

**A COMPARATIVE ANALYSIS OF ENVIRONMENTAL POLICIES OF  
SOUTH AFRICAN UNIVERSITIES**

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## ABSTRACT

There has been ongoing global concern on environmental issues and which is supposed to have moved down into smaller institutions and areas through local agenda 21. Environmental issues are associated not only with care for the environment but also sustainable development. Various universities are beginning to strive for sustainable development and care for the environment. Some universities are therefore integrating care for the environment in their curricula and in their daily operations on campus. The greening of higher educational institutions as models is important as they are the seat for research and training of undergraduates who will become future leaders and policymakers and caretakers of the environment. It is therefore important for undergraduates to be exposed to greening processes in operations, research and curricula whilst still on campus.

This study examines the process of formulating a policy and applies that to forming an environmental policy. The study involved a comparative analysis of environmental policies of various tertiary educational institutions from different countries. The study focused on how many universities in South Africa have environmental policies and how the universities which have environmental policies went about their formulation process. The study further examines the duration of the formulation process and the constraints encountered by universities. The study then reviews strategies on how the environmental policy is being implemented and how effective the implementation process is practically and the constraints these institutions face.

The findings of the study reveal that few universities in South Africa have an environmental policy. The universities are making efforts in their implementation process however, not all the principles found in the policies are being implemented effectively as there are no environmental management systems in place and there are no measurable objectives and targets set for proper evaluation of the success or failure of the policy.

## DECLARATION

I declare that this thesis is my own work and that all other sources used or quoted have been fully acknowledged and referenced. I have not previously submitted it at any university in its entirety or in parts for any degree. It is being submitted for the Master of Science degree at Rhodes University.

Signature

Date

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## CHAPTER 1

### INTRODUCTION AND POLICY CONTEXT

#### 1.1 INTRODUCTION

Environmental issues have always been of concern however it was brought to the fore in 1992 at the Earth Summit in Rio de Janeiro, where world leaders adopted Agenda 21, the global action plan which calls on all countries of the world to undertake comprehensive processes to plan and achieve sustainability. The Rio summit was a catalyst for a number of initiatives by different organizations to develop environmental policies and inform sustainability projects (Graedel 2002). The implementation of environmental principles and actions requires a comprehensive policy both nationally and locally. Whilst environmental policies are being implemented nationally and locally, university campuses are also taking strides towards becoming environmentally aware and friendly through their daily operations and through research and curricula (Graedel 2002, Segreda 2002, Calder and Clugston 2004). These changes are needed in order to inculcate environmental awareness and responsibilities in their products and allow for staff and student participation and involvement. Typically campuses are involved in activities that result in negative environmental impacts and if a university is aspiring towards sustainable development then many actions can be undertaken to help increase the effectiveness of actions to reduce environmental impacts (Venetoulis 2001). According to Arnfalk and Thidell in Gardstrom and Norrthon (1994), only three percent of the manufacturing enterprises in Sweden had an environmental policy in 1992 and that although environmental policies are more common in the public sector in Sweden, the degree of implementation is low (Gardstrom and Norrthon 1994). Ardivissson (2004), in a study of environmental management at Swedish universities, implied that it was only when the government legislated that Swedish universities as public authorities should have written annual environmental reports that universities initiated environmental policy documents or statements. After the environmental policy statements were adopted then the policy statements were implemented by having environmental management systems.

An environmental policy is a document which guides the environmental management of an organization. Policies are formulated within the context of national and international policies and act as a guideline to processes and actions (Wilson 2000). In spite of all the discussions on environmental issues at national level, Downey (2004) emphasized that progress on sustainability in tertiary institutions is slow, even in developed nations such as the UK. Downey (2004) argues that there is a need for further research and action to address the implementation of sustainability in tertiary institutions.

This lack of a policy framework and implementation at tertiary institutions is also of concern in developing countries, including South Africa. Environmental policies and legislation in South Africa are strong nationally and in many areas regarded as comparable with the best in the world. This sets the national background for promoting environmental awareness and action at local and institutional levels. Of particular interest here, is the perceived current lack of environmental policies and action in tertiary education institutes, i.e. universities and technikons. A cursory web search of several leading universities in South Africa indicated that very few had environmental policies (see Table 8). This must be seen as a cause for concern as campuses are environments where pollution, hazardous wastes, environmental degradation and consumption of natural resources occur daily. Furthermore, instilling environmental principles in graduates of higher education institutions is very important as many of the people whose decisions will affect the future attend colleges and universities today. Thus, the institutions have the potential of teaching environmental literacy to the leaders of tomorrow, both in the classroom and by the example of greening. This will give students an understanding of the interrelationship between business decisions and the natural environment, and thereby model behaviors and attitudes that encourage environmental responsibility (van Weenen 2000, Dahle and Neumayer 2001). Universities are arenas where future leaders enquire, learn and adopt practices and modes of thinking that they will carry into their new careers (van Weenen 2000, Dahle and Neumayer 2001), that is why it is of utmost importance to inculcate care for the environment.

## 1.2 AIMS AND OBJECTIVES

The aims and objectives of the research were the following:

- To determine what constitutes a “good” environmental policy for the tertiary education sector in South Africa.
- To determine how environmental policy was derived in the South African tertiary institutions, i.e. the process, participation, stakeholders, duration and formal adoption.
- To determine if and how the statements are being implemented in South African tertiary institutions and what constraints they experience in this regard.

## 1.3 STUDY APPROACH

Based on the above objectives, the approach to this study involved several steps.

- The identification of international environmental policies and principles based on declarations such as Agenda 21 and the Earth Charter in order to identify the key principles that may inform widely accepted environmental policies.
- A desktop analysis of environmental policies of some selected universities from several countries around the world. The selection criteria were based on the uniqueness of the policy in possessing environmental issues or principles not found in all the other policy statements studied, as most of the stated issues were common to all the policies.
- A survey of all South African tertiary institutions (technikons and universities) to determine whether they possessed an environmental policy or not. The South African institutions were surveyed twice by direct mail and on the web to ensure that the institution had received the mails. This was followed up with direct telephone calls if no response was received.
- For those institutions that did have an environmental policy (4) a desktop analysis of the policies was performed.

- Studies of the universities with environmental policies were then conducted by interview and physical visits to study the link between policy statements and implementation.
- The interviewees were identified by their own universities as the people who were involved with the implementation of the environmental policy and therefore could best answer the questions or refer me to other officials in charge.
- Because of the low number of universities with policies the interviews were analyzed and written up as case studies and thus without data coding.

#### 1.4 THE ENVIRONMENT

The usage of the term “Environment” is often taken for granted. Its usage embraces a multitude of ingredients that link to different environments. It may refer to spatial environment, human made and built environment; sociological environment which refers to people and societies; economic, cultural, political, labor, work and the natural environment. Although the term environment embraces all the aforementioned, in Environmental Science, the term environment strictly refers to renewable and non renewable natural resource and environmental problems indicating the impaired interrelationship between humans and their physical surroundings or natural environment (Fuggle and Rabie 1998). The need to wisely manage the finite natural resources on which humankind depends has led to a concern that environmental resources are used in a sustainable way. This in turn has led to the quest for sustainable development (Toakley and Aroni 1998, Leal Filho 2000, Graedel 2002) and a role for universities to manage their environment in order to ameliorate environmental problems.

#### 1.5 SUSTAINABLE DEVELOPMENT

The United Nations Conference on Environment and Development (UNCED), also known as the Rio Earth Summit in 1992, was instrumental in shaping the concept and principles of sustainable development. Sustainable development is defined in many ways but the most widely accepted is the one drafted by UNCED (1987) at Rio. It is defined as

“development that meets the needs of present generations without compromising the ability of future generations to meet their needs”. This makes it clear that natural resources should be used efficiently and equitably for both present and future generations. Development must be socially just, ethically acceptable and economically sound without destroying environmental resources.

The concept of sustainable development is now widely accepted in relation to developmental issues internationally and in South Africa. Sustainable development responses are based on Agenda 21. This document, developed at the Rio Earth Summit is a global plan of action to stop environmental degradation and promote equitable development. It is a broad framework for sustainability to be applied across national and local authorities with their unique needs, histories and resources. Arising from Agenda 21 is Local Agenda 21 (LA21) which is the process used internationally to translate Agenda 21 into action at local government levels. LA21 is a long term action plan developed by citizens in partnership with local authorities (DEAT 2004). There is the need for sound environmental management on a long term or sustainable basis; however, some writers (Leal Filho 2000, Graedel 2002) are still debating on the interpretation of sustainable development or sustainability.

Graedel (2002) argues there is an ongoing contentious discussion regarding the interpretation of sustainable development and sustainability, with some schools of thought viewing sustainable development as an end point and sustainability as a pathway to the end point. However, Graedel (2002) concludes that they are synonymous. Leal Filho (2000) posed that the problem of understanding sustainable development cannot be solved by getting a consensus as there are individual differences in opinion and perspectives on what sustainable development is. However by accepting UNCED's definition and looking at the different approaches (actions) in the environmental sector, this may lead to sustainability (Leal Filho 2000).

However, Graedel (2002) posits that the major key to sustainable development is to settle on a time scale for the transition to sustainability with targets being set. Graedel (2002)

believes sustainability does not mean being a little “more green” but rather adopting a defensible target for meeting one’s share of the transition to sustainability, and then developing approaches and a time scale designed to reach that target.

With all the arguments on what sustainable development and sustainability is, the Bruntland commission definition of sustainable development suffices for the purpose of this research, as natural resources, economic development and environmental problems occur in many tertiary institutions. Environmental policies are important as its formulation, adoption and implementation will help determine how tertiary institutions are engaging in environmental changes and management. Managing environmental resources requires some level of sustaining the resources for future use. This is where the concept of sustainability comes into play in resource management.

Integrating sustainability issues into universities environmental activities requires an environmental policy. This is because an environmental policy will help to clearly define the environmental problems on that campus. During the policy formulation process, alternative policy options are generated and evaluated so that the preferred options are selected and implemented. Environmental policies must include mechanisms for evaluation and feedback to continuously improve on the policy and its implementation (van Weenen 2000, Wilson 2000). Though environmental policies may be seen to be different from other policies due to the cross cutting nature of the policy in that there are many definitions of the word ‘environment’ (Wilson 2000), yet the policy process is seen to have the four main elements found in other policies which are problem identification, policy formulation, adoption and implementation, monitoring and evaluation. These processes are not different from that of other policies (Booyesen and Erasmus 1998, Wilson 2000).

## 1.6 POLICY CONCEPT

In order to determine what constitutes a 'good' environmental policy, for the tertiary education sector, it becomes imperative to identify what a policy is and what policies aim to achieve.

Policy as described by the Oxford English dictionary (2002) is a course or principle of action adopted or proposed by an organization or individual. It is a committed statement of intent to address an identified problem. Policies are usually developed in response to problems that arise within societies and organizations, and serve to coordinate behavior and actions, or to provide some form of normative perspective, so that the intended outcomes are reached (Wilson 2000).

Anderson (1997) in Booysen and Erasmus (1998) posed that in general usage, "Policy" refers to "a relatively stable, purposive course of action followed by an actor or a set of actors in dealing with a problem or matter of concern". This differentiates a policy from a decision. A decision is essentially a choice among competing alternatives. Policy is seen as a process as well as a product and pertains to both "courses of action" and "webs of decision" (Booyesen and Erasmus 1998, Wilson 2000).

Fisher (2003) explains that an environmental policy represents the written commitment by senior management to sustainability on campus and is the rudder which steers all of the operational changes that may follow. He explains that a good environmental policy should be a business tool based on International Organization for Standardization (ISO). The ISO series is a worldwide federation of national standards bodies from over 130 countries and its derivatives. The ISO series are environmental management systems standard (EMS) which is a set of organizational procedures, responsibilities, processes and necessary means to implement environmental policies (Hilson and Nayee 2002). The ISO series give clear definition on what a policy must contain. It defines an environmental policy as a "statement by the organization of its intentions and principles in relation to its overall environmental performance which provides a framework for

action and for the setting of its environmental objectives and targets". It provides a working definition, and a checklist against which the policy can be compared. ISO 14000 recommends conducting an initial environment review, the result of which is used to inform an organization about the kinds of issues and objectives it may wish to include in consolidating an environmental policy, and establishing a future Environmental Management System (EMS). Besides that, it provides a toolkit for conducting that review in the form of questionnaires, interviews, checklists, inspections, record reviews, and benchmarking (Hilson and Nayee 2002, Fisher 2003).

Fisher (2003) states that ISO 14004 indicates that an environmental policy should include the following;

- The organization's mission, vision, core values and beliefs;
- Requirements and communication with interested parties;
- Continual improvement;
- Prevention of pollution;
- Guiding principles;
- Coordination with other organizational policies (e.g. quality, occupational health and safety);
- Specific local or regional conditions; and
- Compliance with relevant environmental regulations, laws, and other criteria to which the organization subscribes.

Environmental audits must be included to allow review of the environmental problems. Furthermore ISO 14000 series poses the following questions as useful benchmarks which a university's policy statement can be compared to:

- Does the university have an environmental policy that is relevant to its activities, products and services?
- Does the policy reflect the organization's values and guiding principles?
- Has the environmental policy been approved by top management and has someone been identified and given the authority to oversee and implement the policy?

