place. Australia has also technological
advantages in areas such as geo-thermal energy, soil conservation techniques, organic
farming, permaculture, as well as horticulture (Daniels, 1991), but has failed so far to
commercialise this lead and to actively position itself on the world markets for these
products. This indicates that there is a lack of co-ordination and shared understanding
between the business community and the Australian government as potential growth
areas are not being tapped and business-as-usual approaches are favoured by current
government policies.

5.1.4 The Cultural Factor
The culture of communities, including their values and traditions, influences peoples’
stance towards sustainability (Botkin, 1990; Suzuki, 1997). Cultural differences help
explain the variance in peoples’ perception of environmental issues. Apparent
cultural differences between Germany and Australia regarding the countries’
business-environment relations may therefore be attributable to differences between
those countries’ national efforts to operationalise sustainability principles.

German businesses are traditionally financed by long-term equity relationships with
commerce banks, allowing longer pay-back periods and a strong emphasis on quality
(Douglas, 1996). Long-term relationships also exist between suppliers and customers.
In view of ESD, the existence of business relationships such as these facilitates the
development of mutually beneficial, environmental initiatives with long-term focus.
In contrast, the Australian business focus is more short-term orientated, and
Australian banks traditionally favour short-term loans and overdraft facilities. Similar
to Anglo-American businesses (Douglas, 1996), Australian businesses currently
employ strategies which are driven largely by prospects of instant returns. This,
however, is likely to hinder the integration of long-term environmental protection into
business decision making (Mortimer, 1997).

The academic qualifications of business managers are also of significance in the
German-Australian comparison because differences in training are likely to affect
managers’ drive toward innovation. Approximately 70 per cent of German industrial
managers are academically qualified engineers or scientists (Douglas, 1996). Australian managers, similar to American and English managers (Douglas, 1996), tend to have primarily financial training (Australian Institute of Management (AIM), 1997). This suggests that the lacking drive for change among Australian business managers may be attributable to a formal business education that is largely influenced by neo-classic economic rationale, disassociating business from the biophysical sciences at university (McKenna & Brueckner, 1998; Shrivastava, 1994a). The technical orientation of German managers, on the other hand, appears to be more conducive to development and innovation, allowing for environmentally driven structural change (Douglas, 1996).

This drive for structural change within Germany is apparent when comparing that country’s expenditures on research and development (R&D) as a percentage of GDP with the relevant Australian data. Germany spends 2.19 per cent of GDP on R&D, whereas Australia spends only 1.61 per cent of GDP (Australian Bureau of Statistics (ABS), 1997b).

More than 75 per cent of R&D funding in Australia is borne by the government. In contrast, German businesses carry approximately 60 per cent of R&D expenditures (Australian Bureau of Statistics (ABS), 1997b). These figures illustrate that development and innovation in Germany are largely driven by the private sector and underpin the suggestion that the technical, engineering orientation among German business leaders more strongly contributes to innovation than does the business background of Australian managers.

The foregoing comparison between Germany and Australia implies neither that Germany, as a perceived international leader on the environmental front, has solved all its social and environmental problems nor that it has already achieved re-direction of its national economy towards sustainability. As a matter of fact, Germany is still faced with persistent high unemployment of currently 12.6 per cent (Higgins, 1998), and despite tight environmental regulations, water and ground contamination as well as air pollution have remained pressing issues. It is also a fact that since the Earth Summit in 1992, not a single country has been able to meet its obligations under Agenda 21 (Steer, 1996). Nonetheless, the maturing efforts to operationalise ESD
principles chiefly in Europe, Japan and North America indicate that the sustainability movement is gaining momentum. It is therefore appropriate to use Germany as a benchmark for Australia. This is because the German government has been successful in sending strong signals to its business community and private households, providing a tight legislative framework for the protection of the environment which is backed by market-based instruments.

5.2 National Differences and the Decision-Making Environment of Business Enterprises

The comparison between Germany and Australia highlights the crucial role of governments to set the parameters for sustainable business conduct. Notwithstanding existing cultural differences between Germany and Australia, Section 5.1 reported on the active role governments can take to foster sustainable business practice. This active role can take the shape of providing a legislative framework, giving incentives for the encouragement of innovation backed up by financial support in form of subsidies, tax concessions, and rebates. At the same time penalties for environmentally harmful activities can potentially discourage business-as-usual and dissuade industries from environmentally detrimental business practice. Although the role of governments will be considered in greater detail in Chapter Seven, it can already be proposed that governments are able to positively manipulate the decision-making environments of business enterprises and potentially help their countries onto the pathway of sustainability through a process of co-operation with industries.

In Germany, tax rebates, subsidies and permit systems provide incentives and penalties that foster change within industries and alter consumption patterns of private households; hence creating an environment that is conducive to sustainable business practice. Companies are able to strategically approach environmental issues, taking advantage of government incentive schemes and subsidy programmes. The German decision-making environment for private sector enterprises encourages companies to go beyond legal compliance and reap economic benefits from proactive environmental initiatives. These actions in turn set standards for the international competition.
In Australia, on the other hand, government policies have tended to allow private sector industries to maintain their business-as-usual approach to their organisation-environment relations. With the exception of some multi-national companies which generally exhibit high standards of environmental management (Staines, 1997), Australian business enterprises generally restrict themselves to environmentally conservative no-regret policies. Since compliance with environment legislation is an issue for most Australian companies (Staines, 1997), the environment has been factored into the business equation. Nevertheless, in the absence of a nation-wide, tight environmental framework, proactive environmental initiatives by industries at large remain isolated incidences rather than the norm (Hamilton, 1997c). However, Australia is dealing with more than just the absence of a rigorous environmental legislative framework. This country is facing the fundamental problem of being a resource economy.

Australia is currently being trapped in its dependence on resources that face relative decline in world demand (e.g. wool and coal). The level of resource exploitation at present erodes Australia’s environmental quality as well as natural capital stocks. Policies to potentially lower the degree of reliance on primary production, however, still remain to be implemented (Kinrade, 1997c). It may therefore not be surprising that Australia is currently faced with high environmental and economic costs due to declining terms of trade (in real terms) and growing external debt, which are generally characteristic of resource dependent LDCs.

Australia needs to rid itself of the ‘quarry syndrome’ and work towards the image of a ‘clever country’ (Daniels, 1991). One pathway out of the spiral of growing resource exploitation and environmental degradation could be the legislative and financial support of growth in labour and knowledge intensive industries such as environmental technology. Actions such as these would reduce current levels of resource dependency and provide the basis for needed growth in employment and investment (Hamilton, 1997c).

Figure 5.2 below illustrates the relationship between environmental degradation and real income, comparing resource-based economies, resource-based economies with environmental protection and knowledge-intensive economies. The diagram suggests,
granting Australia the status of a resource based economy with environmental protection, that environmental degradation will ultimately increase while real income will decline. Hence, it could be argued that, economically as well as ecologically, Australia is currently eroding its capacity for further development unless industry-restructuring occurs.

**Figure 5.2**

**National Economic Structures and the Relationship Between Real Income and Environmental Quality**

(Source: Adapted from Daniels, 1991, p. 254)

Australia is currently at the cross-roads between working towards long-term sustainability and maintaining its business-as-usual approach. The foregoing discussion, however, gives reason to believe that the Australian government has already chosen the latter path although economic and ecological arguments suggest that Australia can no longer afford its highly exploitative stance towards the natural environment. Instead Australia should restructure its industries and reform its policy approach (Daniels, 1991; Hamilton, 1997c; Kinrade, 1997c). The Australian government needs to give incentives to business enterprises in order to provide the opportunities to tap the sustainable markets of the future, which would represent the basis for future economic prosperity. At the same time, effective policies and market-based instruments should be introduced to gradually phase out sunset industries and minimise further resource dependence.
5.3 Conclusion

As stated at the beginning of this chapter, the ESD challenge hinges on the commitment of countries to change their current course of development. In terms of such commitment, the German example gave positive insights into the country’s attempts to integrate the concept of sustainability. Choosing a path similar to that of Germany and creating a business environment that is conducive to ESD, Australia could improve its current position towards sustainability issues. A change such as this would not only help maintain Australia’s richness in bio-diversity and other natural assets but also improve the country’s economic stability. This indicates that lessons can be learned from the German experience. However, to empirically substantiate this claim, an exploratory study, which looks at the differences between German and Australian private sector enterprises in their pursuit of sustainability, has been conducted as a basis for developing an appreciation of the lessons Australia can learn from the German experience. This research and the results are described in the following chapter.
Chapter Six
The Environmental Management Performance of
German and Australian Private Sector Enterprises:
A Research Report

6.0 Introduction
As argued in Chapter Five, commitment of government and all sectors of the community is the key element on which a sustainable future depends. In terms of commitment to ESD, Germany was shown to have taken a responsible stance, at least in a regulatory sense, and to be at the forefront of the international sustainability challenge. Conversely, it was argued that Australia is behind international trends in the context of ESD, jeopardising its future economic stability and ecosystem integrity. The impact of Australia’s current approach to economy-ecology relations on the national business environment was described as detrimental to proactive environmental management initiatives by the private business sector. The German business environment, on the other hand, was shown to be shaped by co-operation between German industries and the German government, creating conditions that are compatible with the demands of ESD.

Germany’s assumed position at the forefront of the ESD challenge gives rise to the expectation that German private sector enterprises would have more effective environmental policies in place than their Australian competitors. This assumption also leads to the suggestion that German business enterprises would surpass the Australian private business sector in terms of environmental management practice and eco-sensitive leadership. Validation of this conjecture requires that analysis be made of current environmental management standards in both countries, comparing the initiatives taken by German and Australian private sector enterprises.

For the purpose of this thesis a research project was carried out, aiming to explore the extent to which there are differences in environmental management practice between German and Australian businesses. This chapter will inform of this research and present the findings of this study.
6.1 Problem Statement

It was indicated in Chapter Five that national differences exist between Germany and Australia in relation to ESD. It was also suggested that these differences help explain why Germany is a perceived leader in areas such as environmental policy making and government-business co-operation. When accepting these arguments, the question that remains to be answered is whether the steps taken by the German government and German industries actually translate into proactive and effective environmental management performance of German private sector enterprises. For this reason, the research in hand focused on a bilateral comparison between German and Australian companies to explore whether Germany indeed ranks more highly in terms of eco-sensitive management when compared with Australia. The problem statement of this study therefore concentrated on the following question:

Are there any differences between companies operating in Germany and Australia in regard to their efforts to operationalise sustainability principles?

To this end, the following theoretical framework was employed.

6.2 Research Design Details and Methodology

In the course of this study, due to reasons that will be addressed in Section 6.2.7, methodological changes needed to be made in order to accommodate unforeseen problems in the data collection process. To create an understanding of resulting research limitations the following sections will provide a chronological report on the progress of this study. This will help account for the restrictions under which this research was carried out and may also aid in the design process of related research in the future.

The following sections will inform of the research design that was initially chosen for the purpose of this study. Thereafter, problems that were experienced will be addressed and subsequent changes to the methodological framework of the research in hand will be described.
6.2.1 Type of Study
This study was considered to be exploratory research, which was reflected in the non-directional focus of the problem statement. This type of study was chosen as only little was known about the situation at hand and there was no information available on how similar problems or research issues have been solved in the past. This research was considered exploratory also because it aimed to deepen understanding in the area of management practice and ESD and advance knowledge in this field through hypothesis generating, providing a basis for related future research.

6.2.2 Nature of Study
This study was designed to enable description and comparison of the characteristics of German and Australian environmental management practice in view of ESD. To this end, the research was intended to employ quantitative analysis tools to provide the information necessary for the bilateral comparison between the two countries in question.

6.2.3 Study Setting
It was anticipated that the research would be conducted in a natural, non-contrived environment and that research participants were neither to be influenced nor controlled or manipulated. All information was to be obtained without any form of prompting or suggestions on behalf of the researcher with the exception of instances where clarification would be needed in relation to the responses given by the research participants. In events such as these use was to be made of unstructured telephone interviews, which will be addressed in more detail in Section 6.2.8.

6.2.4 Time Horizon
Due to existing time constraints involved in a Masters project, this research was meant to be cross-sectional, aiming at a data collection period of six months from the 1st August 1997 to the 31st January 1998.

6.2.5 Unit of Analysis
German and Australian private sector enterprises were chosen as the unit of analysis. It was anticipated that a minimum of 15 companies from each country would participate in the research exercise.
6.2.6 Data Collection Method

The data collection process was based on nonprobability sampling (purposive – judgement - sampling), meaning that the selection of research participants was to depend on a company’s suitability and position to provide the information required. The decision to utilise this sampling technique was justified in view of the fact that research participants needed to conform to a set of research criteria that were established by the researcher (see Sekaran, 1992). These criteria were set up to ensure a degree of relative homogeneity among the companies that were chosen for this investigation. The following criteria were applied for the selection process:

- **Research participants are certified under ISO 14001 or to be certified by the end of 1998.** *Rationale:* The ISO 14001 criterion sets an environmental management standard by which companies can be measured and compared.