- Does the policy guide the setting of environmental objectives and targets?
- Does the policy guide the organization towards monitoring appropriate technology and management practices?
- What commitments are embodied in the environmental policy, for example, support for continual improvement, support for the prevention of pollution, monitoring, meeting or exceeding legal requirements, and consideration of the expectations of interested parties (Fisher 2003)?

From the above discussions on institutional policy and the environment, it becomes apparent that an environmental policy is a policy formulated to deal with the problems of usage of renewable and non-renewable resources in a sustainable way for present and future generations. A good tertiary environmental policy would therefore be one which has been developed in response to the environmental problems facing those tertiary institutions and aimed at providing some form of action in order to reduce the impacts of environmental problems.

#### 1.6.1 POLICY FORMULATION

Anderson in Booysen and Erasmus (1998) conceptualized “policy formulation” as involving the development of “pertinent and acceptable proposed courses of action for dealing with public problems.” Booysen and Erasmus (1998) assert that the policy-making process or policy formulation involves three categories of interconnected sets of activities starting firstly with deciding on what, (if anything) is to be done about a problem. Once the question of what has been resolved, the second activity of drafting legislation and administrative rules can be written. When a policy is adopted it will carry the agreed principles and statements into effect and formalizes the preceding activities. The third category is the implementation of the adopted policy.

Policy formulation is recognized as a complex process, however Parsons (1995) in Booysen and Erasmus (1998) use a simplistic circular model to explain the process. In this model the process of policy making starts with the existence of a problem to the

definition of the problem. This is then followed by the generation of alternative policy options, the evaluation of these alternatives, the selection and implementation of the preferred option, and the eventual evaluation which serves as feedback and indicates the extent to which the original problem has been addressed. The process of policy making continuously evolves especially in societies in transition such as South Africa. Here participation and consultation constitutes the basis for creating the legitimacy of policies as well as giving a feedback on how the processes can be improved (Erasmus and Booysen 1998). Five phases demarcate the policy making process:

- problem identification,
- agenda setting,
- policy deliberation,
- policy adoption, and
- policy implementation

Public policy making in South Africa is an ongoing interactive process that involves a “stream” of actions that combine to deliver policies and directives for their implementation. It involves policy actors who influence policy making by channeling draft policies along documentary stages. The documentary stages of policy making include discussion documents, white papers, legislation and regulations for policy implementation. Public participation refers to the direct involvement of citizens in the “seeking of” and “access to information about” and the making of decisions related to certain specified public issues. The policy community/actors may include officials from the public service, government, NGO community, labor, the media, business and leaders of relevant interest groups and in the South African context, community forums. These “participant stakeholders” influence emerging policy (Willis 2004).

South Africa’s transition to political democracy has seen a shift towards more open and inclusive policy making processes and substantively different policy outcomes. Public policy making in South Africa is now guided by the new institutions of democratic governance and approval from the community actors,’ inclusion, participation and transparency are important (Willis 2004). Policy making should be seen within the

context of larger societal and cultural attitudes (Booyesen and Erasmus 1998, Willis 2004).

Within the above context, environmental policy formulation at tertiary level will have to involve an inclusive, open public participation by all the community members of the university in order to help identify environmental problems and set agendas for ameliorating them.

### 1.6.2 POLICY ANALYSIS

Policy analysis is the process through which we identify and evaluate alternative policies or programs that are intended to lessen or resolve social, economic, or physical problems (Patton 2004). In performing policy analysis, Patton(2004) lists six steps to follow:

- The first step involves clearly identifying and defining the problem to be resolved.
- The second step involves the establishment of relevant evaluation criteria to compare, measure and select among alternatives. In this step, the cost, net benefit, effectiveness, efficiency, equity, administrative ease, legality and political acceptability must all be considered.
- The third step requires the analyst to identify alternative policies. This may require combining the alternatives to generate better solutions, or relying on past experiences from other groups or policy analysis to create a more thorough analysis and understanding. Policy analysis involves an incrementalist approach as each step must be completed before the next step.
- The fourth step is to evaluate alternative policies and how each possible alternative ranks against the criteria previously established. In doing this the original problem statement may be transformed and new aspects may be found. Efficiency will therefore be increased when several projects are analyzed and evaluated (Patton 2004).

- The fifth step is to display and distinguish among alternatives. Comparison schemes can be used in distinguishing among several options. Qualitative and quantitative analysis and other considerations can be moulded into general alternatives to distinguish between alternative policies. The negative and positive effects in implementing the policy should be displayed. The mixing of two or more alternatives helps with obtaining a justified policy analysis (Patton 2004).
- The sixth and last step is monitoring the implemented policy. This concern requires that policies be maintained and monitored during implementation to assure that they do not change unintentionally, to measure the impact that they are having, to determine whether they are having the impact intended, and to decide whether they should be continued, modified or terminated (Patton 2004).

In policy analysis there is a distinction between normative and analytical policy analysis (Booyesen and Erasmus 1998). Normative policy study involves how policy is made and how the processes may be improved. Policy evaluation and implementation are all related to normative policy. Analytic policy studies seek to develop models and explanations of the policy process. Analytically the meaning of the concept of policy has changed over time. Policy may be the label for a field of activity or refer to specific proposals, decisions or a process. Since policy refers to a field of activity, there is a need to distinguish between public and private spheres of activity and therefore of policy (Booyesen and Erasmus 1998).

There are differences between the different types of public policy on the basis of their impact on society (Booyesen and Erasmus 1998). Thus, there is distributive policy which are policies that bring tangible benefits to individuals or groups e.g. government subsidies. There are policies that have a regulatory impact. Such regulation policies either increase or diminish the options that individuals or groups can exercise. Lastly, there are policies with redistributive impact, which represent attempts to manipulate the allocation of wealth and other values among different societal groups (Booyesen and Erasmus 1998). One would therefore conclude that environmental policies in tertiary institutions are regulatory in nature as they diminish the options of individuals or groups in degrading the

environment and increases the option of implementing environmental sustainability in campus activities, curriculum and research. Furthermore analysis of the policy by the different communities involved in the policy formulation would enable stakeholders to understand how they value their environment and bring differences to the fore in order to help solve the environmental problems when decisions have to be taken.

Decision making forms part of the activities of the policy formulation process. It is therefore important to know how the eventual policy decision will be made, the nature of the actors making the decisions and the relationships between them (Booyesen and Erasmus 1998). Decision making can be characterized as being rational, incremental or an approximation of the mixed-scanning model (Booyesen and Erasmus 1998). According to the model of rational decision making, the decision maker is confronted with a problem that can be both clearly defined and separated from other problems. The goals and values that guide the decision maker are clear and ranked in order of importance. Armed with this information the decision maker is able to examine all the alternatives, calculate the costs and benefits of each alternative, weigh up the consequences of each alternative against the impact of the other alternatives and to choose the option which best contributes to the realization of the stated goal.

In the incremental approach, the decision maker has less scope for evaluation and action and time is a critical variable. The decision maker considers a limited number of alternatives which can differ only marginally from the existing policy. It is therefore of a remedial and corrective nature and cannot be used for extreme policy change, policy innovation or termination. The incremental model of decision making is more appropriate to policy making in periods of policy succession. Keeler (1993) in Booyesen and Erasmus (1998) asserts that profound or extreme policy changes can be driven for example by a very large victory in an election by a political party or by the existence of fear or crisis in society.

The mixed scanning approach is associated with both rational decision making and incremental approaches. It requires the decision maker to broadly review the field of

decision without undertaking the detailed evaluation required by the rational model. These reviews then set the stage for more incremental decisions and specific analysis of certain options (Booyesen and Erasmus 1998).

Policy analysis deals with the position and attitudes of various groups within the policy making process. Since the policy process involves the actors or role players taking the decisions and the interrelationships between them, other policy analysts turn to political systems theory to analyze the decision makers (Booyesen and Erasmus 1998). Political systems theory represents a broad generic attempt to come to grips with questions pertaining to both the actors involved in the policy process and some of the interplay between these actors. The political system comprises certain actors who are empowered to allocate certain values to society including the setting of policy. From the environment, this political system receives demands and supports which directs the decision maker towards appropriate policies. These policy outputs are, in turn, subjected to evaluation and feedback which constitutes the impetus for new or altered policy outputs (Booyesen and Erasmus 1998). The “how” and “who” of policy making is linked with the substance of policy outcome in South Africa (Booyesen and Erasmus 1998).

Carley (1996) believes policy analysis requires baseline analysis information, regular monitoring of quantitative and qualitative changes in the information used in the policy formulation to refine policy and implementation, and the evaluation of programs and projects to determine their impact in terms of effectiveness and efficiency. Monitoring should be constructive and non-threatening to policy managers. Evaluation of the implementation process should be carried out by a neutral third party who can make a detailed assessment of the successes or failures of policy initiatives. Within the policy making framework, there must be adaptive management systems for the use of feedback for the purpose of more effective actions (Carley 1996).

Thus policy analysis would therefore form part of the process of evaluating the adopted and implemented environmental policy of the university and this in turn will help with

the continued implementation in terms of effectiveness and efficiency of the policy or the generation and utilization of alternative actions.

### 1.6.3 POLICY FAILURES

Policy failure may be as a result of constraints on the development and implementation of the process. These constraints include economic constraints, competition for limited resources in terms of budgetary priorities, constitutional constraints, organizational constraint and capacity constraints. Consequently, policy failures simply reflect the complexity of the policy making and implementation process and the response to failure would be to use monitoring and evaluation to generate new knowledge and opportunities for incremental improvement of policy (Carley 1996). In the tertiary education sector, typical policy failures include a lack of awareness of the policy by the people supposed to utilize it, lack of funding, commitment, coordinating persons, lack of tangible benefits accruing from the policy and the fear of new challenges (Shriberg 2002).

### 1.7 DEVELOPMENT OF ENVIRONMENTAL POLICY

The need to solve environmental problems has become a prime concern and this has resulted in the promulgation of policies, legislation and regulation designed to prevent, conserve and protect the environment from harm to create a sustainable future. These regulations were initially in the form of environmental laws directed at specific forms of pollution of air and water. This ad-hoc and discrete approach only responded to problems as they arose and could not deal actively with the root causes of environmental degradation (Fuggle and Rabie 1998). Subsequently, the increase in environmental awareness has led to a more pro-active involvement in the environment by the formulation and implementation of policies designed to protect the environment holistically and are referred to as “environmental policies”.

The need for environmental policy and conservation strategy arose from a growing awareness to manage natural resources wisely (Fuggle and Rabie 1998, Toakley and

Aroni 1998, Glasser and Nixon 2002). The USA took the lead in legalizing environmental policies with the promulgation of the National Environmental Policy Act (NEPA) in 1970. Between 1970 and 1980 there was silence on the environmental front. After the publication in 1980 of the *World Conservation Strategy* by the International Union for the Conservation of Nature (IUCN) and coupled with an increase awareness of environmental degradation, and activism, this set off a chain reaction throughout the environmental movement (Fuggle and Rabie 1998).

In South Africa the quest for a national environmental policy began in the eighties with the publication of the government's White Paper on a national policy regarding environmental conservation. The promotion of environmental education and the institutionalization of environmental impact studies were the two approaches that were singled out (Fuggle and Rabie 1998). In post apartheid South Africa, the elected government enacted the National Environmental and Management Act (NEMA) in 1998 in response to continuous degradation and Environmental Impact Assessments (EIA) were made compulsory for certain identified activities. This act has been reviewed in 2004. In South Africa, although there is a national environmental policy, tertiary institutions are not legislated to have their own environmental policies. However, where the institutions activities may have a negative impact on the environment, they are compelled by the national policy to conduct EIA. In some developed countries, some tertiary institutions have formulated their own environmental policies in order to ameliorate their impacts on the environment (Toakley and Aroni 1998, Calder and Clugston 2004, Downey 2004).

## 1.8 EVOLUTION OF ENVIRONMENTAL POLICY IN THE TERTIARY SECTOR

As national institutions were forging ahead in their fight against environmental problems, universities or institutions of higher education were attempting to become more sustainable by formulating their own environmental policies or by being signatories to international environmental charters and declarations and developing their institution's policy around these (Toakley and Aroni 1998, Leal Filho 2000, Arvidsson 2004, Thomas

2004). This is shown by the number of international declarations related to care for the environment and environmental education that has signed by various universities.

The chronologies of some International declarations related to the environment in higher education are listed by Leal Filho (2000) and Wright (2002) as follows. Many tertiary institutes have signed these declarations in order to help them to be environmentally sound in their campus management and curricula and to sustain these practices.

- 1972 The Stockholm Declaration on the human environment
- 1977 The Tibilisi Declaration
- 1988 The Magna Carta of European Universities
- 1990 The Talloires Declaration of University Presidents for a Sustainable Future
- 1991 The Halifax document "Creating a common future: an action plan for Universities
- 1991 The Copernicus Charter "urgent appeal from the Conference of European Rectors (CRE)" to the Preparatory committee of UNCED
- 1992 Report of the United Nations Conference on environment and development- chapter 36, promoting education, public awareness and training
- 1993 Ninth International Association of Universities Round Table: The Kyoto Declaration.
- 1993 Association of Commonwealth Universities, Fifteenth Quinquennial Conference: Swansea Declaration.
- 1994 CRE-Copernicus Charter
- 1997 International conference on Environment and Society-Education and Public Awareness for Sustainability: Declaration of Thessaloniki
- 1999 The Lund Declaration
- 2001 Lüneburg Declaration
- 2002 GHESP
- 2002 The "Ubuntu" Declaration

It is clear that starting from 1972 some tertiary institutions had begun to incorporate environmental issues into their organizational structures by signing such declarations. However, it gained momentum in the nineties as illustrated by the number of policies and declarations that have since been signed by tertiary institutions.

Wright (2002) summarizes the core tenets of the declarations by asserting that these declarations center on improving the environment through education. For example, Principle 19 of the Stockholm Declaration (1972) stated the need for environmental education from grade school to adulthood. The Tbilisi Declaration (1977) is considered to be the formal starting point for international environmental education initiatives as it states that environmental education should be provided to people of all ages and academic aptitude in both formal and non-formal environments incorporating strategies of action and specific recommendations within the framework of the general university (Leal Filho 2000).

In 1990 the Talloires Declaration was signed with twenty two Presidents, Rectors and Vice –Chancellors from across the world but now has over 275 signatories. The Talloires Declaration was the first statement made by university administrators of a commitment to sustainability in higher education. It stated that “university heads must provide leadership and support to mobilize internal and external resources so that institutions respond to the urgent challenge as well as encouraging universities who were not present at the conference to sign the declaration and join administrators in their effort” (Wright 2002).

The Halifax Declaration (1991) was a follow up on the Talloires Declaration by Canadian universities to discuss its implications. The Declaration recognizes the leadership role which universities could play by reconstructing their environmental policies and practices to contribute to sustainable development on local, national and international levels. Although the Kyoto Declaration (1993) has no signatories, it is however endorsed by all members of the International Association of Universities. The Kyoto Declaration emphasizes that the international university community has an ethical obligation and must create specific plans of action to pursue the goal of sustainability (Wright 2002).

The Swansea Declaration (1993) repeated many of the past sustainability declarations but stressed equality amongst countries as a factor in achieving sustainability. It appealed to universities of richer countries to aid in the evolution of university environmental sustainability programs in less wealthy nations worldwide.

The CRE-Copernicius Charter (1994) was developed by the Association of European Universities and represents over 500 universities in 36 countries. The key areas in the charter are public outreach, environmental literacy and encouraging partnerships and networking amongst universities. It states that all individuals (students and employees) within the university can work in an environmentally responsible manner (Wright 2002).

The Thessaloniki Declaration (1997) recognized that sustainability initiatives must take place at all levels of society and must be linked with poverty, population, food security, democracy, human rights, peace, health and a respect for traditional cultural and ecological knowledge. It stressed the need for all subject disciplines to address environmental problems and sustainable development in the curriculum and finally called on governments and leaders in education to honor the commitments they had already made in signing past declarations of environmental policies (Wright 2002).

The Lüneburg Declaration (2001) was adopted by the Global Higher Education for Sustainability Partnership (GHESP) partners at a conference on “Higher Education for Sustainability-Towards the World Summit on Sustainable Development (Rio + 10)” held in Germany. This Declaration was the first joint policy statement of GHESP. It is one of the modern or latest Declarations dealing with sustainable development and higher education. It posits that the ultimate goal of education for sustainable development is to impart the knowledge, values, attitudes and skills needed to empower people to bring about the changes required to achieve sustainability. The Declaration made various calls on these different coordinators, higher education institutions, NGO’s, stakeholders, United Nations and UNESCO to ensure sustainable development includes education in general and higher education in particular in future international programme of work. It

focuses on education, in general and teacher education towards sustainable development. Furthermore the EUA-COPERNICUS, International Association of Universities (IAU), and the Association of University Leaders for a Sustainable Future (ULSF), partners committed to achieving certain targets within the next five years. The targets were to create a global learning environment for higher education for sustainable development; promote expanded endorsement and full implementation of the Talloires, Kyoto and Copernicus Declarations; produce an action-oriented Toolkit for Universities, managers, administrators, faculty and students designed to move from commitment to concrete action. The Toolkit would include implementation strategies for colleges and universities depending on size, type, demographic characteristics, etc.

Global Higher Education for Sustainability Partnership (GHESP) includes the following partners: Association of University Leaders for a sustainable Future (ULSF); COPERNICUS-CAMPUS; International Association of Universities (IAU); and United Nations Educational, Scientific and Cultural Organization (UNESCO). The reason for the partnership is to combine the strengths of its individual partners in an effort to mobilize universities and higher education institutions to support sustainable development. The rationale for the partnership is the consensus that higher education must play a central role within the overall process of achieving sustainable development. The partners are convinced that the leaders of higher education institutions and their academic colleagues in all disciplines must make sustainable development a central academic and organizational focus in order to create a just, equitable and ecologically sound future. The overall goal of GHESP is to create a global learning space for higher education for sustainable development based on cooperation and exchange of good practice between institutions throughout the world. GHESP is involved with two types of Partnership outcomes; Type 1 outcome which is a Political Declaration and Type 11 outcomes which involve partnerships with governments, intergovernmental agencies, NGOs and businesses (GHESP MOU 2002).

The Ubuntu Declaration (2002) was issued at The World Summit for Sustainable development (WSSD). The Declaration recognizes the need to integrate sustainable

development into the curriculum at every level of education, starting in primary school. The “Ubuntu Declaration” lays global emphasis on education and creates a global alliance to promote science and technology courses and teaching throughout educational systems worldwide.

The Lüneburg and GHESP Declarations are interrelated as Lüneburg came out of GHESP however both contribute to the debate of sustainable development in the context of higher education (Lüneburg declaration 2001).

Thus many tertiary institutions are aiming for cleaner environments coupled with development of their institutions. The development however must be sustainable. Having signed such Declarations institutions vary in the level of implementation and can be grouped as:

- Those that have made no attempt to implement
- Those that are attempting to implement the declarations
- Those that have incorporated the principles of the declaration into their own environmental policy.

## 1.9 BARRIERS TO POLICY IMPLEMENTATION IN THE TERTIARY SECTOR

Integrating sustainable development into institutional activities is the biggest challenge in the twenty first century (van Weenen 2000) and approaches towards dealing with sustainable development vary from campus to campus. This has resulted in the greening of some physical operations on some campuses and integration of environmental and sustainability education in curricula and in research.

The greening of higher educational institutions involves reducing the multitude of environmental impacts resulting from campus activities and decisions as well as raising environmental awareness within the human communities of a college or university (Creighton 1999 in Dahle and Neumayer 2001).

Although several universities and colleges have started implementing environmental concerns into their policies and day to day practices, a general trend in the USA and in Europe is that few of these institutions are vigorously pursuing greening initiatives throughout their campus operations (Dahle and Neumayer 2001, Hopkins and Turner 2002).

Wright (2002) describes how some universities in USA, have adopted the Talloires Declaration as their primary environmental policy by examining, managing and/or implementation of one of the Talloires tenets e.g. Ball State University, whilst others like MacAlester College in Minnesota have adopted the Talloires declaration but have created their own plan within their institutional context.

It has been noted by Wright (2002) that being a signatory to an international declaration is not a valid indicator of an institution's dedication to sustainability as there are institutions that have signed no declarations but have taken environmental sustainability issues seriously by creating their own institutional environmental policies that are meaningful and suit their particular situation (Wright 2002). Wright (2002) lists the Universities of Waterloo, South Carolina and Toronto as a few of the universities that have not signed any environmental declaration but have developed their own environmental policy which they are implementing.

Hopkins and Turner (2002) noted that in most historically black institutions of higher education, environmental studies have not been introduced as instructional priorities. A few universities in the USA have environmental studies with a strong institutional commitment driving instructional activities in the field. In others, research and teaching in the field involve sporadic activities undertaken by a few committed individuals who may happen to have access to funding and facilities to support their efforts. Solutions to environmental problems are seen as the responsibility of other agents and not academics. Teaching about the environment may raise general awareness of the issues, it is not perceived as a viable solution to environmental problems since the pressing demands of other issues such as accreditation issues or improving the technological infrastructure

makes it less likely for institutions of higher education to give consideration to the cause of the environment (Hopkins and Turner 2002).

The low interest in environmental projects was attributed to a lack of resources in terms of funding of projects and curricular. However, Hopkins and Turner (2002) noted the greatest need for environmental education amongst the black population in the USA as their institutions were the ones lacking environmental education in the curricula. This may hold true in the South African context where because of apartheid the quality of education in historically black institutions has been inferior. Successes in such institutions depend on collaboration between faculties and members by responding to their needs for career advancement, resource support, and peer recognition (Hopkins and Trevor 2002).

Higher Educational Institutions (HEIs) can be described as “microcosms” of environmental problems facing the larger society in numerous ways (Smith 1993 in Dahle and Neumayer 2001). Hazardous chemicals are used in laboratories, fertilizers, insecticides and pesticides are abundant on campuses leading to pollution. Universities and Colleges generate solid and hazardous waste as well as congestion and noise. Indirect impacts are also created off campus by the production and use of services and goods served on campus (Glasser and Nixon 2002, Graedel 2002,). Graedel (2002) sets the five specific areas where greening initiatives can be undertaken as:

- energy use,
- water use,
- resources use,
- emissions to land, water and air,
- use of land.

Barriers to the implementation of greening on campuses vary. Dahle and Neumayer (2001) gave the following reasons which were the result of empirical studies in Tufts, Utrecht and Barcelona universities. There is a fundamental lack of interest and commitment towards green initiatives among administrators, staff and students. Further

barriers were established to be a lack of financial resources and environmental education within the campus community. The organizational structures and the predominating culture of some universities prevent the introduction of green initiatives. The lack of expertise, tradition and budgetary constraints all contributed as barriers in the implementation of greening initiatives. Other important barriers to implementation of greening initiatives involve the long payback periods, and a general lack of incentives and information on environmental issues and even the location of some institutes (Dahle and Neumayer 2001, Thomas 2004).

Leal Filho (2000) found that there were misconceptions related to the topic “sustainability” and these misconceptions were translated into a negative view reflecting institutions lack of willingness to implement more sustainable actions in relation to the environment which means less campus greening. This affects implementation efforts on campuses. Leal Filho (2000), in a study of why some European Universities may be reluctant to implement environmental sustainability initiatives, found that when interviewees were questioned on obstacles and misconceptions to sustainability, the respondents’ range of opinions fell into five categories,

- that sustainability is too abstract and broad because of the scope of the theme,
- lack of information on sustainability,
- there were no personnel to implement and look after it,
- the resources needed did not justify it, and
- sustainability had no scientific basis.

Leal Filho (2000) rebuts all these arguments with concrete examples and argues that the following factors influence attitudes towards sustainability either positively or negatively: knowledge on sustainability and its implications; background of an individual; experience with environmental affairs; perception and values; and the context of sustainability entailing economics and social matters and not only ecological matters.

Thus, these misconceptions need to be addressed by stressing the importance of financial incentives, rewards and motivation as tools to foster environmental initiatives. Examples

from some European universities which have been successful can be used e.g. a university in Germany was able to save around 6% of the total energy bill in the first year alone (Leal Filho 2000).

By fostering the links between theory and practice of sustainability by means of case studies, pilot projects and initiatives on the ground, sustainability on environmental issues can be made a reality (Leal Filho 2000). Specific issues and themes such as energy use, or sustainable water consumption can be utilized to give clear approaches and clear outcomes. The value of sustainability needs to be disseminated to institutions and good experiences need to be documented to raise its profile and increased acceptance (Leal Filho 2000).

Leal Filho (2000) suggests that certain features that need to be put in place to enable universities to fully engage in sustainability initiatives in the environment are:

- Reliable in-service training provisions on matters related to sustainability,
- Setting up of working groups to debate how best to pursue it via specific initiatives,
- The development of intra and inter-institutional networks to exchange ideas and experiences, and
- The setting up and execution of specific projects.

Furthermore attempts to implement initiatives related to sustainability at universities should be followed according to a timetable and action plan. This helps to provide a sense of direction as to where efforts are going and to measure results against aims within a number of months or years (Leal Filho 2000).

According to Fischer (2003), the methodology of seeking transformational change within an institution through environmental management and greening practices lacks a consistent framework. He argues that this problem can be remedied by uniformity and standardization by looking at the way businesses have approach the same problems. A

number of voluntary environmental standards have been developed within certain business communities by committees of peers, which are designed to assist companies in the responsible management of environmental issues that may affect them. These include the International Organization for Standardization's ISO 14000 series of environmental standards, which are of international application. The overall purpose of the standards is to assist companies and other organizations to develop their own proactive management systems, which take into account environmental issues and concerns and which allows future benchmarking in relation to safe environmental practices. Furthermore, an ISO approach in environmental management by educational institutions can be likened to a special campus business approach to the environment. Businesses recognize the ISO logo, and are likely to respect it and consequently would know what campuses are talking about in discussions on environmental initiatives in an ISO 14000 context. That sort of shared experience would provide an experiential link between business and education (Fisher 2003).