- **Research participants employ more than 100 staff.** *Rationale:* This criterion allows this research to focus exclusively on companies within the medium to large enterprise category.

- **Research participants realise an annual turnover in excess of AUS$15 million.** *Rationale:* This turnover figure is equivalent to AUS$150000 per employee and represents a measure of economic viability.

The research tool was a questionnaire comprising 26 questions (see Appendix A) which was designed for the purpose of this study. As the questionnaire was administered to German and Australian companies, both German and English versions were devised. The questionnaire was intended to measure potential differences between German and Australian companies in their efforts to operationalise sustainability principles and for this purpose concentrated on the following issues:

- **Incorporation of ESD principles into company’s mission statement and decision-making processes.**

- **Staff training on environmental affairs / employment of environmental specialists.**

- **Funding of community projects and environmental research and development as a percentage of annual investment / turnover.**

- **Strategic approach to the environment / outlook on companies’ future business-environment relations.**

In order to limit the scope of this research twelve issues were chosen from the list of criteria shown below in Table 6.1 (Selected criteria are highlighted). These criteria
were adopted from Friedman (1991), Hunt and Auster (1990) and Polonsky, Zeffane, and Medley (1992). They have been designed to determine the extent of corporate environmental commitment and were therefore integrated into the research tool. In addition, the preliminary findings of research carried out by the Bundesdeutscher Arbeitskreis für Umweltbewusstes Management e.V. (B.A.U.M.) (1997b) were incorporated into the survey, as they identify reasons for failure of environmental projects in business enterprises. In particular, the B.A.U.M. results indicate that employee involvement is crucial for the successful ‘greening’ of business organisations. The role of employees was therefore an issue that was specifically addressed within the questionnaire.

| Table 6.1 | A Summary of Selected Criteria for the Measurement of Corporate Environmental Commitment |
| Source: Zeffane, Polonsky, and Medley (1994); also cited in Keogh and Polonsky (1997) |

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>General Pro-environmental Mindset of Managers</td>
<td>Policy Established by the Board and Senior Executives</td>
<td>Existence of Environmental Policy and Policy Implementation</td>
</tr>
<tr>
<td>Resource Commitment to Environmental Activities</td>
<td>Funds are Allocated to Ensure Effective Policy Implementation</td>
<td>Environmental Considerations in New Investments and Ventures</td>
</tr>
<tr>
<td>Top Management Supports and is Involved in the Environmental Management Process</td>
<td>Responsibility for Environmental performance is Allocated at the Line Management Level</td>
<td>Environmental Considerations in Corporate Objectives and Performance</td>
</tr>
<tr>
<td>Environmental Performance Objectives are Established</td>
<td>Environmental Objectives are Incorporated to all Operations and Functional Areas</td>
<td>Commitment of Board and Board Members</td>
</tr>
<tr>
<td>Environmental Programs are Integrated with Other Programs</td>
<td>Most Advanced Procedures, Processes and Control Methods are Used</td>
<td>Environmental Opportunities</td>
</tr>
<tr>
<td>Reporting Structures Exist in the Organisation</td>
<td>Internal Compliance System Monitors Performance</td>
<td></td>
</tr>
<tr>
<td>Environmental Performance is Reported to Top Management</td>
<td>Each Division has its Own Environmental Monitoring System</td>
<td></td>
</tr>
<tr>
<td>Environmental Management Involves all Functional Areas</td>
<td>Environmental Information System is Implemented</td>
<td></td>
</tr>
<tr>
<td>All Employees have Environmental Training</td>
<td>Forward Looking Environmental Attitude in all New Areas</td>
<td></td>
</tr>
</tbody>
</table>

The questionnaire was divided into five sections. Sections I and V were used to gather general information and research particulars. Section II focused on environmental initiatives that were taken by the research participants, looking at staff
training, incorporation of ESD principles into company motto/philosophy and internal decision-making processes. Section III looked at environmental cost-benefit issues and enquired into companies' resource commitment to environmental activities and their return on investment. Section IV concentrated on the general future importance of environmental issues to companies' strategies and success.

The questionnaire was supplemented with a set of instructions, a glossary of technical terms, as well as an appendix to provide additional space for answers. These supplements were provided to aid participants in completing the questionnaire. Most questions were to be answered with "Yes" or "No", but they also required participants to elaborate on the rationale relating to their answers. The length of the questionnaire was two folded A3 pages printed both sides, and it was anticipated that the survey would take 30 to 45 minutes to complete depending on data availability to the individual participant.

6.2.7 Problems Relating to Data Collection Process
The data collection process commenced on the 1st August 1997. A total of 43 companies were approached, initially by telephone, and asked for their participation with the research project. After the first contact, the companies in question received letters which outlined the scope of the study and the role of the participants. Copies of the questionnaire were attached to the research description. By November 1997 only four companies had agreed to take part in the research which necessitated follow-up phone calls and repeated contact by mail and fax. Throughout the Christmas period the data collection process was slowed, and by January 1998 only two Australian and six German companies had confirmed their participation; however, only three of these companies had returned the questionnaire.

Due to time constraints and the persistent reluctance to co-operate on behalf of most companies that were approached initially, changes were made to the original research design, reducing the number of research participants to four companies from each country. Furthermore, due to data availability from four German business enterprises and their Australian subsidiaries the research was limited to a comparison between German private sector enterprises and their Australian business operations. The assumption was made that differences in the companies' respective business
environments would be mirrored in those companies’ environmental management performance. Potential differences between German and Australian subsidiary companies’ environmental management standards were expected to be indicative of the progress of their respective countries towards the operationalisation of ESD principles.

For the final selection of research participants the initial set of research criteria were revised and altered to the following:

- German companies operate an Australian subsidiary.
- Australian subsidiaries are managed independently from German headquarters.
- German companies are certified under ISO 14001 or to be certified by the end of 1998.
- Research participants employ more than 100 staff.
- Research participants realise an annual turnover in excess of AUSS15 million

Due to the small sample size the use of quantitative tools could not be justified. Therefore, the decision was made to shift the research emphasis from quantitative to qualitative research, utilising case study methodology. This research design was considered appropriate firstly because this was an exploratory study. Secondly, the use of case study methodology seemed permissible, as it has proven useful within social sciences in understanding the dynamics of policy-making and practice within organisations (Miles & Huberman, 1984), which was the case in the present situation, where current management practices and attitudes were described and analysed. Yin (1984; 1993), Tsoukas (1989), Parkhe (1993), and Easton (1994) also support the use of case study methodology. It needs to be acknowledged, however, that this study does not meet the requirements of a rigorous case study research. As the research methodology had been re-designed in the course of the project, the present investigation reflects something of a compromise between the demands of quantitative and qualitative research.

With the exception of the data collection process, which needed to be extended until 30th February 1998, none of the research design details that were outlined in Sections
6.2.1 to 6.2.6 were affected by the changes to the research methodology. Nonetheless, these necessary changes impacted greatly on the methods employed in the data analysis and hence on the 'quality' of the research findings. First, due to the shift in emphasis from quantitative to qualitative research methodology generalisability of the research findings could not be achieved, chiefly because of the small sample size. Secondly, in terms of precision and confidence it was difficult to estimate how close the findings were to 'reality' and gauge the probability of the correctness of the results, as the data analysis was based on personal judgement. Although steps were taken to ensure the overall validity and internal consistency of the research data (see Section 6.2.8), objectivity proved difficult to establish. In other words, the results and the discussion presented in Sections 6.3 and 6.4 need to be interpreted in the context of these research limitations and therefore understood as a basis for related future research only.

6.2.8 Data Analysis Methods

For the purposes of the data analysis, the responses from Sections II to IV were tabulated and qualifying comments evaluated and listed for comparison (see Appendix B). The research particulars gathered in Section I were compared in view of the answers given in Sections II to IV in order to assess the impact of companies' business environment on standards of environmental management practice.

The qualifying statements that were made by the research participants in Sections II to IV were used firstly to gain further insights into companies' decision-making processes relating to environmental issues and secondly to identify mechanical responses given without due consideration. All research participants were asked to provide supportive documentation such as corporate environmental guidelines and policies, annual reports, environmental reports, and company brochures. The supportive documentation that was provided by the research participants is listed in Table 6.2 below. The use of supportive documentation provided a form of control for the internal validity of responses given by the participants, as answers could be tested and adjusted where necessary based on the evaluation of the material presented.
The majority of research participants had expressed their desire not to be identified in this report, and the names of the organisations surveyed were therefore kept anonymous.

Unstructured telephone interviews were conducted with research participants where responses did not correspond with the data provided in the supportive documentation or where further clarification was required. These interviews were used to establish internal consistency for the purposes of the data analysis. It needs to be acknowledged that interviews could only be conducted with six of the participating eight companies. This was because two Australian subsidiaries were not agreeable to being interviewed, and Edith Cowan University ethical research guidelines required the expressed consent of participants to take part in this kind of investigation.

6.2.9 Sample Characteristics

The sample of eight companies comprised four German enterprises and their respective Australian subsidiaries. The German companies employed on average 120,000 people, and the Australian subsidiaries had on average a workforce of
approximately 600 people. Furthermore, all German enterprises either had been or were in the process of being certified to ISO 14001. One Australian based company was also certified to ISO 14001 and two organisations were planning to obtain accreditation by 1998/99. All participating organisations matched the established research criteria in terms of company size, annual turnover, staff numbers, and management.

6.3 Results

Section II: Environmental Initiatives

1. Does your company’s mission statement and/or philosophy incorporate the goal of environmental protection?

All companies surveyed had formally included the notion of environmental protection in their corporate mission statements (Appendix B: Table B.II.1). Furthermore, all participants with the exception of one Australian subsidiary expressed environmental awareness in their policy statements and corporate guidelines which the organisations were asked to attach to the questionnaire.

2. Does your company have a separate environmental department?

The responses showed that four German and two Australian companies had established separate environmental departments (Appendix B: Table B.II.2).

3. Do staff members who are in charge of dealing with environmental issues have environmental expertise/qualification?

When asked whether their environmental departments or other departments in charge of environmental issues have qualified staff with specific environmental expertise and training, all companies confirmed that they employ environmental specialists (Appendix B: Table B.II.3). However, specific details relating to the expertise of the companies’ environmental officers could not be obtained, as the participants were not required to provide additional information for their answers.

4. Are employees specifically trained and informed on environmental issues?

With regards to staff training on environmental issues all German and three Australian participants indicated that they had formal training procedures in place. However, as shown in Appendix B: Table B.II.4, the scope of such training and information
sessions varied between the two countries. In fact, the German parent companies identified a greater variety of training programmes, suggesting more far-reaching training efforts by the German group of companies.

5. Does your company provide incentives for its employees to encourage environmental initiatives such as recycling, car pools, or the use of public transport? Overwhelmingly, four German and three Australian companies had employee incentive schemes in place to foster environmental awareness among employees (Appendix B: Table B.II.5). Similar to staff training on environmental issues, the data suggested that the German parent companies had implemented more comprehensive incentive schemes than their Australian subsidiaries, as they offered a wider range of programmes.

6. What are the reasons for your company to implement environmental initiatives? Three German and two Australian companies revealed that the prime motive for the aforementioned employee incentive schemes were corporate image and cost-benefit issues. One German company stated that initiatives such as these were based on the organisation’s responsibility towards the environment, and one Australian subsidiary expressed the aim to change the corporate culture and individual behaviours. Finally, one Australian participant introduced environmental initiatives because of obligations from legislative requirements (Appendix B: Table B.II.6).

7. Who was responsible for the environmental initiatives? Three German companies identified senior management and environmental officers as the prime initiators of environmental incentive schemes. Two of the Australian companies referred to their environmental officers while senior management was mentioned by one subsidiary. Furthermore, one German parent company named its shareholders, and middle management was referred to twice by German participants (Appendix B: Table B.II.7).

8. Are principles of "environmentally sustainable development" an integral part of your company's decision-making processes? With the exception of one Australian company, all respondents revealed that the notion of ecologically sustainable development had been factored into their decision-
making processes. The group of German companies, however, was found to have included a wider range of departmental levels involved in their corporate decision-making processes than their Australian subsidiaries (Appendix B: Table B.II.8).

9. Is your company involved in environmental community projects in terms of providing financial and/or non-financial support?
Three German and two Australian companies were involved with environmental community projects for which they had provided financial and other support. Table B.II.9 in Appendix B summarises the companies’ projects.

Section III: Cost-Benefit Issues
1. Are environmental projects part of your company’s investment strategy?
All German and three Australian companies indicated that environmental projects were part of their investment strategy (Appendix B: Table B.III.1). Emphasis was placed by the respective participants on new technology relating to production and product design. Two German as well as two Australian participants also referred to the area of research and development, and one German parent company identified recycling as an area for investment (Appendix C: Table C.III.1).