Noeke (2002) argues that for the implementation of environmental policy, there is the need for an environmental management system. The environmental management system would check whether the environmental policy may be good on operable aims and measures and if it can influence the environmental targets positively. Fisher (2003) states that the two most important standards in the context of environmental initiatives are ISO 14001 and ISO 14004 which includes general guidelines on the principals and systems which comprise a workable EMS and supporting techniques.

#### 1.10 BENEFITS OF "GREENING" ACTIONS

By implementing greening actions on their campuses, institutions can reduce the cumulative effect of these environmental problems, and thereby prevent environmental degradation (Dahle and Neumayer 2001, Graedel 2002, Downey 2004).

Another benefit is that of inculcating environmental attitudes in the students who in turn are going to be the leaders of the future and therefore may apply and transfer the

knowledge. A green university can become a green model for the external community by gathering and sharing effective ideas on environmental issues (Dahle and Neumayer 2001, Thomas 2004). The greening of a college or university can also be cost effective and in a society with increased environmental awareness, a green attitude can also give a university a positive image to the outside world, and thereby be a selling point. This has been illustrated in the USA by Eagan and Keniry (1998 cited in Dahle and Neumayer 2001, Carlin 2004).

Higher Educational institutions are “integral parts of the larger society’s economic, social, and physical landscape”. Their economic power, through the investments they make by the products they buy, and the companies they do business with, is extensive. By utilizing and demanding environmentally friendly products and technologies, universities and colleges can therefore create or encourage markets for environmentally friendly and sustainable commodities (Dahle and Neumayer 2001).

#### 1.11 ASSESSMENT TOOLS USED IN TERTIARY ENVIRONMENTAL POLICY IMPLEMENTATION

Campuses require methods of comparison to each other as to how well their environmental operations are doing. This involves incorporating sustainable principles in their operations and curricula. Cross institutional sustainability assessment will act as a benchmark to ensuring a degree of conformation to minimum standards and assist lagging colleges and universities. Cross institutional assessment tools identify sources of support and resistance for sustainability initiatives, which helps lead to effective sustainability policies, objectives and programs (Shriberg 2002).

Thus, assessment tools are important in operationalizing charters and policy statements about sustainability in higher education such as Talloires Declaration, Halifax Declaration, Kyoto Declaration and Copernicus Charter (Shriberg 2002). This is because although these documents contain important guidelines for education, none of them offers concrete prescriptions on an operational level for what exactly Higher Education should

do to contribute maximally to sustainable development (Roorda 2000 in Shriberg (2002). Assessment tools can alleviate this problem through identification of best practices and focusing campus efforts on continual improvement. These tools also facilitate communication of progress within and across institutions, which is the key to mutual success in moving towards the target of sustainability in higher education (Glasser and Nixon 2002, Shriberg 2002).

To measure sustainability in higher education, there must be criteria for cross-institutional assessment. Attributes of ideal assessment tools involve five criteria (Shriberg 2002). These are:

- What quantity of material goods does the college/university consume on a per capita basis?
- What are the university management policies for materials, waste, recycling, purchasing, landscaping, energy use, and building?
- Does the curriculum engender ecological literacy?
- Do university finances help build sustainable regional economies?
- What do the graduates do in the world? These questions deal with core issues of ecologically, socially and fiscally sustaining a campus.

Assessment tools can help facilitate communication of progress within and across institutions, which is the key to mutual success in moving towards the target of sustainability in higher education. Assessment tools help with identification of best practices on campuses.

Shriberg (2002) gives a summary review of the strengths and weaknesses of eleven campus sustainability assessment tools used in determining the profile of environmental performance on colleges and universities in America and Europe. A few of these are Auditing instrument for sustainability in education (AISHE), National Wildlife Federation's state of the Campus Environment, Sustainability Assessment Questionnaire (SAQ), Higher Education 21's Sustainability indicators and Greening Campuses.

In general, ideal cross-institutional assessments must identify and address important issues of campus environmental, social and economic efforts and effects. The tools must provide mechanisms to prioritize sustainability-related issues. Cross-institutional assessment tools must be calculable and comparable. There must be quantitative and qualitative ways to measure status, progress, priorities and direction towards sustainability. Assessment tools must measure processes and motivations since sustainability is a process. They must ask “why” and “how” campuses pursue sustainability in addition to “what” they are currently doing. Sustainability tools must stress comprehensibility to a broad range of stakeholders (Shriberg 2002).

Shriberg (2002) concludes that many assessment tools excel in capturing baseline data on environmental and sustainability performance, however they do not provide mechanisms for comparing campus efforts against other institutions or averages and that while measuring what” and “how” campuses are doing, most assessments neglect “why” initiatives began and are maintained. An ISO 14001 environmental management system linked with cross-institutional assessment might provide the standardization or uniformity that is lacking. Furthermore many assessment tools do not effectively communicate methods and results.

#### 1.12 SUMMARY OF ELEMENTS FOUND IN A GOOD ENVIRONMENTAL POLICY

From the above discussions, the key elements or principles of an environmental policy for a university can be summarized as care for the environment and humans, economic and social development, environmental education as well as education on sustainability issues. Furthermore partnerships with governments businesses and NGOs are an important part of an environmental policy.

In conclusion, a “good” environmental policy should have the following elements.

- It should include a written mission, or vision of the core values and beliefs of that institution in terms of its environmental stance.

- This should be followed by a definition of the problem, an environmental review of where the institute stands in terms of the environment and sustainable development with a view to moving towards decreasing impacts in terms of environmental degradation and with the aim of preventing pollution.
- The aims and objectives should be clearly written and it should be relevant to the institutions' activity, products and services as well as considering the local and regional conditions.
- The policy should be compliant with relevant environmental regulations, and laws. There must be coordination with other organizational policies such as occupational health and safety.
- Within the policy there should be the setting of environmental objectives and targets.
- The policy should be approved by top management adopted by all the people who are going to be involved in its implementation.
- The policy should include an implementation strategy with an environmental management system in place for the smooth running of all operations as well as an inbuilt evaluation or feedback system. This will allow the monitoring of all technology and management practices and gives room for continual improvement.
- There is the need to identify personnel and authority to oversee and implement the policy.
- Finally, communication with interested parties and all personnel should be open at all times.

When these key principles are written down in the environmental policy and implementation is followed, it allows for the effective and efficient working of the policy.

## CHAPTER 2

### COMPARATIVE ANALYSIS OF ENVIRONMENTAL POLICIES

#### 2.1 GLOBAL ENVIRONMENTAL FRAMEWORKS

In discussing different environmental policies, it is important to first set the context by examining prevailing global environmental frameworks driving local level and sectoral developments and policies (see section 1.7 and 1.8). It is within these global initiatives that universities have sought to position themselves and respond to environmental challenges.

Analysis of any environmental policy is incomplete without reference to the initial Rio Declaration on environment and development (Rio Declaration 1992). The Earth Summit in Rio adopted Agenda 21, the global action plan for sustainability. This declaration advocated cooperation amongst states towards international agreements with respect to the interests of all and protection of the integrity of the global environment and developmental system. The principles enshrined in the Rio Declaration will be utilized as the framework with which to compare all subsequent declarations. The Rio Declaration is made up of twenty seven principles which will be used to compare to another important Declaration after Rio, the Earth Charter Benchmark Draft II, of April 1999. This is because the Earth Charter has not been officially ratified by the United Nations, yet it has been described as the most important development in international environmental and sustainable development since the Rio Earth summit (Hassan 2002 in The Earth Charter at the Johannesburg summit report). It expresses the spirit of global interdependence and inclusive ethical responsibility (Johannesburg Implement Plan 2002). The objective of the Earth Charter is to set forth an inspiring vision of the fundamental principles of a global partnership for sustainable development and environmental conservation (Masters students, School of Environment and Development Natal 1998). The Earth Charter is an international declaration based on the principle of building a global community which

will provide an integrated framework for environmental and sustainable development and policy. It is made up of sixteen principles (Table 1).

Table 1: A comparison of the principles found in the Rio Declaration and the Earth Charter Draft II.

PRINCIPLE	RIO DECLARATION	EARTH CHARTER
Human beings at the centre of sustainability concerns	Principle 1	Principle 1
Exploitation of a country's own resources in pursuant to their environmental and developmental need but to ensure that these activities do not cause damage to own country and neighbouring states	Principle 2	Principle 6 under ecological integrity
Development that meets the environmental needs of the present and future generations	Principle 3	Principle 4 under general principles
Environmental protection as an integral part of development	Principle 4	Ecological integrity subdivided into 3 parts
Poverty eradication as a requirement for sustainable development	Principle 5	Sustainable economic order subprinciple 10
Priority should be given to least developed and developing countries	Principle 6	Sustainable economic order subprinciple 10.5 and 11
Global partnerships to conserve, protect and restore the health and integrity of the earth's ecosystems	Principle 7	Ecological integrity subprinciple 5.1-5.5
Reduction and elimination of unsustainable patterns of production and consumption	Principle 8	Principle 8.1-8.6
Exchange of scientific and technological knowledge and diffusion and transfer of new and innovative technologies	Principle 9	Principle 12
Participation of citizens in environmental issues as well as access to information on environmental hazards	Principle 10	Principle 13-13.5
Enactment of effective environmental legislation	Principle 11	6.3, 11.4, 12.3, 13.4
Trade policy measures and an open international and economic system leading to economic growth in all countries	Principle 12	Principle 8 and 9
National and international laws regarding liability and compensation for adverse effects of environmental damage	Principle 13	Principle 13.5
States should prevent the relocation and transfer to other states of substances or activities that cause severe environmental degradation	Principle 14	Not clear on this
The precautionary approach as the best method of ecological protection when knowledge is limited	Principle 15	Principle 16
Internalization of environmental costs and the use of economic instruments to let the polluter bear the cost of pollution	Principle 16	Principle 6.4
Environmental impact assessment shall be undertaken for proposed activities that are likely to have a significant impact on the environment	Principle 17	Principle 6.3
Notification of other states of natural disasters that may	Principle 18 and 19	Principle 6 not to

produce harmful effects on the environment of those states		notify but to take precautionary measures to prevent environmental harm
Gender equality with special reference to women and youth and their role in environmental management and development	Principle 20 and 21	14.1, 14.2, 15.1
Vital role of indigenous people in environmental management because of their knowledge and traditional practices	Principle 22	Principle 11.3
Protection of natural resources of people under oppression	Principle 23	Not clear but reference is made in many sections to the protection of all peoples dignity and equality
Inherent destructiveness of warfare and respect for international law, culture of peace and development	Principle 24 and 25	Principle 16
Peaceful solution to all environmental disputes and cooperation in good faith and in a spirit of partnership	Principle 26 and 27	Principle 16

### 2.1.1. KEY SIMILARITIES

The Earth Charter recognizes the intrinsic value of all beings and affirms respect for the inherent dignity of every person and the potential of humanity. Agenda 21 principles found in the Rio Declaration also acknowledge the value of all beings. Agenda 21 principles are relevant to states and countries trying to practice sustainable development. For example Environmental Impact Assessments (EIA) is clearly stated as principle seventeen on its own, whilst in the Earth Charter, EIA is made reference to with respect to enabling local communities to care for their own environments. It assigns responsibilities for environmental protection standards and monitoring systems to various levels of government. It is stated in 6.3 of Agenda 21 but not as a stand alone principle. Both policies acknowledge women's participation in environmental issues; however the Earth Charter elaborates on gender equality and universal access to education, health care and employment to support women and as a prerequisite for sustainable development. The Earth Charter and Agenda 21 both express the spirit of global interdependence but the Earth Charter includes global ethical responsibility.

### 2.1.2 KEY DIFFERENCES

Agenda 21 encourages global cooperation amongst states and international legislation on environmental degradation to preserve the earth. The Earth Charter on the other hand does make reference to states but not as strongly as the Rio Declaration. The Earth Charter also states the need to incorporate sustainable development principles as part of formal education and lifelong learning in principle 15 whilst Rio does not. The Earth Charter's four broad principles made up of the following: (i) general principles, (ii) ecological integrity, (iii) a just and sustainable economic order and (iv) democracy and peace with each of these principles subdivided into smaller applicable or workable principles, makes it a good choice for adapting to utilize in smaller institutions and organizations whilst the Rio Declaration's twenty seven principles refers to countries and states and therefore would be easier to apply to sovereign nations. Rio on the other hand, emphasizes mechanisms that hold states, governments, international organizations, and business enterprises accountable to the public for the consequences of their activities.

### 2.2 ENVIRONMENTAL DECLARATIONS FOR THE TERTIARY EDUCATION SECTOR

There are many environmental declaration policies. These policies focus primarily on environmental education in the curricula from the primary school level to tertiary level. These declarations may also stress the importance of "greening" campuses in their actions and operations.

The two global declarations mentioned in section 2.1 are broad and intended for use by countries and states although the Earth Charter can be adapted by smaller organizations. As the international community began to work for a sustainable future based on the Rio Declaration, universities began to examine their roles and responsibilities towards the environment, degradation and unsustainable resource utilization practices. Higher education institutions can play a pivotal role in turning society toward sustainability (Corcoran and Wals 2004). These have led to university management signing

environmental declarations as first steps to implementing correct resource utilization. In matters of environmental education the declarations that have a bearing on sustainability in higher education have already been listed under section 1.8 in Chapter 1.

### 2.2.1 TBILISI DECLARATION

The Tbilisi Declaration was adopted at the world's first intergovernmental conference on environmental education which was organized by the United Nations Education, Scientific, and Cultural Organization (UNESCO) in cooperation with the U.N. Environment Programme (UNEP). It was convened in Tbilisi, Georgia (USSR) in October 1977. The Tbilisi Declaration constitutes the framework, principles and guidelines for environmental education at all levels, from local to international and for all age groups both inside and outside the formal school system. It states that the basic aim of environmental education is to succeed in making individuals and communities understand the complex nature of the natural and the built environment, resulting from the interaction of their biological, physical, social, economic and cultural aspects and acquire the knowledge, values, attitudes and practical skills to participate in an effective way in solving environmental problems and in the management of the environment. A further basic aim is to show the economic, political, and ecological interdependence of the modern world in which decisions and actions by different countries can have international repercussions, and in this regard, environmental education should develop a sense of responsibility and solidarity amongst countries which will guarantee the conservation and improvement of the environment. It contains twelve guiding principles. The Tbilisi declaration focuses on learning about the environment in the formal school situation, about the knowledge, skills and attitudes which can be developed in learners to help solve environmental problems. The Tbilisi declaration mentions education in general but not higher education and does not deal with the practicality of implementing environmental sustainability actions on the ground. It deals with lifelong learning in the environmental arena (The Tbilisi Declaration 1977).

### 2.2.2 TALLOIRES DECLARATION

The Talloires Declaration arose from the realization by the presidents, rectors and vice – chancellors of universities on the need for action to be taken on environmental pollution, degradation and depletion of natural resources. It is also based on the premise that universities have a major role in the education, research policy formulation and information necessary to achieve the goals of addressing and reversing environmental degradation and pollution. The Declaration is made up of ten principles (refer to Table 2) (Talloires Declaration 1990).

### 2.2.3 HALIFAX, KYOTO AND SWANSEA

The Halifax, Kyoto, Swansea, have almost the same substance as Talloires Declaration but with a few changes in wording and sometimes the target group at which the principle is directed differs. For example, whilst the principle of teaching environmental literacy to undergraduates and professional students is found in the Talloires Declaration, Kyoto mentions the wider public as well. Talloires also deals with cooperation with national and international organizations whilst some of the other Declarations simply identify the broad society. The Swansea declaration stressed equality amongst countries as an important fact in achieving sustainability and appealed for universities of richer nations to aid in the evolution of university environmental sustainability programs in less wealthy nations. The Kyoto Declaration claimed that the international university community must create specific plans of action in order to pursue the goal of sustainability. It stressed the ethical obligation of universities to the environment and sustainable development principles and challenges universities to promote sustainability through not only education but through the physical operations of a university (Wright 2002). There are no individual signatories to Kyoto apart from its endorsement by all the International Association of Universities (IAU) members and the general conference of members meeting in South Africa in 2000 (Wright 2002). However, Halifax and Swansea have got signatories which means it is more likely to be implemented.

#### 2.2.4 THESSALONIKI

The Thessaloniki Declaration identified the fact that insufficient progress had been made even after Rio and other conferences and there was the need to reaffirm and recommend some environmental principles (Masters students, School of environment and development 1998). Principle eleven in the declaration states clearly its support for environmental education as developed within the framework of the Tbilisi declaration. The Thessaloniki conference gives twelve recommendations for action to be taken to ensure a sustainable future. These recommendations focused on education as the necessary means to fulfill this aspiration. The goal of environmental sustainability involves action plans for formal and informal education with concrete targets and strategies.

One of the Thessaloniki principles states clearly the involvement of financial institutions and the productive sector, and the reinvestment of savings from greening processes. It also recommended the reorientation of teacher training programs to support environmental sustainability. Support should be given to research in interdisciplinary teaching methodologies and in assessing the impact of relevant educational programmes. Thessaloniki even recommends the institution of an international award under the auspices of UNESCO to be given every second year for exemplary educational projects for environment and sustainability. Thessaloniki emphasizes education and public awareness and its wording is closer to the Tbilisi declaration. The main theme that runs through it is the need to educate people both formally and informally in order to sensitize and make them aware of environmental development and sustainability (Masters students, School of Environment and Development, Natal, 1998). The declaration affirmed with regard to formal education that all subject disciplines must address issues related to the environment and sustainable development and that the university curricula must be reoriented towards a holistic approach to education (Wright 2002).

## 2.2.5 COPERNICUS

Copernicus is a programme of the Conference of European Rectors (CRE). This charter is relevant to over 500 universities within 36 countries that CRE represents (Wright 2002). It posits the need for education as being critical in giving new sets of values and improving peoples capacity to address environmental and development issues. Although the charter asserts education is important at all levels, the membership believe university education is especially important as it is for the training of future decision makers (Wright 2002). The Copernicus declaration stresses that it is the duty of universities and equivalent higher institutions of education to propagate environmental literacy and ethics in society as they have the expertise in all fields of research. The declaration further asserts that universities can play a role in developing a multidisciplinary and ethically orientated form of education to devise solutions for the problems linked to sustainable development, thus becoming leaders in creating sustainable societies. The declaration puts forward ten principles of action to be undertaken by universities to ensure environmentally sustainable development. These ten principles are all part of the other declarations presented in Table 2.

Table 2: A comparison of the principles found in higher educational international environmental policies

TB: Tbilisi, TA: Talloires, HA: Halifax, KY: Kyoto, SW: Swansea, CO: Copernicus  
TH: Thessaloniki

PRINCIPLE	TB	TA	HA	KY	SW	CO	TH
Environmental education (EE) should consider the environment in its totality							
EE should begin at preschool level through all formal and informal stages							
EE should be interdisciplinary to give a holistic and balanced perspective							
EE should examine environmental issues from local to international points of view so that students receive insights into environmental conditions in other geographic areas							
EE should focus on current and potential environmental situations while taking the historical perspective into account							

Promote the value and necessity of cooperation in the prevention and solution of environmental problems							
Consider environmental aspects in plans for development and growth							
EE should enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting their consequences							
EE should help learners to discover the symptoms and real causes of environmental problems							
EE should emphasize the complexity of environmental problems and thus the need to develop critical thinking and problem solving skills							
EE should utilize diverse learning environments and a broad array of educational approaches to teaching, learning about and from the environment with due stress on practical activities and first hand experience							
Raise public, foundations , government, industry and university awareness by addressing the need to move towards environmental sustainability and establishing a clearer meaning							
Encourage universities to engage in education, research, policy formulation and information exchange on population, the environment and development so as to move to global sustainability							
A better understanding of the society of the inter-related physical, biological and social dangers facing planet Earth							
Establish programmes to produce expertise in environmental management, sustainable economic development, and ensure all university graduates are environmentally literate and ecologically responsible citizens							
Ethical obligation of present generation to overcome malpractices of resource utilization							
Programmes to develop the capacity of universities to teach environmental literacy to students and public							
Establishment of institutional ecology policies and practices of resource conservation, recycling, waste reduction and environmentally sound operations							
Involvement of government and industry to support interdisciplinary research, education, policy formation and information exchange in environmentally sustainable development. Expand work with communities and NGO's to assist in finding solutions to environmental problems							
Convene with environmental practitioners to develop curricula, research initiatives and operation systems and outreach activities to support environmentally sustainable future							
Partnerships with primary and secondary schools to develop capacity for interdisciplinary teaching about population, environment and sustainability							
Work with national and international organizations to promote a worldwide university effort towards a sustainable future							
Coordination of efforts in a number of sectors and rapid and radical change in consumption and production patterns							
Poverty reduction as an indispensable condition of							

sustainability as poverty makes delivery of education and social services more difficult and leads to population growth							
Education to all men and women to empower them throughout life							
The need to translate these principles into action							
Media mobilization to diffuse environmental issues and messages							
Education for teachers should be orientated towards sustainable development and foster environmental attitudes, skills and behaviour patterns and ethical responsibility							
Total no	11	10	8	8	8	3	19

From the chronological presentation of the declarations, (see table 2) it can be observed that the trends in higher education policy declarations is that initially, Tbilisi focused solely on environmental education from as early as preschool level with very little input in operational activities to halt environmental degradation on campuses. However, the subsequent declarations after Tbilisi focused on higher education institutions and encouraged universities not only to engage in environmental education, but in environmental research and the establishment of institutional practices of resource conservation, recycling, and waste reduction as well as environmentally sound operations. There is also a shift in wording of the principles to include environmental management, sustainable development, and economic development. All the policies without exception recognize the need for involvement of governments, NGO's, and the wider community in solving environmental problems. The policies cite the need for a better understanding of the inter-related physical, biological and social dangers facing planet Earth. Table 3 examines new millennium declarations and their implication for higher education. The latest declarations (Ubuntu and GHESP 2002) focus on teaching, research, education and sustainable development in higher educational institutions and only the Ubuntu declaration discusses it at the primary level (See table 3).

Table 3: Comparison of the principles in the Millenium Declarations of GHESP and Ubuntu

PRINCIPLE	GHESP	UBUNTU
Promote more effective implementation strategies for the incorporation of sustainable development in universities		
Education for sustainable development in all schools primary, secondary and university level		
Interdisciplinary approaches to teaching and research		
Identify, share and disseminate widely effective strategies, models and good practices for promoting higher education for sustainable development (HESD)		
Make recommendations on HESD in consultation with key stakeholders from the North and South, business, governments, UN bodies and NGOs'		
Form partnerships with NGOs' working closely with the UN system to develop and implement a joint action plan addressed to achieve common goals		
Focus on science and technology education for sustainable development		
Openly endorsed the Earth charter		
Intergrates natural, social and human factor		
Endorses the Lüneburg declaration		
Focus on teaching profession		

The key difference between the two is that GHESP is totally focused on sustainable development at university level and partnerships with government and non governmental organizations as well as states, whilst Ubuntu focuses on learners from primary through to university and teachers who bring about the learning process. The Ubuntu declaration has as its focus science and technology in education whilst all the other declarations refer to education in general and not specifically to science. The Ubuntu declaration builds on the Lünenburg declaration but places a greater global emphasis on education for sustainability with the strengthening of science and technology education to achieve this. The similarities between the two (Ubuntu and GHESP) and the other declarations is the reference to education in general and the endorsement of the Lüneburg declaration. These declarations reiterate what has been stressed by the earlier ones but with the focus strictly on education. GHESP discusses partnerships known as Type 1 and Type II. Type I partnerships involve partnerships with NGOs and businesses and the outcomes are the Political Declaration whilst Type II partnerships are in relation to higher education for sustainability with action plans to be followed.

## 2.3 COMPARATIVE ANALYSIS: NON-SOUTH AFRICAN TERTIARY INSTITUTIONS

A study of 22 environmental statements from other tertiary institutions in other countries from around the world identified from (the sustainable campus policy bank 2004). The core areas where most tertiary institutes focused their environmental objectives for institutional practice are outlined in this section.

Most of the university policies have clearly defined and detailed the environmental problems facing their institutions. Almost all the tertiary institutions' list policy objectives except Lakeland College in Canada but many are silent on implementation strategies. The 22 universities are listed in the table below. The universities that stated their implementation strategy in their policy statement have been identified in Table 4.

Table 4: Tertiary institutes from other countries with Policy statements which were analyzed.

UNIVERSITY	Country	Implementation Strategy identified in policy
Manchester	UK	yes
Liverpool John Moores	UK	yes
Edinburgh	UK	nil
Sunderland	UK	nil
Central Lancashire	UK	yes
Greenwich	UK	nil
Northumbria at Newcastle	UK	yes
Wales, Swansea	UK	nil
Oxford Brookes	UK	nil
Douglas College	Canada	nil
Lakeland	Canada	nil
British Columbia	Canada	yes
Northern Alberta Inst.	Canada	nil
Dalhousie	Canada	nil
Toronto	Canada	yes
George Washington	USA	nil
Brown	USA	nil
California State	USA	nil
Brevard Community Coll.	USA	nil
Lund	Sweden	nil
Flinders	Australia	nil
Massey	New Zealand	yes

The analysis of these 22 universities identified the following as the main areas of environmental focus:

- Education: under education 16 universities have stated in the policy the integration of environmental courses into the curriculum and environmental issues into specific courses in order to train students for careers in the environmental fields. However it is not clear if it has been done or is an intention in the policy statement. Another area in education is the training of university staff and communities in environmental awareness programs in order to pursue their work in an environmentally responsible way. This area was found in all the 22 policies.
- Students and academics are encouraged to research into all aspects of the environment across disciplines and on sustainable practices. This statement was found in 16 of the policy statements.
- Operations: all the 22 policy statement contained statements on ecosystem or natural environment protection. The objectives were focused on minimizing negative impact of the universities activities on the environment.
- Hazardous waste: this included waste management by reducing the volume of waste or by introducing more efficient operations. Emissions into land, water and air should be reduced or prevented to reduce pollution. All 22 policy statements referred to this. Targeting of noise pollution in order to reduce it. This statement was found in only two policy statements. Some universities like Oxford Brookes specifically targets recycling waste with university involvement and responsibility.
- Purchasing policy: 19 universities intended to influence the manufacturing and distribution practices of the suppliers of goods and services to their respective university. They also intended wherever possible to purchase environmentally friendly products and seek alternatives to detrimental products. Some e.g.