2. What is your company’s annual turnover? 3. Approximately, what proportion of annual turnover is directed towards environmental projects? 4. What is the size of your company’s capital base and share portfolio? 5. Approximately, what proportion of total capital holdings is directed towards environmental projects?
All German companies provided their annual turnover figures (AUS$33.8 billion; AUS$1.7 billion; AUS$16 million; AUS$88.4 billion), and two of them stated the volume of their investment portfolios (AUS$0.8 billion; AUS$8 billion). Two Australian participants provided data relating to their annual turnovers (AUS$730 million; AUS$90 million), and one Australian company stated an unquantified loss for the previous financial year. Three of the Australian participants failed to provide answers relating to questions #3, #4, and #5, and one Australian participant stated the amount of $70000 as the company’s total environmental investment expenditures for the period of 1996/1997. Only one German participant gave information on the percentages of its annual turnover (5 per cent) and investment portfolio (3 per cent)
that were dedicated towards environmental projects. (Appendix B: Tables B.III.2,3,4,5).

6. Is there a visible return on investment from your company’s environmental projects?
When asked whether their organisations had received visible returns from their environmental projects, three German enterprises responded “Yes”, whereas only two Australian subsidiaries acknowledged financial benefits from their environmental investments. The five companies in question pointed to cost savings as a direct result of environmental projects (Appendix B: Table B.III.6). Real returns on investments, however, were found to be unquantifiable.

Section IV: Future Outlook

1. Are environmental initiatives part of your company’s future strategy?
Overwhelmingly, all companies surveyed stated that environmental initiatives were an integral part of their future strategy (Appendix B: Table B.IV.1). Two German enterprises identified the natural environment as being integral to their future success (Appendix C: Table C.IV.1).

2. Will environmental initiatives be vital for your company’s future success in the domestic or international market place?
Three German and four Australian organisations believed that environmental initiatives would be crucial for their business success in the future (Appendix B: Table B.IV.2). However, one “No”-respondent and three “Yes”-respondents declined from giving further statements to clarify their answers.

3. Is your company actively supporting changes in government legislation to achieve more stringent environmental industry standards?
Four German research participants were actively supporting changes in environmental legislation, while only two Australian companies were lobbying for change. Two German companies were in favour of deregulation and/or self-regulation of their respective industries. Two German companies were lobbying internationally for tighter environmental standards to achieve fairer competition. In Australia, three
companies emphasised policies that would improve industry standards in terms of quality and environmental management practice as well as improve government-industry co-operation (Appendix B: Table B.IV.3).

4. What is your company's motivation for its lobbying efforts?
The German companies that were in favour of changes in environmental standards within their respective industries were either image driven, pressured by customer demands, or motivated by the desire to achieve industry self-regulation in order to act more independently. One Australian company was interested in improving the quality and environmental performance of its suppliers while another Australian participant wanted to take advantage of the ISO 14001 environmental management standard within its industry (Appendix B: Table B.IV.4).

6.4 Discussion
The data analysis indicated that all companies surveyed were actively involved with environmental protection. Nonetheless, the responses given were indicative of differences in scope and extent of the environmental initiatives between the companies under investigation. To explore the nature of the differences between the German and Australian research participants the discussion below will look in detail at the environmental performance of the organisations in question in the light of the criteria laid down by Friedman (1991), Hunt and Auster (1990), and Polonsky, Zeffane, and Medley (1992) which provided the theoretical basis for this study.

All companies' corporate guidelines, mission statements, performance objectives, and policies implied a strong corporate commitment to the environment by all research participants (Hunt & Auster, 1990; Polonsky et al., 1992). This is because they provided direction for day-to-day corporate activities and well-articulated guiding principles of behaviour, identifying the companies' visions and missions. The high degree of similarity between the mission statements of the surveyed parent and subsidiary companies may be related to the fact that corporate cultures and values were imposed by the German parent on the Australian subsidiary. This assumption can be supported by the fact that one German organisation under investigation stated that all its international subsidiaries were bound to the parent company's corporate environmental guidelines.
The extent to which separate environmental departments were established differed between German and Australian enterprises. Four German companies had set up environmental departments, which may in part be attributable to the size of the parent companies. All companies identified their environmental officers as being specifically trained on environment related issues, but it needs to be acknowledged that no qualifying data were obtained relating to the skills and expertise of environmental officers. Two of the four Australian subsidiaries surveyed did not have separate environmental departments. This does not necessarily suggest a lesser degree of environmental commitment of the Australian companies in question but may in fact imply the use of minimisation policies within these subsidiaries.

In the context of staff training and the establishment of employee incentive schemes relating to environmental protection, differences could be found between German and Australian organisations. The German parent companies were shown to provide a wider range of compulsory environmental training initiatives and incentive programmes, placing greater emphasis on environmental awareness among employees (after Friedman, 1991). These initiatives suggest a stronger resource commitment to environmental protection by the German parent companies and reflect the contextual differences between Germany and Australia.

Existing employee incentive programmes were predominantly described as cost saving exercises, that were also lifting the corporate image. This indicates that incentive schemes were put in place for reasons that were primarily economic. Nevertheless, the active involvement of the senior management level in environmental initiatives such as these within the German companies surveyed points to a general pro-environmental mindset of managers and top management support for environmental protection (after Hunt & Auster, 1990). The lack of senior management engagement among the majority of the Australian group, however, raises questions relating to the extent of top management involvement in the companies’ environmental management processes and the perception of the strategic importance of environmental issues.

All German companies were found to have included the notion of sustainability into their corporate decision-making processes with a wide range of functional areas and
operations participating. Similarly, most Australian companies surveyed identified ESD as a factor in their decision-making processes. The Australian companies, however, showed a smaller participation rate in those processes by their company departments. According to Friedman (1991) and Hunt and Auster (1990) the involvement of all departments in decision-making processes is crucial for the successful incorporation of environmental objectives in functional areas and operations, which in turn is a criterion for effective environmental management. In view of this criterion, German companies rank more highly than their Australian subsidiaries, due to higher participation rates in corporate decision-making processes.

Most companies from both countries signalled their involvement in community projects, for which they provided financial as well as non-financial support. Activities such as these indicated the participants' successful translation of environmental considerations into corporate activities (after Polonsky et al., 1992). Of particular interest is the cooperation between local councils and the German business enterprises, as this result is congruent with the findings of the bilateral comparison between Germany and Australia in Chapter Five, which depicted the German business environment as being shaped by the cooperation between government and industry.

In terms of investment strategies and financial returns most companies surveyed emphasised investments in production technologies and product design, indicative of a strong belief in the growth potential for the marketing of environmentally sound products. This is an example of 'environmental opportunities' that were taken by the companies in question (after Polonsky et al., 1992). The acquisition of technology and adoption of highly advanced production processes allowed all German and most Australian participants to operate not only within but also beyond current environmental regulations. This information was obtained from the supportive documentation provided.

All corporate investments were shown to be based on economic as well as environmental considerations. This basis for investment represents a result that is compatible with the third criterion of Polonsky (1992). It also indicates that economic
and ecological considerations can be mutually reinforcing because new production processes, for instance, can be environmentally sound as well as economically viable.

There were problems however relating to the measurement of economic viability of the investments of the companies surveyed. The majority of research participants were unwilling and/or unable to quantify their financial returns on their environmental investments, as only one German company provided the financial data requested. This organisation indicated that its investments in environmental projects would total 3 per cent of annual turnover and 5 per cent of the company’s investment portfolio. These figures were sufficient to qualify under the resource commitment criterion laid down by Hunt and Auster (1990). In the absence of the financial data from the remaining seven participants, a coherent assessment of the impact of financial returns on organisational activities cannot be made. These companies’ failure to provide the financial data requested may be attributable to factors such as these:

- Environmental accounting system was not in place.
- Data were considered too sensitive to divulge.
- Data could not be made available to person in charge of the research questionnaire.

Section Four revealed that all participants viewed environmental protection as an issue that was part of their future business strategy and crucial for their future success. These findings point to the rationale underlying the companies’ decisions to invest in new production technology and product design, as shown earlier. It is interesting to note that most research participants identified the growth potential of environmental markets. In fact, the companies’ responses were compatible with the findings in Chapter Four which identified increasing pressure on business enterprises in terms of tightened environmental regulations and changes in consumer preferences. This indicates that most participants had actively responded to changes in their business environment and were becoming aware of the necessities and possibilities of proactive environmental management. Evidence of this was found, for example, in new product design ideas to attract environmentally aware customers and new production technologies that exceed the environmental standards laid down by current legislation.
The lobbying efforts of the majority of the German companies' surveyed, seeking industry deregulation and a wider use of market-based mechanisms, also correspond with the results from Chapter Four. There, the effectiveness of market-based mechanisms was demonstrated and their advantages highlighted over punitive government sanctions against polluting industries. The research data support the notion that companies positively respond to market-based incentives, as potential economic advantages entice businesses to invest in change.

In relation to the motivation behind the lobbying efforts of the research participants, differences could be found between the German and Australian based enterprises. In Germany, as shown in Chapters Four and Five, the combination of a tight legislative framework and high levels of co-operation between industries and government have produced comparatively high environmental management standards. The data in hand indicate that the German companies surveyed hope to further improve environmental management standards through industry self-regulation and market-based incentive schemes put in place by the German government. The Australian based companies, on the other hand, signalled their desire to improve co-operation with government, aiming to improve corporate environmental management practice as well as the quality of current industry standards.

In view of the variance between Germany and Australia, there is reason to suggest that the German approach may have guiding principles to offer for Australia's government-industry relations. This is because the co-operative approach employed in Germany has proven successful in 'kick-starting' greening efforts by German industries and has given rise to new environmental management standards. This in turn, as shown in Chapters Four and Five, has greatly contributed to the success of German companies in the global marketplace for clean products and technologies. The direction of current lobbying efforts by the Australian research participants indicate that there may indeed be lessons to be learned from the German example in terms of bringing together governments and industries to work jointly towards a sustainable future. It would be crucial however not to limit business-government co-operation in Australia to the nation's dominant industries, as this may further strengthen the position of the country's primary industries, which could prove to be environmentally counterproductive.
Overall, the environmental management performance and environmental awareness of the German companies under investigation appeared to be of a high standard. The pro-active environmental initiatives that were taken by the German participants reflect the effectiveness of the German approach to business-environment relations and demonstrate the positive impact of the country’s environmental legal framework on the business environment.

All Australian participants also seemed to operate at a high level in terms of environmental management practice, even though their environmental programmes were shown to be less comprehensive when compared to those of their German parent companies. It was shown in Chapter Five that the Australian environmental regulations are less effective than the German legislative framework in terms of fostering pro-active environmental business practice. It was therefore surprising to find relatively high environmental standards among the Australian subsidiaries under investigation. In this context, it may be reasonable to suggest that the relatively close match between environmental standards of German parent companies and their Australian operations was related to strong organisational cultures, policies, guidelines, and high levels of corporate cohesion (The impact of these intervening variables on this study will be addressed in Section 6.5). In fact, it appeared that the Australian subsidiaries surveyed were influenced more by their parent companies’ policies than by the Australian political and legal context. This was evidenced by the supportive documentation provided by the Australian research participants which identified the implementation of environmental initiatives similar to those of their German parents. These initiatives went beyond legal compliance.

This study could not establish a persuasive difference between the German and Australian companies in their environmental management performance. Although some differences were found in the area of staff training, incentive schemes, and lobbying activities, a linkage between the companies’ business environment and their environmental business practice could not be clearly established. This research outcome runs counter to earlier assumptions made about the impact of the difference between the two countries’ business environments on their industries’ environmental management performance. In other words, the conjecture that a legal climate which encourages environmental sensitivity would translate into better environmental
protection compared to a business environment which does not foster environmental awareness could not be substantiated.

The lobbying efforts by companies from both countries indicated that Germany was leading Australia in terms of business-government-environment relations. The study also revealed that the economic arguments that were advanced in Chapter Four have already found practical application in German business enterprises and their Australian subsidiaries. This indicates that the proactive use of eco-sensitive economic tools is likely to gain popularity with increasing environmental awareness within countries (This issue will be addressed in greater detail in Chapter Seven). Environmental legislation, cost savings, and the maintenance of a company’s attraction to customers were found to be the driving motives behind the companies’ environmental initiatives. In other words, the economic benefits (though currently not fully quantifiable) from effective environmental management practice could be identified as the trigger for the ‘greening’ efforts of organisations.

It is interesting to note that the degree of eco-sensitivity exhibited by both the German and Australian companies surveyed does not correspond with current levels of environmental awareness within the Australian business community as identified by Batten, Card, Hettihewa, and Mellor (1993) and the Small and Medium Enterprise Research Centre (SMERC) (Hutchinson & Gerrans, 1997).