Northumbria, intended to purchase only goods produced with respect for the environment.

- Energy: All the 22 policies listed reduction in consumption, long term strategies to conserve and reduce energy usage and monitoring of energy use. Brown University has a strong focus on mainly energy, heat and lighting conservation. However there is nothing on waste and education in its policy.
- Water: 21 of the policies emphasized on reduction of consumption. Flinders, in Australia is the only policy which stated that it had initiated a program of catchment management and weed control in order to harvest more water.
- Transport: the reduction of fossil fuel usage and review of the use of vehicles on university business as well as private use of vehicles was stated by 18 of the policy statements.
- Infrastructure and aesthetics: mention was made by 15 universities of building environmentally friendly buildings which use less energy in new buildings and old buildings when renovating. Brown university went further by stating that the choice of architects, engineers and consultants would even be based on those who were environmentally friendly.
- Environmental accountability: George Washington University was the only university which stressed environmental accountability involving all the members of staff as a principle. The administrators did not state any implementation strategies; however they intended to develop more specific, objective standards and metrics. In terms of the broad overarching goals that had been established, and indicators which assess both subjective and objective performance were to be developed. Other policies made mention of environmental accountability but not as one of the main principles.

The universities identified below had other interesting principles in addition to the common principles discussed earlier.

- The University of Greenwich had linkages with their Local Agenda 21 in the East Thames region and together with the Universities of Edinburgh, Flinders, and Toronto, which had the development of wildlife and biodiversity conservation as an objective in their policy statement.
- Flinders university also lists phasing out ozone depleting substances.
- British Columbia university is very strong on compliance with environmental legislation and legal issues. There is a system for reporting of non compliance to environmental targets and written definitions of terminologies used in the policy to make it clear to everyone.
- Oxford Brookes university and Massey university focused on three key areas which were education, operation and communication.
- The University of Manchester is also strong on implementation strategies and even goes as far as giving an 11 point practical strategy to address the environmental issues in the home and office situation.
- Brown University was business based. It was clearly stated in the policy that they were expecting returns on their investment in the environment which should be greater than the current borrowing rate. They also stated that investment in resource conservation was subject to capital availability.

Six policies stated the implementation of environmental audits, the hiring of a person(s) responsible for the operation of the environmental management systems, the evaluation

of the environmental managements system by feedback in the way of quarterly and annual reports and clear delineation of employee responsibilities which are very important when implementing a policy.

### 2.3.1 ENVIRONMENTAL POLICIES OF SELECTED NON-SOUTH AFRICAN UNIVERSITIES

In the desk top analysis of the twenty two international environmental tertiary education policies, outlined above, the environmental policies of four institutions from different countries were selected for more in-depth analysis. The foreign universities selected were: (i) Flinders University in Australia, (ii) University of Toronto in Canada, (iii) University of Manchester in the United Kingdom and (iv) Massey University in New Zealand. The criteria for selecting the universities were based on the fact that these policies had implementation or action strategies included in their document with the exception of Flinders University's document as well as other environmental issues not found in the other policies (See Table 4 and section 2.3).

The principles found in these policy statements were compared to a summary of the key principles in the international environmental policies and international tertiary environmental policies (see Table 5). Subsequently a detailed comparison is made of the common environmental principles in these environmental policies (see Table 5). The contents of the four selected documents when compared to the international ones illustrated that the common themes running through all the policies are:

- environmental education and research in curriculum,
- minimizing waste by reusing and recycling, involving the reduction of the quantities of energy, water and paper usage,
- Reduction in emissions of pollutants into air, water and land,
- All the policies contained transport as a principle and this was linked with the reduction in the use of fossil fuels,

- Purchasing principle for the universities is linked to environmental friendliness of the products and in some cases of the suppliers,
- All the policies cited environmental criteria in all plans and designs for new buildings and renovations but one specifically mentioned that the choice of architects, engineers and consultants would be based on expertise in resource conservation designs,
- Wildlife value and biological diversity got a mention in only Flinders and Toronto universities,

These four policies, all non South African universities but from the Sustainable Policy Bank (2004) when compared to the international tertiary policies were mainly focused on institutional operations principle.

Flinders University in Australia had a principle on water catchment management, weed control and revegetation. Massey is strong on implementation strategies and is very comprehensive as to the actions it intends taking as well as the list of international environmental declarations that had been used to write up the policy. Manchester's communication processes were clearly stated with a list of people to contact in the event of queries. It also has practical pointers on ways to help the environment at home and offices in a simple point form which is easy to implement. Toronto had odour and noise pollution and the use of chemicals with special reference to cleaning agents, pesticides and herbicides. The policy had been made available to service providers and contractors in order to provide environmentally friendly services.

Table 5: Comparison of selected non-South African university environmental policies with the key principles of international environmental policies.

PRINCIPLE	TO	FL	MA	MY
Mission/vision/beliefs/preamble stated				
Coordination with other organizational principles				
Compliance with relevant environmental regulations and laws				
Human beings at the centre of the sustainability concern and recognition of the intrinsic value of all living things				
Monitoring and reviewing				
Development that meets the needs of the present and future generations				
Environmental protection as an integral part of development				
Poverty eradication as a requirement				
Reduction and elimination of unsustainable patterns of production and consumption and overcome the malpractices of resource utilization				
Exchange of scientific and technological knowledge and diffusion and transfer of new and innovative technology				
Participation of citizens in environmental issues such as access to information on environmental hazards				
Environmental impact assessment shall be undertaken for proposed activities that are likely to have a significant impact on the environment				
The precautionary approach as the best method of ecological protection and when knowledge is limited				
Special reference to women and youth and their role in environmental sustainability				
Role of the indigenous people in environmental management				
The value and necessity of cooperation in the prevention and solving of environmental problems				
Raise public, foundations, governmental, industry and university awareness of environmental sustainability issues				
Encourage universities to engage in education, research, policy formulation, and information exchange on the environment and development issues				
Better understanding by the society of the interrelated physical, biological and social dangers facing the planet earth				
Programmes to develop the capacity of universities to teach environmental literacy to students and public				
Establishment of institutional ecology policies and practices of resource conservation, recycling, waste reduction and environmentally sound operations				
Involvement of government and industry to support interdisciplinary research, education, policy formation and information exchange in environmental sustainability. Expand work with communities and NGO's to find solutions to environmental problems				
Convene with environmental practitioners to develop curricula, research initiatives and operation systems and out reach activities to support environmental sustainability				
Work with national and international organizations to promote a worldwide university effort towards a sustainable future				
Education for all men and women in order to empower them throughout life				
Education for teachers should be orientated towards sustainable development and foster environmental attitudes, skills and behavior patterns and ethical responsibility				
Environmental education should consider the environment in its totality				
Environmental education should begin at preschool level through to tertiary level and from formal to informal				
Environmental education should be interdisciplinary				

### 2.3.1.1 KEY SIMILARITIES

All the four policies had six common principles (See table 5). These were:

- Mission statements and/or stated preamble,
- Human beings at the centre of their sustainability concern and the recognition of the intrinsic value of all living things,
- Monitoring and reviewing of environmental operations,
- Environmental protection as an integral part of development,
- Reduction and elimination of unsustainable patterns of production and consumption and overcome the malpractices of resource utilization, and
- Establishment of institutional ecology policies and practices of conservation, recycling, waste reduction and environmentally sound operations.

Flinders and Massey were the two universities that dealt with compliance with relevant environmental regulations and laws. Manchester university and Massey university also had similarities in the principles of the role of indigenous people in environmental management, and in raising the public, foundations, governmental, industry and university awareness of environmental sustainability issues.

### 2.3.1.2 KEY DIFFERENCES

The main difference between the policies lies in the principles of education. Massey university has three more principles on environmental education, stressing the interdisciplinary nature, of environmental education and environmental education in its totality right from preschool to tertiary level. This educational part is in line with the focus of the Tbilisi declaration. There is also a shift in language to a sustainable future which illustrates a closer relationship to the Talloires and Swansea declarations.

Altogether there were ten international principles not used as stand alone principles in the universities environmental policies. All the global environmental policies contain as

principles development that meets the needs of the present and future generation, poverty eradication as a requirement for sustainability, participation of citizens in environmental issues such as access to information on environmental hazards, the precautionary approach as the best method of ecological protection when knowledge is limited and gender with special reference to women and youth. However none of the selected non-South African universities have set these as principles, although Flinders university makes mention indirectly of development that meets the needs of the present and future generation by defining its goal of ecological sustainable development as development that improves the quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. Although the exchange of scientific and technological knowledge, involvement of government and industry to support interdisciplinary research, expanding work with communities to find solutions to environmental problems are not stand alone principles of the four university policies.

With the exception of Massey university the principle on coordination with other organizational principles is lacking in the other university policies. Out of a total of 29 environmental principles, Massey had the highest with seventeen principles in common with the international standard whilst Toronto had the least of six.

## 2.4 COMPARATIVE ANALYSIS OF ENVIRONMENTAL PRINCIPLES IN SOUTH AFRICAN UNIVERSITIES

The following South Africa universities were the tertiary institutions which either replied to the survey or whose environmental policy was found on their website, namely (i) University of Port Elizabeth, now known as Nelson Mandela Metropolitan University (NMMU), (ii) Rhodes University (RU), (iii) University of Kwazulu Natal (UKZN) and (iv) University of Cape Town (UCT).

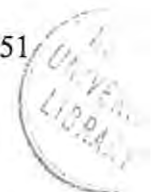
NMMU's environmental policy is a short paragraph with three broad premises followed by fifteen specific principles (see table 6). It refers to a holistic view of the environment and sustainable utilization of the natural resource. It also has an environmental

management system in accordance with ISO 14001. The university's environmental policy had been reviewed and was merged with health and safety policy to form one policy (see table 6).

All the South African universities have environmental education, research, and information exchange as well as teaching environmental literacy to students and local communities. Furthermore, the universities have established institutional ecology policies and practices of resource conservation, recycling, and waste reduction as well as environmentally sound operations and have committed themselves to the reduction and elimination of unsustainable patterns of production and consumption and overcome the malpractices of resource utilization. All policies also stated environmental protection as an integral part of development. Another important fact is that some universities indicated that they were signatories to the Talloires declaration. These were Rhodes and Cape Town. The University of Witwaterstrand is a signatory to the declaration, yet has no policy.

Table 6: Comparison of the environmental policies of four South African Universities with the key principles of international environmental policies.

PRINCIPLE	RU	NM MU	UCT	UK Z
Mission/vision/beliefs/preamble stated				
Coordination with other organizational principles				
Compliance with relevant environmental regulations and laws				
Human beings at the centre of the sustainability concern and recognition of the intrinsic value of all living things				
Monitoring and reviewing				
Development that meets the needs of the present and future generations				
Environmental protection as an integral part of development				
Poverty eradication as a requirement				
Reduction and elimination of unsustainable patterns of production and consumption and overcome the malpractices of resource utilization				
Exchange of scientific and technological knowledge and diffusion and transfer of new and innovative technology				
Participation of citizens in environmental issues such as access to information on environmental hazards				
Environmental impact assessment shall be undertaken for proposed activities that are likely to have a significant impact on the environment				
The precautionary approach as the best method of ecological protection and when knowledge is limited				



Gender- special reference to women and youth and their role in environmental sustainability				
Role of the indigenous people in environmental management				
The value and necessity of cooperation in the prevention and solving of environmental problems				
Raise public, foundations, governmental, industry and university awareness of environmental sustainability issues				
Encourage universities to engage in education, research, policy formulation, and information exchange on the environment and development issues				
Better understanding by the society of the interrelated physical, biological and social dangers facing the planet earth				
Programmes to develop the capacity of universities to teach environmental literacy to students and public				
Establishment of institutional ecology policies and practices of resource conservation, recycling, waste reduction and environmentally sound operations		ISO 14001		
Involvement of government and industry to support interdisciplinary research, education, policy formation and information exchange in environmental sustainability. Expand work with communities and NGO's to find solutions to environmental problems				
Convene with environmental practitioners to develop curricula, research initiatives and operation systems and out reach activities to support environmental sustainability				
Work with national and international organizations to promote a worldwide university effort towards a sustainable future				
Education for all men and women in order to empower them throughout life				
Education for teachers should be orientated towards sustainable development and foster environmental attitudes, skills and behavior patterns and ethical responsibility				
Environmental education should consider the environment in its totality				
Environmental education should begin at preschool level through to tertiary level and from formal to informal				
Environmental education should be interdisciplinary				

#### 2.4.1 COMMON ENVIRONMENTAL PRINCIPLES CITED BY THE FOUR NON-SOUTH AFRICAN UNIVERSITIES AND THE FOUR SOUTH AFRICAN UNIVERSITIES

The four non-South African universities are compared with the South Africa Universities which possess an environmental policy.