In 1993, the study by Batten et al. (1993) surveyed 136 Australian business enterprises and established that very few firms had acknowledged any negative impacts of their business activities upon the natural environment. In fact, 78 per cent of all companies surveyed were unaware of the environmental effects of their business conduct, attesting environmental insensitivity for the majority of companies under investigation. Four years later, the SMERC study by Hutchinson and Gerrans (1997) focused on the awareness and perceptions of environmental management processes and standards of business enterprises operating in Western Australia. For this purpose the research surveyed 169 companies and detected a lack of awareness within the West Australian business community to the existence of local and international environmental standards. Furthermore, environmental initiatives, as addressed by the research in hand, were not viewed by the research participants as “a potential source
of competitive advantage, a marketing issue, of importance to customers or as a factor when ... purchasing from ... suppliers” (Hutchinson & Gerrans, 1997, p. 12). In view of these data it seems that, although there has been a measurable increase in environmental awareness within the Australian business community during the last ten years (State of the Environment Advisory Council, 1996), private sector industries need to greatly improve current levels of eco-sensitivity in order for the goal of ecological sustainability to be achieved.

The present lack of environmental awareness among Australian businesses corresponds with the apparent paucity of eco-sensitivity within Australia’s business environment. This seeming absence of environmental awareness has been revealed by studies on Australians’ perception of environmental issues over the last eleven years (Anderton, 1997; Blum, 1987; Clarke, 1996; Marshall, 1998). Overall, the data collected by these researchers suggest that environmental awareness within Australia is poor, as in general less than 50 per cent of the people surveyed had qualified as being environmentally aware or knowledgeable. In contrast, German research carried out by the Umweltbundesamt (Federal Environmental Department) (cited in Bundesdeutscher Arbeitskreis für Umweltbewuβtes Management e.V. (B.A.U.M.), 1996b) revealed that more than 60 per cent of the 3400 people surveyed were found to be environmentally aware and that approximately 27 per cent were prepared to pay higher taxes and charges for environmental protection.

The aforementioned studies raise two important issues. Firstly, there appears to be a connection between the level of environmental awareness in Australia, the business environment and the country’s environmental management performance in the private business sector. This was also indicated in the discussion in Chapter Five which identified major weaknesses in Australia’s approach to its economy-ecology relations. Secondly, although the present study was unable to establish a relationship between companies’ business environment and their environmental management performance, it can now be seen with greater clarity which issues will require greater attention in related future research. These issues will be addressed in the following section.
6.5 Research Limitations and Concluding Comments

This study primarily served the purpose of hypothesis generation, and, based on the findings of the literature analysis and case study analysis, the following recommendations can be made for related future research.

Firstly, corporate culture was identified as an intervening variable in the comparison of environmental management standards, but its impact on organisational processes could not be assessed. Therefore, future research may need to address the impact of corporate culture on environmental management policy and practice.

Secondly, the influence of environmental legislation on corporate environmental management practice could not be determined by the study in hand. However, the discussion in Section 6.4 pointed to the possible existence of a relationship between the stringency of environmental legislation and the effectiveness of corporate environmental policies management practices, which was also indicated in Chapter Five. Hence, in the future it may prove useful to determine the nature of the relationship between environmental legislation and corporate environmental management standards and practices.

Thirdly, the literature analysis in Chapters Four and Five highlighted the need for industry restructuring and a shift away from resource intensive and environment-degrading industries towards knowledge intensity. In this context, further analysis seems necessary of the short-term and long-term implications to so-called sunset industries and the growth potential of ‘green’ industries in view of ESD.

Finally, the literature analysis in Chapters Three and Four drew attention to the need for change in the current economic, political, and social settings in order to enable the integration of ESD principles into the human way of life. For a transition such as this to occur, however, a much greater understanding is needed of the requirements for the successful operationalisation of ESD principles. In other words, future research may need to focus on the dynamics of government-industry-consumer relations to aid the development of strategies for the achievement of sustainable, socially equitable, and economically viable arrangements.
These research topics are only an indication of the scope of further analysis needed to fully understand the nature of ESD and conceptualise its implications for human activities. The list presented above is by no means exhaustive; nevertheless, it informs of unenlightened areas in the context of ESD.

In view of research limitations, the present study was greatly restricted by its small sample size, and due to this the results from this research cannot be generalised. The small size of the data group was chiefly related to the reluctance of German and Australian companies to take part in this research. Moreover, as companies with poor environmental records are generally not inclined to participate in research activities such as this, the selection of participants was very likely biased towards companies with above average environmental management standards. Furthermore, the length of the research questionnaire proved to be responsible in part for companies, refusing to participate. Therefore, to attain larger sample sizes in the future the research tool should focus on a smaller number of issues.

The sample of German and Australian companies was selected to remove sources of variability after changes to the research methodology, outlined in Section 6.2.7. However, the influence of German parent companies on their Australian subsidiaries was not explored in any detail. As a consequence of this, a number of intervening variables related to parent companies and their subsidiaries were not addressed. It is likely that these variables contributed to the small variance found between environmental management standards between the two data groups. These variables include (a) corporate culture of German business enterprises, (b) staffing policies of Australian subsidiaries and (c) the standardisation of policies and behaviours within internationally operating companies. Rather than dealing only with Australian subsidiaries of multinational companies, future research should examine environmental management standards across Australian industries, allowing comparisons to be made between the various industry sectors and between Australian States and Territories. This information could then be used to identify Australian industries that are suitable for comparisons with industry sectors from other countries for which a similar analysis would have to be made. This would allow more accurate mirroring of the environmental management performance of a country’s industries and enable more precise comparisons of the local data with international standards.
The research findings from Batten et al. (1993) and Hutchinson and Gerrans (1997) indicated that there appear to be linkages between environmental management standards of private sector enterprises and their business environment. The absence of environmental awareness by the companies surveyed within Australia suggests that poor environmental management standards found within the Australian business community are related to the paucity of tight environmental regulations and awareness campaigns (as shown by Anderton, 1997; Blum, 1987; Clarke, 1996; and Marshall, 1998). Nevertheless, there are at least some Australian companies that operate internationally and employ environmental management practices of high standard (e.g. Alcoa of Australia and Hamersley Iron Pty. Ltd.). These companies were initially surveyed in the course of this study, but their data could not be used due to changes in the research methodology.

Both the SMERC study (Hutchinson & Gerrans, 1997) and the research undertaken by Batten et al. (1993) imply that there is scope for future research to explore the linkages between government action or inaction in the context of environmental policy-making and environmental management standards of industries. The present study, could not find evidence of a relationship between a country’s business environment and the environmental management performance of its business community. It does, however, indicate that future Australian research should be designed to enable differentiation between Australian-owned industries and those of other countries. This issue will in part be the subject of Chapter Seven.

This research also found evidence of a converse Gresham’s Law\(^3\). This means that there appears to be an international transfer of environmental management practice, replacing traditional business-environment relations, as shown in the example of German parent companies and their Australian operations.

The data gathered in this research exercise cannot be used to deduce generalisable conclusions. Nevertheless, a number of observations can be used in the following chapter for the purpose of developing a comparative environmental management model to aid future research in the analysis of environmental management standards.

\(^3\) Gresham’s Law: The tendency for bad money to drive out good money
Chapter Seven
A Management Approach to Sustainable Development: The Fusion of Ethics, Economics, and Ecology

7.0 Introduction

The previous chapters provided insights into the problematique of accommodating the concept of ESD within current national and international settings. Existing economic systems, social structures, and attitudes shaped by the dominant Western paradigm were shown to be at odds with the ethical demands of ESD and indeed to be an impediment to the successful implementation of sustainability principles into human activities. In this context, it was suggested that humankind needs to rethink the fundamental assumptions regarding “human motivation, the place of economic institutions in society, the relationship of the world economy to nature, as well as the role given to economic rationality and economic values as guides for social decisions” (Harman, 1993, p. 1066). In essence, change needs to occur within the current systems, redirecting economic development towards the goal of long-term sustainability, re-conceptualising current economy-ecology relations, and defining new maxims for human progress.

Chapter Four elaborated on the impact business enterprises have on the natural environment, which gave rise to the conclusion that the achievement of sustainability will depend to large degree on proactive and effective measures taken by the business community. It was argued that business needs to take responsibility in the sustainability challenge, developing long-term management strategies that are in harmony with societies’ needs and environmental thresholds.

The development of strategies such as these, however, requires attitudinal changes within business, especially, the abandonment of the traditional adherence to economic rationalism, the perceived main obstacle to sustainability. In an operational sense, business managers need to re-conceptualise organisational knowledge and give centrality to ecological and social concerns within their business operations in order to
truly reflect societies' values and to meet the commercial as well as ethical demands of their customers.

In order to coalesce and synthesise the arguments presented above this chapter will focus on the following issues. Firstly, a re-conceptualisation of human economy-ecology relations will be introduced, enabling description and identification of responsibilities, challenges, and opportunities of management in the context of ESD. Secondly, an eco-sensitive management concept will be explored, aiming to capture the ethical demands of ESD and serve as a decisional approach for the practical application of ESD in business organisations. Finally, based on Chapters Two, Four, and Six, a model for managerial sustainability benchmarks will be introduced to give guidance to companies seeking environmental ‘Better Practice’ and to aid related future research in the development of effective tools for the measurement of progress towards sustainability.

7.1 The Re-conceptualisation of Human Economy-Ecology Relations

The need for co-operation between all economic agents - government, households and businesses - in the pursuit of sustainable development has been acknowledged in Chapters Two and Four. It is now necessary to conceptualise the existing connections between these economic key players and to look at the roles and responsibilities of each in greater detail.

Communication and participation are the keys to enable all stakeholders within the human economy to work jointly towards a shared vision of a sustainable future. In other words, the pursuit of sustainability can only become meaningful within a human system that allows co-operation and participation, giving opportunity for dialogue and interaction between all key players. In Chapter Two, the description of the concept of ESD provided insights into the perception of interaction between the social system, the economic system, and the natural environment. In this context, Figure 2.1 depicted social-economy-ecology relations in an atomised fashion, as a construct of three interconnected but largely separate systems. Figure 7.1 below breaks with this interconnectivity perception and instead promotes a conception of embeddedness (after Granovetter, 1985).
The human economy (central gearwheel) is considered the locus for human interaction, exchange, and dialogue where government, private households, and businesses meet. The three gearwheels surrounding the human economy depict the three stakeholders of the social system, which are turning the central gearwheel. In other words, the human economy is embedded within the social system. To maintain the functioning (rotation) of the human economy, the three stakeholder groups need to share a vision and need to work jointly towards a shared goal, as otherwise the 'mechanics' of this economic construct will cause disruption and ultimately the standstill of the human economy. The potential friction between the three gearwheels within the human system can be understood as a 'drag' on each gearwheel in the shape of conflicting beliefs, attitudes, behaviours, and dynamics among the three stakeholder groups.

The entire human system is embedded within the global ecological settings (framing gearwheel) which provide the parameters for the functioning and continuation of the human economy. Figure 7.1 highlights the need for humankind to respect these ecological settings, meaning environmental thresholds, to maintain the stability of the human economy and, taking a sustaincentric position, the integrity of ecological systems in accordance with the ethical demands of ESD.

Figure 7.1

Conceptual Illustration of Human Economy-Ecology Relations
To ensure that the limits of ecological capacities are observed it is necessary that all stakeholders honour their multi-stakeholder interdependence and ecological embeddedness. In essence, members of households, organisational decision makers, and electors of governments need to recognise that ESD is inter-temporal and inter-generational and can only be achieved with the involvement and sharing of responsibility of society as a whole. What the perceived responsibilities for households, government, and businesses entail in the context of ESD are summarised in Table 7.1 and will be described in more detail below. It needs to be acknowledged, however, that this description of the role of all stakeholders within the human economy does not claim to be exhaustive. In fact, it merely serves as a starting point and conceptual basis for further investigation. Nonetheless, it does provide the necessary insights into the dynamics involved between the economic agents, allowing for drafting of a blueprint for a sustainable society and, given the theme of this thesis, concentrating in particular on the role of business management.

Table 7.1
Perceived Responsibilities of All Stakeholders within the Human Economy

<table>
<thead>
<tr>
<th>GOVERNMENT</th>
<th>PRIVATE HOUSEHOLDS</th>
<th>BUSINESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-operation, dialogue, and participation</td>
<td>Good housekeeping</td>
<td></td>
</tr>
<tr>
<td>Legal infrastructure</td>
<td>Reduce consumption</td>
<td>Green products</td>
</tr>
<tr>
<td>Subsidies, loans, grants</td>
<td>Green consumerism</td>
<td>Reduce resource intensity</td>
</tr>
<tr>
<td>Market-based instruments</td>
<td>Ethical investment</td>
<td>Reflect society’s values</td>
</tr>
</tbody>
</table>

7.1.1 The Role of Government

Governments are characterised as organisations that provide goods and services as well as redistribute income and wealth. Most importantly, governments provide a framework of laws and mechanisms for their enforcement (McTaggart, Findlay, & Parkin, 1996). Within the context of ESD, the role of government can be seen firstly to provide a legislative infrastructure, giving a point of departure for the greening of private households and businesses (Hawken, 1997; Porritt, 1984). The use of grants, loans and subsidies as well as the utilisation of market-based mechanisms, as argued in Chapter Four, allows governments to take responsibility, regulating economic
activity and providing incentives to reduce unsustainable levels of consumption, pollution, and resource use.

Secondly, governments can positively influence public environmental perception through advertising and education. This provides possibilities for reaching large audiences and at the same time educating for the environment to "ensure a long-term sustainable reciprocal relationship between people and [the] planet" (Beaumont, 1992, p. 204). This means that people can be 'educationally empowered' (after Rassool, 1997) to participate meaningfully within the social system. Governments need to view education as their greatest resource (Schuhmacher, 1973), as environmental awareness campaigns, for instance as part of school and university curricula, can help to make the 4Rs of sustainability a new way of life, shaping new eco-sensitive generations (An example of the effectiveness of environmental education are the recycling campaigns in Germany which target primary school children, instilling environmental values in young people and aiming for those values to be translated into heightened levels of environmental awareness in the future).

This section shows that government co-operation and communication with citizens and businesses are vital for communicating a shared environmental vision and developing environmental sensibility. This is because active government involvement can encourage households and businesses to participate in the transformation of the human economy into a human system, which more closely mimics biological systems. Government should take a leading role in moving away from the economics paradigm. The success of a transition such as this is dependant on a change in the values of households.

7.1.2 The Role of Private Households

According to Agenda 21 from the 1992 Rio Earth Summit any attempt of sustainability practice is condemned to defeat if it fails to embrace local people (Pérez-Domínguez & Rassool, 1997). In essence, the individual (private household) is at the core of sustainability for the planet which in turn means that the decision-making power at the level of private households needs to be recognised.
The power of private households to actively help shape a sustainable future rests within their consumer power. Private households can actively contribute to the sustainability challenge through the voluntary reduction of the demand for consumer items (voluntary simplicity), and making informed purchasing decisions with emphasis on environmentally friendly products (green consumerism) (Porritt, 1984). Consumer organisations like Consumer Power and Consumer International can provide private households with relevant product information (also see ‘ecolabeling’ in Germany in Chapter Five), to facilitate the product selection process (see McCloskey, 1990). Household initiatives such as voluntary simplicity and green consumerism send out strong signals to governments and businesses that popular concern for the environment exists (see Martell, 1995). These initiatives also serve political and educational functions, as they potentially lead to a deeper understanding of ecological problems and maintain people’s motivation for environmental protection. For instance, the introduction of ‘ecolabeling’ in Germany has drawn consumers’ attention to environmental problems (educational function) and in turn increased the pressure on business enterprises to reflect societies’ heightened levels of environmental concern (political function).

Private households can also communicate their ideas and concerns to government and industry bodies, providing input, for instance through community groups, to an ongoing dialogue with political and economic decision makers. In this context, the role of NGOs should also be acknowledged, as their role is only implied in Figure 7.1. NGOs represent independent bodies of research and information, which on the one hand provide access for the public to ESD related information but, on the other hand, also depend on public support and input. NGOs play a vital role within society, which was demonstrated in Chapter Two by their involvement in the development of sustainability strategies over the last 20 years. They possess the means to monitor and assess any progress towards environmental and social goals, which in turn enables these organisations to provide guidance and information to political and economic decision makers.

Private households can also exercise consumer power through eco-sensitive investment decisions, investing into business enterprises with a reputation of good environmental management practice as well as socially and culturally sensitive
corporate policies. Decisions such as these would immediately be felt by companies with poor environmental management performances and trigger positive change by those organisations to maintain their profitability and ensure the survival of their business operations. Ethical investment consultancies have become increasingly popular, as they provide, similar to consumer organisations, guidance and advice to people who wish to make environmentally sensible investment decisions.

The examples of ethical investment, green consumerism, and voluntary simplicity attest to the fact that the potential to move ESD from theory into practice rests to a large degree within the private households and ultimately, that change towards sustainability starts with the individual. In other words, for ESD to materialise individuals need to rid themselves of the image of rational, utility-maximising agents and work towards the status of informed and responsible world citizens. However, a transition such as this can only occur when education and adequate information are available to private households, which stresses the importance of the educational role of government and business.

7.1.3 The Role of Businesses

Firstly, the role of businesses can be seen in good corporate housekeeping, proactively responding to environmental legislation and societal demands. Good housekeeping entails the minimisation of resource intensity with emphasis on renewables. This would also include a closed system approach to production processes to foster waste minimisation, efficient use of resources, and ultimately zero emissions. To cater for the demand for green products, companies’ product design needs to focus on repair, reconditioning, re-use, and recycling of goods. These initiatives would not only help minimise the ecological footprint of business organisations (Davis, 1996) but also reduce the estimated annual cost of US$10 trillion of resource waste world-wide (von Weizsäcker, Lovins, & Hunter Lovins, 1997).

Secondly, sustainable business conduct can only be achieved through the involvement of employees. Environmental training initiatives need to be participative and engage all members of the organisation into environmental discourse in order to signal that environmental concerns are integral to the corporate mission. Raising the level of
environmental awareness within business enterprises potentially translates into staff members exporting corporate environmental values to their own homes, which in turn may positively contribute to needed attitudinal and behavioural change within private households.

Thirdly, environmental education should not be restricted to the members of business organisations. Transparent companies, seeking contact with the general public, can provide environmental education through the dialogue with the members of the community in which they operate. Community work is mutually beneficial because such dialogue allows enterprises to (a) inform of their companies’ environmental policies and practices, (b) explore the environmental concerns of the general public, (c) potentially eradicate stigmata of the past (e.g. business ethics), and (d) accommodate for and reflect the needs and values of society.

Finally, business organisations need to co-operate with local governments, as shown in Chapters Four and Five, working jointly towards a more sustainable society. Co-operation may include the setting of environmental standards and reaching agreements on scope and timing of the implementation of appropriate economic instruments. Again, this business-government dialogue needs to be participative, inviting and engaging members of the general public, community groups, and NGOs to achieve socially, environmentally, and economically compatible outcomes.

The above description of stakeholder responsibilities in the context of ESD does not include a number of important issues such as population control, distribution of wealth and other important political and social aspects of a sustainable economy. To accurately picture a sustainable society, many of those aspects need to be integrated into the previously described multi-stakeholder approach, which given the limitations of this thesis, could not be addressed. Indeed, a more detailed analysis of the individual functions, interconnections and interdependencies between the economic agents is essential to explore and analyse the attitudinal and behavioural implications of ESD. Nevertheless, the synthesis of the arguments brought forward in previous chapters and the re-conceptualisation of the human economy-ecology construct in this chapter provide answers to the guiding question about the perceived responsibilities,
resulting challenges and potential opportunities of business management in the movement towards sustainability. These can now be summarised as follows.

**Responsibilities:** (based on Chapters Two and Three)
- Moral obligation to respect welfare of present and future generations
- Moral obligation to protect the natural environment (sustaincentric stewardship)
- Social responsibility to reflect society’s values and concerns

**Challenges:** (based on Chapters Three, Four, and Five)
- Balance economic pressures, societal demands, and government regulations
- Overcome economic rationalism and define new corporate maxims
- Seek dialogue and co-operation with *all* organisational stakeholders
- Drive structural change and innovation

**Opportunities:** (based on Chapters Four and Five)
- Gain ‘green’ competitive advantage
- Maintain profitability and ensure economic survival
- Form partnerships with local communities and society at large
- Help shape the future of humankind

On the one hand, the summary of responsibilities and challenges highlights the difficulties business management may face in the pursuit of ESD. The perceived opportunities, on the other hand, demonstrate the high theoretical value of this development paradigm. However, until now the operational value of ESD to business practitioners has not been addressed, and the question remains as to how biophysical resources and human institutions can be managed harmoniously, while serving the bottom line of business enterprises that face economic realities. Given the interdisciplinary nature of ESD as a concept, it can be assumed that the management of sustainable development would require an understanding of the linkages and processes of the natural resource systems (e.g. biodiversity, pollution, resources) as well as insights into the institutional developments (e.g. people and organisations, mechanisms for participation) within societies (see Franks, 1996; Machlis, 1992; McKenna & Brueckner, 1998). Nonetheless, ESD management can only be effective if it is based on a long-term orientated approach to sustainable business-environment
relations. An approach such as this requires development of an organisational strategy that encompasses the ethical demands of ESD, meaning the earlier suggested moral obligations owed by business enterprises to society and the natural environment. In this context, the ESD definition provided in Chapter Two (Section 2.3) and the sustaincentric concept of stewardship advanced in Chapter Three (Section 3.3.3) will provide the building blocks for an ethical environmental management concept in the following section. An attempt will be made to develop a strategic basis for the development of ESD management guidelines.

7.2 A New Perspective on Traditional Corporate Stakeholder Theory

In the context of ESD, an environmental management strategy can only be effective if it addresses the relevant stakeholders and caters for the time horizon it has initially been implemented for. The concept of ESD requires long-term management strategies which reflect the human-environment relations illustrated in Figure 7.1. In other words, a business strategy needs to consider all organisational stakeholders, including future generations as well as the natural environment. This argument combines the ESD interpretation adopted in Chapter Two and the notion of extensionism\(^4\) as presented in Chapter Three.

Traditional approaches to management strategy and stakeholder theory, however, favour short-term rent seeking strategies and exclude the natural environment as well as people, who are considered external to business operations and without political-economic voice (Starik, 1995). As a consequence, there is a paucity of strategic management literature on social responsibility (Lewis, 1997) and environmental extensionism applying to stakeholder theory (Starik, 1995; Stead & Stead, 1992). The problem is that even more recent concepts of stakeholder theory and management strategy (e.g. Carroll, 1993; David, 1993) either include all human stakeholders and neglect to include the natural environment or they include the biosphere as a legitimate stakeholder but solely to serve human interests (Shrivastava, 1994b; Shrivastava & Hart, 1994). In other words, current mainstream management theory, as indicated in Chapters One and Three, does not respect intrinsic environmental values, still taking environmental services for granted (Gladwin et al., 1995a; 1996a; 1997).

\(^4\) Extension of the notion of rights to the natural environment
Shrivastava, 1994a; 1994b; 1995). The development of a strategic environmental management approach that is driven by ethical considerations that satisfy the moral demands of ESD can therefore be considered necessary.

In view of the arguments presented above, it can be reasonably suggested that an all-encompassing stakeholder approach is needed, for businesses to satisfy ESD requirements. An approach such as this would mean that management considerations include all individuals involved or affected by organisations both currently and in the future as well as the natural environment. Most importantly, this kind of stakeholder concept would be driven by a moral obligation to respect inter- and intra-generational justice and consider environmental protection as a moral maxim. Figure 7.2 illustrates how ethical principles can permeate day-to-day business activities and affect all aspects of organisational behaviour.

**Figure 7.2**

**Ethical Environmental Management**

(Source: Adapted from Benumont 1992, p. 189)

It can be seen in the diagram that the moral foundation represents the core of the organisation, meaning that ethics are central and not peripheral to the overall strategic management of the firm (after Hosmer, 1994). The corporate identity and all corporate functions are based on the moral maxims of the organisation, (a) affecting the corporate structure and culture, (b) determining products and services, (c) finding
reflection in corporate regulations, and (d) influencing markets and competitors. In other words, the moral foundation of business enterprises aids the translation of the ethical demands of ESD into corporate action. The need for such an ethical basis within business organisations clearly demonstrates that ESD is more than a short-lived business fad that enables companies to economically exploit temporarily heightened levels of environmental awareness of their customers. In fact, it represents a responsible approach of re-defining corporate values to actively contribute to and shape a sustainable future.

This section helped determine the requirements for a strategic approach to environmental management. What remains to be addressed is the operationalisation of environmental management principles on the basis of a corporate environmental philosophy. For this, the following section will describe a set of sustainability benchmarks (environmental/social targets) to give orientation and conceptual guidance to business management in the pursuit of sustainability, aiming to achieve environmental 'Better Practice'.

### 7.3 Sustainability Benchmarks for Business Management

Ecological sustainability represents a development process which is difficult to capture quantitatively and today can only be understood as a semi-tangible development goal for the global community. For businesses to measure their progress towards sustainability, it is therefore necessary to provide sustainability benchmarks that help identify the standard of environmental management practices and allow comparison between organisations, industries, and even countries on progress made towards sustainability. Figure 7.3 diagrammatically depicts the relationship between a selection of sustainability benchmarks and the corresponding degree of sustainability achieved.

The degree of sustainability is measured on an open scale based on the recognition that ESD is a process rather than a steady state. The scale has been set arbitrarily merely to display variations in the level of sustainability. The selection of ten sustainability benchmarks is based on a synthesis of key arguments brought forward in this thesis. They are summarised below with reference to the chapters from which they have been chosen and a rationale for selecting these benchmarks.

127
1. Definition of environmental ethic and social responsibility and their inculcation into corporate philosophy and guidelines
This is the perceived starting point for moving ESD principles into practice, embracing a sustaincentric approach to human-environment relations. Chapters Three and Four highlighted the need for a re-evaluation of core values within business, and the need for their manifestation in all functional business areas was discussed earlier in this Chapter. The incorporation of principles of environmental protection was also used as a criterion for good environmental management practice in the case study analysis in Chapter Six.