The environmental principles common to the eight universities have the principles involving the optimal management of natural resources, conservation, energy efficiency, staff and general environmental literacy for students and staff (table 6 and 7). With the exception of Toronto university, the universities had specific environmental courses in

the curricula. All four South African universities studied have conservation and respect for biodiversity (flora and fauna) as a listed principle whilst only Flinders university mentions it. Thirty-one environmental principles are listed in the table 7 and the number of environmental principles cited by each university policy is summarized in brackets from the policy with the largest number of principles to the one with the least. Massey (18), UCT (17), UKZN (17), Flinders (12), Manchester (13), Rhodes (12), Toronto (4), NMMU (12). Of the eight universities studied four had less than 50% of the environmental principles in their policy and of these four only one was a South African university. The South African universities list of environmental issues compares favorably with its international counterparts on the number of principles touched upon. Gigliotti (1994) notes that public concern for the environment in the 1970's was confined largely to pollution and did not embrace significant issues such as solid waste management, noise control, land management and preservation of open spaces and resources. Environmental concerns have however, broadened to include all this and more because all environmental principles are of equal importance. Of the eight universities studied, four listed environmental audits of waste monitoring, and all were South African except one non-South African university (see table 7).

Under environmental education and training, seven universities except Flinders have as a principle environmental literacy to be taught to staff and students. This is important because many of the environmental programs on campuses are driven by students and staff and their environmental attitudes will determine the success of any campus initiative as they drive environmental actions on campuses (Schumpert 1998, Blythe and Calder 1999, Mason *et al.* 2003).

Another dimension to environmental matters is that although the environmental principles may be generalized, yet they are highly interrelated in that actions taken to address one area are likely to affect others (Gigliotti, 1994), for example, although conservation may not be a principle, yet proper management of gardens aesthetically may result in improved fauna as asserted by Gigliotti (1994).

## 2.4.2 ENVIRONMENTAL PRINCIPLES CITED BY LESS THAN HALF OF THE UNIVERSITIES

Massey university and UKZN are the only two with land management and research programmes aimed at resolution of environmental problems written in their policy document. They are also the only two with mission statements whilst the other institutions started their policies with preambles acknowledging the necessity for the environmental policy.

Flinders university is the only policy with weed control and revegetation and water catchment as a principle. A water catchment principle should be of importance for South Africa universities because South Africa is an arid country with rainfall less than the world average which is very unevenly distributed across the country. There is just over 1200 kl of fresh water per year for each person at the population estimation of around 42 million, thus South Africa is on the threshold of the internationally used definition of water stress (White Paper on Water Policy 1997).

Toronto is the only university which lists minimizing noise and odour pollution. This issue does not seem to be considered important as many policies do not have it, but with the knowledge that noise pollution causes stress, it is important for health reasons. Furthermore since the scope of environmental concerns has broadened it is an issue that needs to be taken seriously. Under buildings and infrastructure, the universities advocate the reduction of adverse environmental impacts when building or renovating.

Thus, the environmental principles named have been compared in detail between the universities below in table 7.

Table 7: Comparison of specific environmental issues or principles between South African Universities and non-South African Universities

PRINCIPLES OF ACTION	Non-South African				South African			
	MY	FL	TO	MA	RU	UCT	NA	NM MU
Mission statement								
<b>ENVIRONMENTAL EDUCATION AND TRAINING</b>								
• Staff environmental literacy								
• Students environmental literacy								
• Environmental literacy of the local community								
• (Curricula)Specific environmental courses								
• Environmental courses incorporated into all curricula in different faculties (inter-disciplinarily)								
• Research programmes aimed at resolution of environmental problems and sustainability at undergraduate and post graduate levels								
<b>SUSTAINABLE NATURAL RESOURCE MANAGEMENT</b>								
• Manage natural resources responsibly								ISO 14001
• Institution of environmental management systems								
<b>ENERGY</b>								
• Energy reduction either through less use of non renewable energy sources and or use of energy efficiency materials for new buildings and renovations and monitoring								
<b>WATER</b>								
• Reducing water consumption								
• Water catchment management								
<b>LAND</b>								
• Land management								
• Aesthetics/landscaping								
<b>CONSERVATION</b>								

• Conservation/Respect for biodiversity(flora and fauna)									
• Weed control and revegetation									
<b>WASTE GENERATION</b>									
• Paper and paper products-reduction, reuse recycle									
• General waste reduction									
• Minimizing polluting and hazardous effluent and emissions into air, land and water									
• Minimize noise and odour pollution									
• Environmental audits of waste-monitoring and managing resources									
<b>PURCHASING</b>									
• Environmentally responsible purchasing procedures in terms of raw materials, manufacture, distribution, use and disposal									
<b>TRANSPORT</b>									
• Environmentally friendly means of transport mode for both staff and students e.g. cycling, walking, pool									
• University owned vehicles should be maintained according to best practice for pollution and emission reduction									
• Reviewing of the use of university vehicles on university business by proper monitoring									
<b>BUILDINGS &amp; INFRASTRUCTURE</b>									
• Reduce adverse environmental impacts when building or renovating									
• Architectural congruence with the natural environment									
<b>COMMUNICATION</b>									
• Staff awareness to keep all staff informed of environmental issues locally and globally and involved in university initiatives									
• To inform the local community and raise awareness and involvement in environmental issues									

• Partnerships with concerned sectors in order to implement coordinated actions on solving environmental issues								
• Dissemination of the results of environmental research								
• Liaise with other health and safety or environmental legislation policy								
TOTALS	18	12	4	13	12	17	17	12

The key areas of commonality to all these statements were in energy reduction, recycling of paper and environmental education and communication for staff and students. The key omissions were in the reduction of fossil fuel use through effective transportation means and dissemination of results of environmental research. These principle is found in the Rio declaration and other international declarations relevant to education but are absent from the universities policies. Also environmental courses have not been incorporated into all curricula in different faculties so the interdisciplinary area of environmental education is not being actively pursued. References to gender based principles are also absent from the environmental policy statements of the universities although these are clearly stated in Rio and the Earth Charter. With the exception of New Zealand which refers to indigenous people which language is comparable to the international declarations, all others make no reference to indigenous communities. Although reference is made to local communities this does not necessarily refer to the indigenous people of the area in which the university is situated. There is also no mention made of poverty alleviation which is another important point in some of the international declarations.

In conclusion, there is a growing acceptance of the sustainable development concept, which may now be observed in the management and activities of an increasing number of universities (Mason *et al* 2003). At the policy level, some tertiary institutions have promulgated and committed their universities to implementation processes. These policies content addresses academic programs in some institutions and the implementation of practical day to day operational activities of the university as a community. Although, certain environmental issues may not be present in the policy, Gigliotti (1994) has shown that an action taken on one issue may have beneficial effect

on other environmental principle not listed. In the next chapter results are presented of how South African universities are implementing their environmental policies.

## CHAPTER 3

### SOUTH AFRICAN UNIVERSITIES WITH POLICIES AND THEIR IMPLEMENTATION STRATEGIES

#### 3.1 THE ENVIRONMENTAL POLICY PROCESS

A survey of all South African Tertiary Institutions, (Universities and Technikons) was undertaken to determine whether they had documented environmental policies in order to subsequently determine their implementation. The surveys were carried out during the period when these Institutions were in the process of transformation through mergers. The surveys were undertaken thrice; twice by mail directly to the departments and once by E-mail. Not all the universities responded to indicate whether they had an environmental policy or not. All the universities or technikons which responded either positively or negatively are indicated in table 8. Of the four universities that responded that they had an environmental policy, two were in a process of merging with other tertiary institutions. These two universities were University of Port Elizabeth now merged with Vista and Port Elizabeth Technikon to form Nelson Mandela Metropolitan University (NMMU) and University of Natal, now merged with University of Durban Westville and Edgewood Teachers Training College to form University of Kwazulu-Natal (UKZN). The four universities that responded in the affirmative were then analyzed further on the implementation of their environmental policy and the constraints they faced. This was done through physical visits to the university and personal interviews of people involved in the implementation process (see Appendix 1 for the people interviewed).

Table 8: Replies by Universities and Technikons in South Africa with or without written statements of Environmental Policy

UNIVERSITY	POLICY	TECHNIKONS	POLICY
Cape Town	Yes		
Durban Westville (now UKZN)	No	Border	No
Free State	No	Cape	No
Fort Hare	No	Eastern Cape	No
Natal	Yes	Free state	No
North	No	Mangosuthu	No
North West	No	M. L. Sultan	No
Port Elizabeth (now NMMU)	Yes	Natal	No
Potchefstrom	No	North West	No
Pretoria	No	Northern Gauteng	No
Rands Afrikaans (now University of Johannesburg)	No	Pennisula	No
Rhodes	Yes	Port Elizabeth	No
South Africa	No	Pretoria	No
Stellenbosch	No	South Africa	No
Transkei	No	Vaal Triangle	No
Venda	No	Witwaterstrand	No
Western Cape	No		
Witwaterstrand	No		
Zululand	No		

### 3.2 UNIVERSITY OF CAPE TOWN (UCT)

UCT extends over a number of different campuses in urban and suburban areas. It is made up of the Main campus, Medical school campus, Hiddingh campus, Graduate School of Business, and Residences. These campuses are non- continuous.

The administrators of the university realized that there was a need for an environmental policy to implement sustainable initiatives and to show that it was environmentally sensitive. This was as a result of the university being a signatory to the Talloires Declaration in 1990 and due to the core values and beliefs of the institution. Accordingly, in 2002 an environmental management working group chaired by Mr. J. Critien was

formed to formulate a policy and oversee its implementation. The working group consisted of the following interested groups: students, academic staff, administration staff, and senior management, academics from non governmental organizations, ratepayers and heritage and conservation groups. The process of the selection of representatives from these groups to be part of the committee involved people volunteering themselves, co-option and others outsourced from service providers to the university. This committee then drove the policy formulation process until its adoption at the end of 2003. In formulating the policy, local environmental policies from the city, such as the Waterfront and British Petroleum were studied and the appropriate information from all these policies were adapted to suit the University of Cape Town's environmental concerns. The duration of the policy process from its inception to completion until it became operational took one year. The policy was then approved by Council and formally adopted towards the end of 2003. An environmental review detailing environmental problems in certain departments was undertaken in 2003 after the policy had been adopted. The policy has not been reviewed since its inception. The policy is developed in further detail by a suite of other university policies for specific sectors such as waste management, transport and spatial planning. These policies are supportive, and not contradictory, to the environmental policy.

One of the key factors that aided the process of policy formulation and implementation was the presence of active environmentalists in the committee. Furthermore, different portions of the policy were assigned to individual academics within their area of expertise that were willing to refine them before the whole policy was consolidated. The hurdles encountered in the process revolved around time. Securing time commitment from the academics in addition to their other activities was difficult. Secondly, dispassionate people on the committee needed to be changed (Critien, pers.comm. 2005).

### 3.3 UNIVERSITY OF KWAZULU- NATAL (UKZN)

The University of Kwazulu-Natal's policy formulation process must be understood in the context of their historical background as theirs was a more politicized process. The

University of Kwazulu-Natal is made up of different campuses. These are the Main campus or Howard College campus, Pietermaritzburg campus, Killie Campbell, Medical school, Durban Westville campus and Edgewood campus. It must be noted that this university is in the process of a merger due to the new South African educational transformation process of streamlining Universities and Technikons which has warranted the merging of some of the institutions of higher learning.

Prior to the merger, University of Durban Westville (UDW) was a historically black university and Edgewood a teachers' training college, whilst Howard college campus, Pietermaritzburg campus and others formed the University of Natal. UKZN policy formulation process involved a competitive edge between the University of Natal and University of Durban Westville due to the following factors. UDW, a historically black university with a history of student unrest and destruction of campuses whenever there was rioting was registered in 1994 to become a conservancy. This was championed by Dr. Helen Watson, who was involved in conservancy associations. With the political changes of the new South Africa, the then vice chancellor Professor Balantulu was approached with the view of UDW becoming a conservancy in order for students to view their campus in a more positive light. UDW was proclaimed a conservancy and this was adopted in 1995. This resulted in the University of Natal a historically white campus becoming uncomfortable and so also aspired to attain conservancy status. Professor Preston-White, Mrs Oel and a group of people from the departments of Geography, Biology and Geology drove the process for Howard College, Killie Campbell, and the Medical school to be registered as a conservancy. With the merger in 2004, Edgewood was also proclaimed a conservancy. Pietermaritzburg is not yet a conservancy. This group of enthusiastic people drove the policy and conservancy process until it was launched in 1996. Howard College formulated a policy and a management plan which was initiated in 1994 and adopted in 1996. The groups of enthusiastic and active people being referred to are the environmentally conscious people from various departments who have been the key role players from 1996 up to now. They formed the environmental committee which meets four times a year. The key factors that drove this policy statement were individual efforts and collective efforts by people keenly interested in

environmental issues. It must be noted that these people were already committed to other environmentally friendly societies. Thus, they formed a strong cohesion to influence the policy process. The policy is based on international thinking about the environment but not on a specific policy or charter. No environmental review or audit detailing environmental problems has or was ever done either before or after the policy was written. However, from the policy a management plan was developed. The policy process took one year to complete in both UDW (1994-1995) and Natal (1995-1996). The policy was approved by Senate and the conservancies have been registered with Natal Parks Board and Kwazulu Natal conservancy association. The policy has been reviewed once after the merger (Watson, pers. Comm. 2005).