2. Integration of all organisational members into corporate environmental strategy
Chapter Three provided the moral reasoning that respect for inter- and intra-generational justice and the biosphere represent moral maxims for humankind. It therefore follows naturally that within organisational settings all members need to observe these moral obligations and hence actively work towards their observance. Sections 7.1 and 7.2 also highlighted the need for participation and co-operation as
well as the alignment of all functional areas within the business enterprise with environmentally friendly corporate values.

3. Good Housekeeping: Proactive adjustment of internal processes, products and services and constant strong drive towards innovation

Good housekeeping refers to the responsible shift away from environment degrading business practices, proactively responding to legal requirements. A shift such as this entails elements such as closed systems of production, ‘green’ product design, and zero emissions. Shape, scope and reasons for good housekeeping were advanced in Chapters Four and Seven, and features of good housekeeping were the subject of the case study analysis in Chapter Six.

4. Communication to the markets

Products must perform and be profitable within a traditional marketing framework or they will be discounted. In the context of economic reality, as shown by examples in Chapter Four, companies need to strategically target markets for environmental goods and services and be sensitive to the environmental concerns of their customers. In other words organisations need to balance economic and environmental concerns, aiming to penetrate but also educate and influence the market in the long-run.

5. Integration of suppliers

The purchasing power and the influence of companies (chiefly medium and large sized organisations) allows fostering of conformity of suppliers to the environmental standards of the organisations they do business with. This is an example of corporate ethics permeating companies’ purchasing decisions, displaying the organisations’ moral grounding to external stakeholders as shown earlier in this chapter. Integration of suppliers also corresponds with the observation made in Chapter Six of a converse Gresham’s Law, meaning that good environmental management practice will drive out bad practice.

6. Integration of customers and other corporate stakeholders

Depending on the nature of the goods and services provided, companies can create partnerships with their customers. Such partnerships can include product recycling, product re-take, or repair initiatives which communicate corporate environmental
ethics to the market (see Chapters Four and Five). These initiatives can also be seen as a practical step towards integration of an increasing number of customers as corporate stakeholders. Furthermore, integration of local community groups, as addressed in Chapters Six and Seven, increases the level of social acceptance of business organisations and provides the opportunity to export corporate ethics to the general public; however, this would occur outside the formal economy.

7. Influencing education

Education is perceivably the most important vehicle for the communication of an environmental ethic (see Section 7.1). Business enterprises can serve educational functions through advertising and marketing campaigns. Education, however, can also occur outside the markets through earlier mentioned involvement in community projects. Examples of German companies (see Chapter Six) that are providing environmental expertise to the general public in the form of environmental forums are indicative not only of the need but also the associated benefits of business organisations working jointly with local communities. Chapter Six has also provided examples of companies being active in the area of environmental education within primary schools. When environmental expertise and technical experience are brought into a classroom situation, environmental problems can become better understood by young students, who are then more likely to internalise fundamental principles of environmental protection.

8. Influencing the markets

The influence of business organisations over market dynamics is determined by their success of integration of suppliers, customers, and other corporate stakeholders. In other words, the accumulative effects of benchmarks Five and Six can enable companies to positively influence markets. This means that a certain degree of 'control' over suppliers and customers (in a positive sense) can foster structural change within an economy and drive innovation towards more sustainable processes, products, and services. This is because environmentally aware organisations attract the majority of demand for goods and services, assuming high levels of environmental awareness of consumers, which in turn forces environment-degrading businesses to restructure and redesign their current processes and operations (see Benchmark Five). Examples in Chapters Four and Five of German and Dutch companies, leading the
world in the area of eco-technological equipment give evidence of the potential of organisations positively influence market dynamics.

9. Influencing local and national economic policy
Economic policy making, as argued in Chapters Four, Five and Seven, should be characterised by co-operation between businesses and government. Co-operation at this level would aid the speedy integration and operationalisation of environmental/economic policies. The fruitful co-operation between German business enterprises and government was described in Chapter Six. It could be demonstrated that joint efforts of government and industry in the area of environmental/economic policy have translated into proactive and, in part, internationally unique environmental management standards in many German business sectors. It follows from this that corporate involvement in the design process of environmental/economic policies can have a significant impact on an economy’s standard of environmental protection.

10. Influencing international politics
Finally, the most far-reaching impact on environmental standards can be achieved at international levels. International co-operation between companies can create a network of environmentally friendly organisations, representing a strong economic-political voice. Strategic alliances such as these can operate as lobby groups for economic and structural change within countries and across boundaries. They can also facilitate needed technology transfer, for example the transfer of ‘clean energy’ to developing countries. The translation of companies’ local action into the global context is the extension of good housekeeping and sound environmental management at community level and represents the key for the achievement of global sustainability.

Figure 7.3 illustrates that each attainment of a sustainability benchmark corresponds with an increase in the level of sustainability, and there is an exponential increase in the level of sustainability when progressing along the sustainability benchmarks. This is because each benchmark leads to larger corporate ‘audience’, multiplying the effects of heightened environmental awareness and proactive environmental
management practices. In economic terms, the multiplication of eco-sensitivity represents an ‘environmental trickle-down effect’.

The sustainability matrix shown in Figure 7.3 depicts the scope of responsible management of environmental issues but is not to be interpreted as a coherent model for environmental management, as some of the benchmarks described may not appear to be realistic targets for management practitioners today. However, given the urgency and the magnitude of the task to redirect current global economic trends and inherent environmental and social decline (see Chapter Four), these benchmarks are an indication of what will be required for a timely shift in attitudes and practices within business and society at large. For the effective use of these benchmarks, thresholds need to be defined to determine when compliance with sustainability benchmarks is achieved. Given the complexity involved in threshold definition, further interdisciplinary research is needed to accurately set the economic, environmental, educational, and political parameters for the sustainability benchmarks proposed.

It was mentioned earlier that sustainability is not to be understood as a static state; it is a process of constant improvement and innovation to minimise the human impact on the biosphere and shape an equitable human system. Therefore, the attainment of sustainability benchmarks should not be seen as environmental ‘Best Practice’. Instead management should strive for environmental ‘Better Practice’, using the sustainability progress matrix as a conceptual basis for environmental management practice. This means that business organisations need to develop tailored strategies, to foster on-going improvement of environmental management practices and to drive innovation.

The sustainability matrix also enables comparison of progress made towards sustainability between individual companies, industries, or even countries. Although sustainability benchmark thresholds have not been defined, the information provided in Chapters Five and Six allows the approximate ranking of Germany and Australia in view of their progress in operationalising sustainability principles with the help of the matrix shown in Figure 7.4. The diagram illustrates the perceived lead Germany has over Australia within the sustainability challenge. Germany is considered to operate
at the third sustainability benchmark with some evidence of other stages up to benchmark six (see German Packaging Ordinance in Section 5.1.2). This is because Germany was found to be currently involved with the restructuring and redesigning of industrial processes and creation of markets for green products and services (see Bundesdeutscher Arbeitskreis für Umweltbewusstes Management e.V. (B.A.U.M.) 1996a; 1997a; Bundesministerium für Bildung-Wissenschafter-Forschung und Technologie (BMB+F), 1997; Gesamtverband Der Deutschen Aluminiumindustrie e.V. (GDA), 1997). In contrast, based on the findings of Anderton (1997), Batten et al. (1993) Blum (1987); Clarke (1996), as well as Hutchinson and Gerrans (1997), Australia is believed to operate at the first benchmark, establishing environmental awareness and defining environmental values.

Figure 7.4

Perceived Ranking of German and Australian Efforts to Operationalise Sustainability Principles

Thus the sustainability progress matrix can aid the identification of performance standards in the context of ESD and highlight aspects to be considered for progression to higher levels of sustainability. It may therefore prove to be a useful tool for further research that concentrates on ESD related performance measurement of countries, industries or individual firms.
7.4 Conclusion

This chapter served three purposes. Firstly, the role of management within the human economy was described, exploring inter-connections and relationships of business with society and the biosphere. Secondly, the ethical foundation required for long-term orientated, sustainable business conduct was discussed, and thirdly, the potential and the need for proactive and immediate management involvement in the movement towards sustainability was highlighted.

The multi-stakeholder concept was introduced in an attempt to re-conceptualise human economy-ecology relations and provide a provisional blueprint for sustainable relationships between all economic agents and the biosphere. This concept, in conjunction with arguments developed in previous chapters, allowed determination of the responsibilities, challenges and opportunities of business management in the ESD context. It was argued that moral considerations challenge business management today to widen the organisational focus and cater for all corporate stakeholders, including the natural environment. This in turn provided the point of departure for the development of a model for environmental management with the aim of placing the ethical demands of ESD at the core of business operations.

Finally, a set of sustainability benchmarks was introduced to highlight the implications of ESD for management practice and to offer guidance to strategically address ESD as a central management issue.

In view of the information provided in this chapter, it can be seen that ESD indeed should be a key concern for business management today. The increasing availability of scientific environmental data and the development of intellectual tools for the operationalisation of ESD principles should prompt the acknowledgement of the theoretical and practical value of ESD to business. The management models advanced in this thesis have been developed, based on the realisation that change within the minds of the business community is needed, as it is ESD that represents the only business strategy which can offer a long-term perspective to business enterprise and society at large.
Chapter Eight

Conclusion – Limitations – Recommendations

This thesis was developed to explore implications of the assumption that ideologies and practices prevalent in business today are in part responsible for current social, political, and ecological problems world-wide. It has examined the scope and implications of the concept of ESD, as this approach offers, for both business and society at large, sustainable pathways for human development.

A chronological description of the rise of the ESD paradigm provided the starting point for the research in hand, enabling interpretation of this approach in terms that are familiar to business management. This interpretation was adopted for the purpose of this thesis which in turn led to further inquiry into the differences between this new management target and conventional concepts.

The strong contrast between the demands of ESD and current standards within management theory and practice, prompted an investigation into the ethics of ecologically sustainable development, focusing on moral philosophy. It was found that the dominant utilitarian-anthropocentric paradigm within business science was an inappropriate basis for the accommodation of ESD within business and that a more ecocentric orientation within business theory was required, necessitating a re-definition of business core values. Acknowledgement of the shortfalls of the philosophical framework within business science led to the adoption of the sustaincentric paradigm for the purpose of this thesis, as it is deemed a more appropriate approach to cater for the ethical demands of ESD.

Analysis was also made of the conventional economics paradigm, for it was considered the ideological force underlying business activities that are responsible in part for current global problems. The point of departure for this analysis was a description of perceived political, economic and ecological crises world-wide, which were attributed to the dominance of economic rationalism. Further investigation revealed flaws within the fundamental assumptions within conventional economic theory which were evidenced by examples of inconsistencies within economic
models. To provide a more appropriate economic framework the school of ecological economics was introduced, enabling comparison with the traditional economic approach. Ecological economics was shown to provide a more integrative approach to human economy-ecology relations, overcoming the perceived shortfalls of conventional neo-classical theory and providing the needed economic and ideological tools for the operationalisation of sustainability principles. Advantages of this new economic paradigm to economic policy and business practice were highlighted by a number of international examples, underpinning earlier assumptions about the relevance and importance of ESD to business management.

Comparative analysis of German and Australian environmental standards and business practices through literature reviews and the use of case study methodology brought attention to Australia’s current stance on economy-ecology relations. The comparison between Australia and Germany, a perceived leader in many aspects of environmental/economic policy, revealed that Australia is lagging behind international trends to address socio-economic and ecological problems through economic re-orientation. The analysis stressed the importance for Australia of choosing a more sustainable development path, as current trends were shown to be unsustainable and to the country’s long-run economic and ecological detriment. In this context, areas for improvement were highlighted, and direction was offered for redesigning Australia’s regulatory framework and shape of business-government interaction, using the German example as a benchmark for Australian economic/environmental policy.

In synthesis of the arguments developed in the course of this study, a conceptual model for sustainable economy-ecology relations was introduced, identifying roles and responsibilities of all stakeholders within the human economy. This enabled description of perceived responsibilities of as well as challenges, and opportunities for business management in the context of ESD. The notion of ethical responsibility of business to society and the biosphere led to the development of a model for ethical environmental management, emphasising the central role of ethics within business organisations and their impact on functional business areas. This in turn highlighted the need for a strategic approach to eco-sensitive management of business organisations. In this context, sustainability benchmarks were developed as perceived targets for management practitioners. Progressive attainment of these benchmarks
was associated with increases in the level of sustainability which could be displayed using a sustainability progress matrix. The use of this matrix allowed measurement of the progress made towards sustainable development and enabled comparison between companies, industries, and countries in this respect.

This thesis provided a coherent description of the ESD paradigm and highlighted the importance and relevance of this approach to business theory and practice. It demonstrated that ideological change within business needs to occur and be translated into corporate action to reverse current unsustainable development trends and to shift away from environment degrading practices. Although this thesis does not deliver a blueprint for a successful reorientation of business management towards ESD, it was possible to provide conceptual guidance in terms of outlining sustainability parameters for management theory and practice.

This study has a number of research limitations which relate to aspects of environmental management, economic/environmental policy, the management of eco-sensitive organisations, and the measurement of sustainability. None of these issues could be explored in great depth. Furthermore, the discussion of social, political, environmental, and economic issues in the context of ESD was by no means exhaustive, as the scope of this study only allowed for emphasis to be placed on a narrow selection of relevant aspects. Furthermore, the transdisciplinary nature of ESD required investigation into subject areas that are traditionally considered external to business science. The author's limited expertise in the fields of sociology, anthropology, environmental science, psychology, chemistry, and physics set the limitations of this research project. This is because these disciplines are integral to an investigation into ESD and offer insights on issues such as:

- Population control,
- Environmental threshold analysis,
- Social dynamics within market economies,
- Toxicology,
- Measurement of environmental attitudes, and
- many others.
The recency and complexity of issues relating to ESD require further research in many scientific disciplines and, especially, interdisciplinary analysis. Within business science, emphasis needs to be placed on research that focuses on the operationalisation of ESD principles within business organisations and economic systems at large and drives the design process of strategies to achieve environmental management targets. More comprehensive research would also be required on the measurement of sustainability and the evaluation of environmental management standards. However, notwithstanding the importance of further investigation, a change in attitude by individuals is required to enable the inoculation of ESD principles into business activities and the human way of life as a whole.
References


Earth Network for Sustainable Development. (1997). Countdown to the Rio+5 Forum. [on-line]. Available E-mail: earthnet@terra.ecouncil.ac.cr.


Organisation for Economic Cooperation and Development (OECD). (1975). The


Objects. Los Altos: W. Kaufmann.


Unwin.


Appendix A
Research Questionnaire (English)
Company Survey
Environmental Management

Dear Sir/Madam.

Thank you for taking part in this research project. Your co-operation is highly appreciated. As I am aware that your time is very precious, the instructions outlined below are intended to aid you in completing this questionnaire.

The questionnaire is divided into five sections. Each section looks at general and/or specific areas of your company’s environmental management performance. Most questions will require a YES or NO answer. However, some questions ask you to elaborate on the rationale relating to your answer in the spaces provided. If you require additional space, an Appendix has been attached at the end of the questionnaire. Should you use the Appendix, please indicate the relevant section and number of the question to which you are referring.

Please attempt to answer all questions. However, should you find yourself unable to answer a particular question, please give a reason as to why this was the case. Technical terms are defined in a Glossary provided.

In section 5 of this survey, you will be asked to indicate whether your company is agreeable to being identified in the report of the research project. Please be assured that all data gathered in this study will be dealt with confidentially and be used only for the purposes of this project in accordance with Edith Cowan University research regulations.

If you have any questions regarding the questionnaire, please contact:

Martin Brueckner

Again, I would like to thank you for your participation.

Sincerely,

Martin Brueckner
Glossary

1. **Environmental issues:** These issues relate to the current environmental problematic of global warming, deforestation, pollution and others; in essence the impact of human activities on the biosphere.

2. **Environmentally sustainable development:** For business enterprises, sustainable development means adopting business strategies and activities (e.g. Recycling, closed systems, use of renewable resources) that meet the needs of the enterprise and its stakeholders today while protecting and enhancing the human and natural resources that will be needed in the future.

3. **Government legislation:** Government legislation refers to environmental legislation at Federal and State level and includes industry specific EPA (Environmental Protection Agency) standards (e.g. emission levels).

Questionnaire

Section 1: General Information

1. What is the name of your company? .................................................................

2. What is the name of the department in charge of completing this questionnaire?
.........................................................................................................................

3. What is the position of the person completing this questionnaire? ....................
.........................................................................................................................

4. How many staff does your company employ? ..................................................
.........................................................................................................................
Section 2: Environmental Initiatives

1. Does your company's mission statement and/or philosophy incorporate the goal of environmental protection? (If possible, please attach copy of your company's mission statement)

   NO
   YES

   (Please elaborate) ...................................................................................
   ...................................................................................
   ...................................................................................
   ...................................................................................
   ...................................................................................
   ...................................................................................

2. Does your company have a separate environmental department?

   NO
   YES

   (If "no": please indicate which department deals with "environmental issues" (see Glossary)) ........................................................................,
   ........................................................................,
   ........................................................................,
   ........................................................................,
   ........................................................................,
   ........................................................................,

3. Do staff members who are in charge of dealing with environmental issues have environmental expertise/qualification?

   NO
   YES

4. Are employees specifically trained and informed on environmental issues? (e.g. in seminars, workshops, or briefings)

   NO
   YES

   (Please elaborate) ..................................................................................
   ..................................................................................
   ..................................................................................
   ..................................................................................
   ..................................................................................
   ..................................................................................

III
5. Does your company provide incentives for its employees to encourage environmental initiatives such as recycling, car pools, or the use of public transport?

NO  YES

(Please elaborate)........................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................

6. If you answered “yes” for question(s) 4 and/or 5, what is the reason for your company implementing environmental initiatives?

Positive public image  Requirement by legislation  Cost benefit

Other (please specify).................................................................................................
.................................................................................................................................

7. If you answered “yes” for question(s) 4 and/or 5, who was responsible for the environmental initiatives?

Senior management  Middle management  Environmental Officer

Other (please specify).................................................................................................
.................................................................................................................................

8. Are principles of “environmentally sustainable development” (see Glossary) an integral part of your company’s decision making processes?

NO  YES

(Please identify all departmental levels of the company involved).........................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................

IV
9. Is your company involved in environmental community projects in terms of providing financial and/or non-financial support?

NO

YES

(Please elaborate) .................................................................................. .

Section 3: Cost – Benefit Issues

1. Are environmental projects (projects that go beyond compliance with “government legislation” (see Glossary) for the environment) part of your company’s investment strategy (e.g. production technology, product range, alternative input materials)?

NO

YES

(Please elaborate) .................................................................................. .

2. What is your company’s annual turnover (A$)? .........................................

3. Approximately, what proportion (%) of annual turnover is directed towards environmental projects? ..............................................................................................................

4. What is the size of your company’s capital base and share portfolio (A$)? .................................................................................................................................

5. Approximately, what proportion (%) of total capital holdings is directed towards environmental projects? ..............................................................................................................
6. Is there a visible (quantifiable) return on investment from your company’s environmental projects? In essence, do environmental initiatives pay for themselves and/or produce a profit?

NO

YES

(Please elaborate)

Section 4: Future Outlook

1. Are environmental initiatives part of your company’s future strategy? (medium and long term)

NO

YES

(Please elaborate)

2. Will environmental initiatives be vital for your company’s future success in the Australian/international market place?

NO

YES

(Please elaborate)
3. Is your company actively supporting changes in government legislation to achieve more stringent environmental industry standards?

NO

YES

(Please elaborate) .................................................................................
........................................................................................................
........................................................................................................
........................................................................................................
........................................................................................................

4. If you answered “yes” for question 3, what is your company’s motivation for such support?

(Please elaborate) .................................................................................
........................................................................................................
........................................................................................................
........................................................................................................
........................................................................................................

Section 5: Research Particulars

1. Does your company agree to be identified in the report of this research project?

NO

YES

2. Is a member of your company agreeable to being interviewed after the analysis of the questionnaire data in the event that answers require further clarification?

NO

YES

(please provide contact details)
........................................................................................................
........................................................................................................
........................................................................................................
........................................................................................................

(Signature of authorising person) (Date)

3. Is the company interested in a copy of the research report?

NO

YES
Appendix
Sehr geehrte Damen und Herren,


Für Rückfragen über dieses Forschungsprojekt stehe ich Ihnen gern zur Verfügung.

Martin Brückner

Ich bedanke mich sehr für Ihre Mitarbeit mit der Sie den Erfolg meiner Arbeit tatkräftig unterstützen.

Hochachtungsvoll,

Martin Brückner
Glossarium

1. **Nachhaltige Entwicklung:** Nachhaltige Entwicklung bedeutet für Unternehmen die Einführung von Strategien und Initiativen, die sowohl den Interessen des Unternehmens und seiner Anteilhaber dienen als auch die menschlichen und natürlichen Ressourcen schützen und fördern, die in der Zukunft benötigt werden.

**Beispiele:**

Effizienter Rohstoffeinsatz in Produktionsprozessen und Produkten, einschließlich Substitution durch Sekundärstoffe.

Entwicklung neuer, umweltverträglicher und kreislaufzögernder Materialien, Produkte und Produktionsverfahren.

Umweltgerechter, rohstoffschonender Umgang mit Konsumgütern

Industriefragebogen

Sektion 1: Allgemeine Informationen

1. Wie nennt sich Ihr Unternehmen? ........................................................................................................

2. Wie nennt sich die Abteilung zuständig für diesen Fragebogen? ...................................................

3. Was ist die Position des/der zuständigen Sachbearbeiters/erin? ....................................................

4. Was ist Ihre Mitarbeiteranzahl? ........................................................................................................

X
Sektion 2: Umwelt Initiativen

1. Ist Umweltschutz ein Bestandteil des Firmenmottos und/oder der Firmenphilosophie?
   (Falls möglich, fügen Sie bitte eine Kopie des Firmenmottos bei)
   NEIN  JA
   (Bitte ausführen)

2. Hat Ihr Unternehmen eine separate Umweltabteilung?
   NEIN  JA
   (Falls "nein": bitte nennen Sie die zuständige Abteilung für Umweltangelegenheiten)

3. Sind Ihre Sachverständigen in Umweltangelegenheiten für dieses Aufgabenfeld ausgebildet/qualifiziert?
   NEIN  JA

   NEIN  JA
   (Bitte ausführen)
5. Gibt Ihr Unternehmen Anreize für Mitarbeiter, um Initiativen wie Recycling, Fahrgemeinschaften, oder die Nutzung öffentlicher Verkehrsmittel zu ermutigen?

NEIN

JA

(Bitte ausführen)..................................................................................
..................................................................................
..................................................................................
..................................................................................
..................................................................................
..................................................................................
..................................................................................

6. Falls Sie Frage(n) 4 und/oder 5 mit "ja" beantwortet haben, was ist die Motivation Ihres Unternehmens für die genannten Initiativen?

Firmenimage Gesetzesvorlagen Kostenvorteile
Andere (Bitte ausführen)..................................................................
..................................................................................
..................................................................................

7. Falls Sie Frage(n) 4 und/oder 5 mit "ja" beantwortet haben, wer war für die Einführung solcher Initiativen verantwortlich?

Seniormanagement Mittelmanagement Umweltbeauftragter
Andere (Bitte ausführen)..................................................................
..................................................................................

8. Sind Prinzipien der "nachhaltigen Entwicklung" (siehe Glossarium) ein integraler Teil betrieblicher Entscheidungsprozesse Ihres Unternehmens?

NEIN

JA

(Bitte nennen Sie die Abteilungen, die an diesen Entscheidungsprozessen teilhaben)...................................................................
..................................................................................
..................................................................................
..................................................................................
..................................................................................
..................................................................................
..................................................................................

XII
9. Beteiligt sich Ihr Unternehmen an Umweltprojekten der Kommune durch finanzielle und/oder andere Art von Unterstützung?

NEIN  JA
(Bitte ausführen)..................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

Sektion 3: Kosten und Nutzen

1. Sind Umweltprojekte (Projekte unabhängig von gesetzlichen Umweltauflagen) Teil der betrieblichen Investitionsstrategie (z.B. Produktionverfahren, Produktpalette, Rohstoffnutzung)?

NEIN  JA
(Bitte ausführen)..................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

2. Was ist der Jahresumsatz (DM) Ihres Unternehmens?..............................

3. Wieviel Prozent (%) vom Jahresumsatz gehen in den Umweltschutz?................

4. Was ist das Gesamtvolumen (DM) des Investitionsportfolios Ihres Unternehmens? (Kapitalbasis und externe Investitionen).................................................................

5. Wieviel Prozent (%) vom jährlichen Gesamt-Investitionsvolumen des Unternehmens gehen in den Umweltschutz?.................................................................
6. Erwirtschaftet Ihr Unternehmen eine sichtbare (quantifizierbare) Kapitalrendite aus seinen Umweltprojekten? Mit anderen Worten, rechnen sich die Umweltinitiativen des Unternehmens wirtschaftlich?

   NEIN                      JA

(Bereits ausführen)

Sektion 4: Der Blick in die Zukunft

1. Sind Umweltinitiativen ein integraler Bestandteil der Unternehmensstrategie in der Zukunft (mittel- und langfristig)?

   NEIN                      JA

(Bereits ausführen)

2. Werden Umweltinitiativen Ihres Unternehmens für den zukünftigen Erfolg im deutschen/internationalen Wettbewerb von entscheidender Bedeutung sein?

   NEIN                      JA

(Bereits ausführen)
3. Unterstützt Ihr Unternehmen aktiv Änderungen gesetzlicher Umweltauflagen für striktere Industriestandards?

NEIN

JA

(Bitte ausführen)..........................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................

4. Falls Sie Frage 3 mit "ja" beantwortet haben, was ist die Motivation für das obengenannte Handeln des Unternehmens?

(Bitte ausführen)..........................................................................................................
.................................................................................................................................
.................................................................................................................................
.................................................................................................................................

Sektion 5: Details für Forschungsarbeit

1. Versteht sich Ihr Unternehmen einverstanden, namentlich in der Forschungsarbeit genannt zu werden?

NEIN

JA

2. Erklärt sich ein Sachverständiger Ihres Unternehmens bereit an einem Telefon-Interview teilzunehmen, sollten Antworten aus dem Fragebogen weiterer Erklärung bedürfen?

NEIN

JA

(Falls "ja": bitte nennen Sie eine Kontaktperson und Telefonnummer)

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

(Unterschrift des zuständigen Abteilungsleiters) 

(Datum)

3. Ist Ihr Unternehmen an einer Kopie der Forschungsarbeit interessiert?

NEIN

JA
Anhang
Appendix B
Case Study Data

Answer Key:

Y: Yes   N: No   N/A: Not Applicable   AD: Answer Denied   A: Answer Given

Section II: Environmental Initiatives

Table B.II.1: Does your company’s mission statement and/or philosophy incorporate the goal of environmental protection?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>Details</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td></td>
<td>Answer</td>
</tr>
<tr>
<td>A</td>
<td>Y</td>
<td>Mission statement</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental policy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Corporate guidelines</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Y</td>
<td>Objective statement</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mission statement</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Policy statement</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Y</td>
<td>Mission statement</td>
<td>Y</td>
</tr>
<tr>
<td>D</td>
<td>Y</td>
<td>Mission statement</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td></td>
<td>International guidelines for overseas subsidiaries</td>
<td></td>
</tr>
</tbody>
</table>

Table B.II.2: Does your company have a separate environmental department?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>Details</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td></td>
<td>Answer</td>
</tr>
<tr>
<td>A</td>
<td>Y</td>
<td>No specification required</td>
<td>Y</td>
</tr>
<tr>
<td>B</td>
<td>Y</td>
<td>No specification required</td>
<td>Y</td>
</tr>
<tr>
<td>C</td>
<td>Y</td>
<td>No specification required</td>
<td>N</td>
</tr>
<tr>
<td>D</td>
<td>Y</td>
<td>No specification required</td>
<td>N</td>
</tr>
</tbody>
</table>
Table B.II.3: Do staff members who are in charge of dealing with environmental issues have environmental expertise/qualification?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td>Details</td>
</tr>
<tr>
<td>A</td>
<td>Y</td>
<td>No specification required</td>
</tr>
<tr>
<td>B</td>
<td>Y</td>
<td>No specification required</td>
</tr>
<tr>
<td>C</td>
<td>Y</td>
<td>No specification required</td>
</tr>
<tr>
<td>D</td>
<td>Y</td>
<td>No specification required</td>
</tr>
</tbody>
</table>

Table B.II.4: Are employees specifically trained and informed on environmental issues?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td>Details</td>
</tr>
<tr>
<td>A</td>
<td>Y</td>
<td>Annual four day seminars</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Technical seminars</td>
</tr>
<tr>
<td></td>
<td></td>
<td>National and international meetings for information exchange</td>
</tr>
<tr>
<td>B</td>
<td>Y</td>
<td>Further statements refused</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Y</td>
<td>Annual seminars</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Staff training and briefing sessions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental hazard identification workshops</td>
</tr>
<tr>
<td>D</td>
<td>Y</td>
<td>Annual seminars</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Guest lectures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>External seminars</td>
</tr>
</tbody>
</table>
Table B.II.5: Does your company provide incentives for its employees to encourage environmental initiatives such as recycling, car pools, or the use of public transport?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>Details</th>
<th>AUSTRALIA</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Y</td>
<td>Cost of public transport for attending shareholder meetings borne by company Publication of environmental-project ideas Internal suggestion system</td>
<td>Y</td>
<td>Environment prizes</td>
</tr>
<tr>
<td>B</td>
<td>Y</td>
<td>Further statements refused</td>
<td>Y</td>
<td>Recycling Reduction of material use</td>
</tr>
<tr>
<td>C</td>
<td>Y</td>
<td>Internal suggestion system Newsletter</td>
<td>N</td>
<td>N/A</td>
</tr>
<tr>
<td>D</td>
<td>Y</td>
<td>Preferred parking for car pools Internal suggestion system Project competitions</td>
<td>Y</td>
<td>Financial reward schemes for environmental project ideas Internal suggestion system</td>
</tr>
</tbody>
</table>

Table B.II.6: What are the reasons for your company to implement environmental initiatives?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>Details</th>
<th>AUSTRALIA</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>Public image Cost benefit Legal requirements</td>
<td>A</td>
<td>Public image Cost benefit</td>
</tr>
<tr>
<td>B</td>
<td>A</td>
<td>Company policy</td>
<td>A</td>
<td>Public image Cost benefit Legal requirements Go beyond legal compliance</td>
</tr>
<tr>
<td>C</td>
<td>A</td>
<td>Public image Cost benefit Legal requirements</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>D</td>
<td>A</td>
<td>Public image Cost benefit</td>
<td>A</td>
<td>Public image Change culture and behaviour</td>
</tr>
</tbody>
</table>
Table B.II.7: Who was responsible for the environmental initiatives?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td>Details</td>
</tr>
<tr>
<td>A</td>
<td>A</td>
<td>Environmental officer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shareholders</td>
</tr>
<tr>
<td>B</td>
<td>A</td>
<td>Senior management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental officer</td>
</tr>
<tr>
<td>C</td>
<td>A</td>
<td>Senior management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental officer</td>
</tr>
<tr>
<td>D</td>
<td>A</td>
<td>Senior management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental officer</td>
</tr>
</tbody>
</table>

Table B.II.8: Are principles of “environmentally sustainable development” an integral part of your company’s decision making processes?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td>Details</td>
</tr>
<tr>
<td>A</td>
<td>Y</td>
<td>Product design</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental officers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Production engineers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Y</td>
<td>Research &amp; development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Production</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Occupational health &amp; safety</td>
</tr>
<tr>
<td>C</td>
<td>Y</td>
<td>Occupational health &amp; safety</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Research &amp; development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Production</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acquisition &amp; sales</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental management</td>
</tr>
<tr>
<td>D</td>
<td>Y</td>
<td>Production</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Research &amp; development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Occupational health &amp; safety</td>
</tr>
</tbody>
</table>
Table B.II.9: Is your company involved in environmental community projects in terms of providing financial and/or non-financial support?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td>Details</td>
</tr>
<tr>
<td>A</td>
<td>N</td>
<td>N/A</td>
</tr>
</tbody>
</table>
| B   | Y       | Technical & financial support  
Waste management agency  
Facility sharing with government agencies | N | N/A |
| C   | Y       | Joint venture with local council and regional suppliers | N | N/A |
| D   | Y       | e.g. Wastewater management | Y | Member of neighbourhood group  
Co-operation with local council & schools  
Financial & technical support |

Section III: Cost Benefit Issues

Table B.III.1: Are environmental projects part of your company’s investment strategy?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td>Details</td>
</tr>
</tbody>
</table>
| A   | Y       | Production  
Product design  
Research & development | Y | Production  
Research & development |
| B   | Y       | Further statements refused | Y | Production  
Product design |
| C   | Y       | Production  
Recycling | N | N/A |
| D   | Y       | Production  
Product design  
Research & development | Y | Production  
Research & development |
### Table B.III.2: What is your company’s annual turnover?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td>Details</td>
</tr>
<tr>
<td>A</td>
<td>A</td>
<td>88.4 billion (world-wide)</td>
</tr>
<tr>
<td>B</td>
<td>A</td>
<td>33.8 billion</td>
</tr>
<tr>
<td>C</td>
<td>A</td>
<td>2.1 billion</td>
</tr>
<tr>
<td>D</td>
<td>A</td>
<td>16 million</td>
</tr>
</tbody>
</table>

### Table B.III.3: Approximately, what proportion of annual turnover is directed towards environmental projects?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td>Details</td>
</tr>
<tr>
<td>A</td>
<td>A</td>
<td>Data unavailable</td>
</tr>
<tr>
<td>B</td>
<td>A</td>
<td>Data unavailable</td>
</tr>
<tr>
<td>C</td>
<td>A</td>
<td>Data unavailable</td>
</tr>
<tr>
<td>D</td>
<td>A</td>
<td>5 per cent</td>
</tr>
</tbody>
</table>

### Table B.III.4: What is the size of your company’s capital base and share portfolio?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td>Details</td>
</tr>
<tr>
<td>A</td>
<td>A</td>
<td>8 billion (world-wide)</td>
</tr>
<tr>
<td>B</td>
<td>AD</td>
<td>No statement</td>
</tr>
<tr>
<td>C</td>
<td>AD</td>
<td>No statement</td>
</tr>
<tr>
<td>D</td>
<td>A</td>
<td>0.8 billion</td>
</tr>
</tbody>
</table>
Table B.III.5: Approximately, what proportion of total capital holdings is directed towards environmental projects?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td>Details</td>
</tr>
<tr>
<td>A</td>
<td>A</td>
<td>Data unavailable</td>
</tr>
<tr>
<td>B</td>
<td>A</td>
<td>Data unavailable</td>
</tr>
<tr>
<td>C</td>
<td>A</td>
<td>Data unavailable</td>
</tr>
<tr>
<td>D</td>
<td>A</td>
<td>3 per cent</td>
</tr>
</tbody>
</table>

Table B.III.6: Is there a visible return on investment from your company’s environmental projects?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td>Details</td>
</tr>
<tr>
<td>A</td>
<td>Y</td>
<td>Depending on project</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data unavailable</td>
</tr>
<tr>
<td>B</td>
<td>AD</td>
<td>No statement</td>
</tr>
<tr>
<td>C</td>
<td>Y</td>
<td>Data unavailable</td>
</tr>
<tr>
<td>D</td>
<td>N</td>
<td>No statement</td>
</tr>
</tbody>
</table>

Section IV: Future Outlook

Table B.IV.1: Are environmental initiatives part of your company’s future strategy?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td>Details</td>
</tr>
<tr>
<td>A</td>
<td>Y</td>
<td>Environmental protection is crucial for securing the future of the company</td>
</tr>
<tr>
<td>B</td>
<td>Y</td>
<td>Further statements refused</td>
</tr>
<tr>
<td>C</td>
<td>Y</td>
<td>To Improve environmental management systems</td>
</tr>
<tr>
<td>D</td>
<td>Y</td>
<td>To ensure future economic success</td>
</tr>
</tbody>
</table>
Table B.IV.2: Will environmental initiatives be vital for your company’s future success in the domestic or international market place?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>Details</th>
<th>AUSTRALIA</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Y</td>
<td>Product design will become important in the long term</td>
<td>Y</td>
<td>Further statements refused</td>
</tr>
<tr>
<td>B</td>
<td>Y</td>
<td>Further statements refused</td>
<td>Y</td>
<td>Customers demands</td>
</tr>
<tr>
<td>C</td>
<td>Y</td>
<td>Environmental protection and profitability go ‘hand-in-hand’</td>
<td>Y</td>
<td>Further statements refused</td>
</tr>
<tr>
<td>D</td>
<td>N</td>
<td>Further statements refused</td>
<td>Y</td>
<td>However, only in the long term</td>
</tr>
</tbody>
</table>

Table B.IV.3: Is your company actively supporting changes in government legislation to achieve more stringent environmental industry standards?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th>Details</th>
<th>AUSTRALIA</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Y</td>
<td>Not in Germany Market approaches</td>
<td>N</td>
<td>Further statements refused</td>
</tr>
<tr>
<td>B</td>
<td>Y</td>
<td>Co-operation in the area of deregulation in favour of market-based instruments</td>
<td>Y</td>
<td>Contribution to drafts of environmental standards</td>
</tr>
<tr>
<td>C</td>
<td>Y</td>
<td>Eco auditing and ISO 14001 as industry standard Emission controls Market-based approaches</td>
<td>Y</td>
<td>Further statements refused</td>
</tr>
<tr>
<td>D</td>
<td>Y</td>
<td>Not in Germany; for changes in legislation for fairer competition internationally</td>
<td>Y</td>
<td>Support for ISO 14001</td>
</tr>
</tbody>
</table>
Table B.IV.4: What is your company’s motivation for its lobbying efforts?

<table>
<thead>
<tr>
<th>COY</th>
<th>GERMANY</th>
<th></th>
<th>AUSTRALIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Answer</td>
<td>Details</td>
<td>Answer</td>
</tr>
<tr>
<td>A</td>
<td>AD</td>
<td>No statement</td>
<td>N/A</td>
</tr>
<tr>
<td>B</td>
<td>A</td>
<td>Take responsibility&lt;br&gt;Achieve deregulation</td>
<td>A</td>
</tr>
<tr>
<td>C</td>
<td>A</td>
<td>Company image&lt;br&gt;Customer demands</td>
<td>AD</td>
</tr>
<tr>
<td>D</td>
<td>N/A</td>
<td>N/A</td>
<td>A</td>
</tr>
</tbody>
</table>