### 3.4 NELSON MANDELA METROPOLITAN UNIVERSITY (NMMU)

The University of Port Elizabeth (UPE) is in the process of a merger and is now referred to as the Nelson Mandela Metropolitan University (NMMU). Before the merger, it was called the University of Port Elizabeth (UPE) and was made up of the North and South campuses. The merger will be completed by the end of 2005, and will incorporate Port Elizabeth Technikon and the Vista campus (Port Elizabeth) to form Nelson Mandela Metropolitan University (NMMU). Of these three institutions, UPE had an environmental policy and an environmental management system running for some environmental issues. The University of Port Elizabeth's policy process was initiated by some academic members of staff from the Biological and Environmental Sciences Departments who made the proposal and initiated it with the support of the then Vice Chancellor, Professor Jan Kirsten. The group that initiated the policy process included academic staff, administration staff, senior management and other workers like horticulturists. The driving force behind this initiative was the realization by some of the management staff that environmental management cannot be done in between things. Pressure was also mounting as environmental issues became more pressing as it was realized that there was an urgent need to improve the environment as any environmental damage would affect the prestige of the university negatively. It was felt that if the image of the university is seen as environmentally conscious and caring, it would enhance its status. The process

was started from 1996 through to 1997. The initial policy was only an environmental policy. Subsequently the focus of the environmental policy has been broadened to incorporate occupational health and safety issues. After the policy was developed a safety, health and environmental management committee was formed to oversee the implementation process. This committee meets every three months and reports directly to the Vice Chancellor. The groups that were identified to join the committee were representatives selected from the whole university. The factors that influenced the policy were environmental threats and administrators who felt that there was a moral obligation towards the environment, together with people from the environmental sciences driving for an environmental policy. The policy is not based on any international charter but on the University's unique conditions and on ISO 14001 standards. ISO 140001 standards are not certified as it involves finances and certification is done on a half yearly basis of which the university feels that it cannot afford. The policy was approved by top management of the university council in 1998. Subsequently the policy has been reviewed three times already to incorporate more health and safety issues. No formal environmental review or auditing has been done for the whole university however an EIA was done for UPE campus technical services, sport and Biological sciences department.

The factors that aided the policy process varied. One of the key factors was the owning of the Nature conservancy. There was a need for a policy to regulate the management and use of the Conservancy. Apart from the administrators being obliged to manage the Nature conservation, there was a sense of urgency because the administrators realized that they were liable for safety issues on campus and therefore were prepared to have the policy to deal with environmental disasters. The factor that posed as a hurdle involved difficulty in obtaining personnel that would get involved. The lessons learned are that environmental management health and safety need to be together for the management to be holistic.

### 3.5 RHODES UNIVERSITY (RU)

Rhodes University, like Cape Town, has no merger dilemma of incorporating other campuses into their environment. RU's environmental policy was initiated by the Vice Chancellor (VC) after signing the Talloires declaration. He invited the environmental education unit to lead a participatory policy development process. Dr. Eureka Janse Van Rensburg, who was then the chair of the Murray and Roberts Environmental Education unit, responded to the VC's request and invited interested academics, students, NGO's and the community to the first meeting by forming a network. Thereafter, role players for the policy formulation kept changing, especially from the community. This resulted in the policy formulation process being a long drawn out one. This must be put in the context that the university had a strong empathy for environmental issues. The policy formulation process was initiated on March 18, 1997 and took eighteen months to be completed. The initial meeting had no senior management present. However, senior management were represented in subsequent meetings. The policy formulation group comprised of representatives from the students body, academic staff, administration staff, senior management, workers and the community. These groups were identified to join the process through advertisements in the local Grahamstown newspapers as well as canvassing interested people who could provide valuable inputs. The policy was approved by Senate and the University council and adopted on the 17 of September 1998. Several factors influenced and guided the university's policy statement formulation process. The first was the fact that the Vice Chancellor himself was involved and the second that Talloires declaration had been signed. Also individual champions who advocated for environmental issues to be considered were involved. Another factor was that the Vice Principal joining the formulation group gave impetus as he was a member of the top management. The policy is based on the international charter, the Talloires declaration and was adapted to make it relevant to Rhodes' situation. An environmental review of certain factors was undertaken once, after the policy process commenced. The policy is currently under review this year (2005), specifically because the university has a policy to review all policies on a regular basis. It is however, the first time it is being reviewed. The lessons learned from the process are that the process needs to reflect the

current needs of environmental problems as environmental issues keep changing all the time so there is a need to look at the environment from a holistic point of view (Hazell, pers. Comm.. 2005).

### 3.6. IMPLEMENTATION OF ENVIRONMENTAL POLICY PRINCIPLES

After the adoption of an environmental policy, the next stage is its implementation or how the policy is made operational (Wilson 2000). The key environmental policy principles that this study was limited to were issues or principles that were common to most international and local environmental policy statements (see table 5 and table 7). These were the following: water, energy, solid waste (paper and trash), hazardous waste, biodiversity, land management, transport, renovation and refurbishment, design of new buildings in an environmentally friendly manner, procurement and refurbishment of capital assets and consumables and environmental education literacy to staff and students.

Of the four South African universities studied, none had targets and time frames within which environmental issues would be addressed (See Table 9). However there were measures and strategies aimed at reducing water usage and some form of monitoring systems in place. As there are no targets set, it is difficult to gauge policy failure or success. Handler *et al.* (2003) have identified the following factors in table 9 as factors that are needed to be in place for an effective implementation of an environmental policy.

Table 9: Factors needed to be in place for effective implementation of an environmental policy.

Key

	No
	Yes

FACTORS NEEDED	UCT	UKZN	NMMU	RU
Targets and objectives set for environmental issues				
Time frames set				
Environmental manager fully employed for policy implementation				

Environmental coordinator who is seeing to the implementation as an add to his job description				
Specific budget set for implementation of environmental policy				
Initial environmental review done for the whole of university				
Environmental review done in some departments or on a particular environmental issue				
Environmental management system in place				
Environmental audit				
Based on ISO 14000 but no certification				

### 3.6.1 WATER

UCT was the only institution that was able, in operational terms, to supply a water usage figure of 660 megalitres per month which had been reduced to 480 megalitres as a result of water saving systems put in place for the year 2003. However in the same breadth it stated that water usage had increased which was contradictory. The reason for increase in water usage was ascribed to increase student numbers. All the other institutions cited a higher increase in the quantity of water usage and also ascribed it to an increase in student numbers. Strategies or measures that have been put in place in UCT to conserve water are the following: Toilets have been retrofitted with hold down flush mechanisms and urinals with manual flush systems in place of continuous flushing. As Cape Town experiences perennial water shortage, the university harvests water and has its own dam with a capacity of 50 million liters. The dam has been expanded in recent times and this has translated into a savings in monetary terms. There is also another dam which pumps water back into the big dam during periods of water shortages. This is utilized to extend the irrigation systems. Grey water is recycled off air conditioning plants. There is a central help desk for reporting water leakages and the response and repair time is six hours. All the four universities use their monthly account billing to track the kilolitres of water consumed monthly.

In UKZN, limits are put on the need to use water especially during periods of drought and in winter. Sprinkler systems are turned on and off from midnight to morning to save on evaporation and transpiration losses. During periods of drought, a borehole is used for

irrigation but this is discontinued once the drought is over. Press flush toilets were introduced to cut down on water consumption but problems were experienced in this regard as people did not know how to utilize the system and it caused problems as the use of disinfectants were not allowed with the system. The more successful system for the university was the utilization of a brick system in the cisterns which lowered the amount of water flushed down. As there is no quantifiable unit all that can be said is that it is the measure being used without problems. In the men's residences it was observed that there was higher water usage as they were taking long showers and huge baths and these male residences were urged to conserve water through posting of notices. Monitoring water usage involves the use of water meters as well as a surveillance system in the gardens and buildings which have sensor machines which detects faults and leakages. The accounts department also monitors and queries high accounts although not from a conservation point of view but from a financial cost aspect.

In NMMU, an environmental impact assessment of water usage was done after which control strategies were put in place to limit water utilization but with no measuring indicators. There are water saving devices in all the toilets such as the flush master water system which enables water to stop flowing once a push button is released. The water pressure in the showers at the residences has been lowered in order to save water as a lowered pressure means less enjoyment when showering and therefore less time spent in the showers and less energy usage. Another source is recycled water from the sewage plant known as Cape Receife. This recycled water is partly treated and utilized for the Summerstrand area. It is utilized in the sprinklers for the gardens between buildings and sports fields. This water is reclaimed and is non-portable. There is a dam which captures about 80 % of water run off in its area with a floating pump device which, as the seasons changes, triggers the pump and the sprinklers are then fed from the dam. There are three sources of water on the campus. These are portable water for daily use by students and staff, reclaimed sewerage water for the sports fields, and dam and borehole catchments which are pumped for the gardens. There is a system of reporting all leakages and broken pipelines via the intranet to have them fixed immediately by the maintenance unit. The university has a working relationship with the Working for Water Project which has a

base at the university from where it operates to remove alien vegetation. The wood generated is given to local communities surrounding the university for their energy needs. The reasons given for the inability to set targets on water usage but only on quality of water control measures includes the annual increase of student numbers, different needs for water usage by the diverse and cross cultural communities e.g. Muslims needing water due to religious rites, and self catering hostels where students do their own cooking and washing.

Measures to decrease water usage at Rhodes University (RU) involve all new buildings having low flush toilets to conserve water. Furthermore, water conservation nozzles have been fitted in showers in order to get fine showers which utilize less water. This is operating successfully in the female residences but in the male residences, the men tend to unscrew the fine shower nozzles to get more water. Hand wash basins with flow reducers have also been introduced in all new buildings. At RU, a GIS linked to the environmental management systems are being used to draw models to investigate the question of benchmarks on water usage. However, statistics of water usage is used for monitoring through consistent checking of water accounts for discrepancies on a monthly basis and whenever large differences are noted it is investigated immediately. In spite of all these measures there is an increase in consumption of water due to an increase in the number of students and staff.

### 3.6.2 ENERGY

An energy review was done at UCT and the largest consumers of electricity have been found to be the boilers for heating water and chillers for cooling water for air conditioning. There has been an upgrading where T5 energy-efficient light systems have been installed. External lighting systems are being replaced incrementally with new energy bulbs. The university has moved from individual geysers, gas and diesel into electric geysers (heat pumps) which are energy efficient. The building management systems centrally control the duty cycles of plant equipment (boilers, chillers and air conditioners) in selected buildings. The computer-based system identifies all large

consumption plants across the campuses and controls the switching on and off. During peak demand times certain energy consuming facilities are switched off. This allows the University to take advantage of opportunities for energy conservation. For example, air conditioning systems chill water during the night when general electricity demand is low. The chilled water is held in a reservoir for use during the day, thus peak electricity demand is lowered. Also the side product is cold air which is utilized in summer time by feeding it into the air conditioning units leading to less consumption of electricity by air conditioners. The Energy Research Institute (ERI) has been tasked by Eskom to investigate energy saving devices and is working closely with the University. The benchmark used to monitor electricity usage is consumption per student. It is difficult to set targets on usage because whilst the academic staff numbers are more or less constant, there are annual increases in students' population. Electricity monthly accounts are utilized to monitor consumption patterns.

UKZN has similar strategies to these used by UCT, in utilizing air chilling plants in air conditioners and during the night when peak demand is low has been adopted by Howard College campus only in order to keep the tariff low. Energy saving lights are utilized especially when refitting or refurbishing as is the case in the refitting of the Magkoba library in 2002. This resulted in cost savings which was in turn utilized on the Pietermaritzburg campus for heat pumps in the residences. Solar heating was installed in the residences in 1986. This was meant to supplement electricity usage. The temperature on the solar heaters was set such that if the heaters did not or could not maintain or reach the required temperature because of low solar radiation, the electricity would automatically switch on. Initially it was felt that it would not be successful because of the large cloud cover normally experienced in Durban. However the real setback to the project was that although it was expensive to install, it was more expensive to maintain especially in the early days of its installation. With the cutting edge in technology, it is cheaper now. Heaters allowed into the residences were one bar heaters which in turn created fire hazards. Students are monitored from slipping in unapproved heaters in an attempt to control usage. Hot water usage is a problem in the male residences where it was discovered that some men were showering for as long as 43 minutes per shower as a

sort of message. Notices were then put up urging conservation but this did not change attitudes in the consumers and ultimately the shower heads had to be changed. Subsequently, the shower heads were found to have been tampered with and the heads kept disappearing. This is an ongoing problem in the male residences. Monitoring of the energy accounts is on a monthly basis by observing the billing and wardens urging conservation in their halls of residences.

As already stated, none of the universities have targets and time frames for dealing with environmental issues and this applies to NMMU as well. Several strategies have however been put in place to reduce energy usage. Temperature levels have been reduced in all geysers, and lagging removed as it causes overheating. The use of low quality geysers results in ruptures more easily, thus use of low quality geysers is discouraged. In the residences, the amount of voltage pulled from plugs has been lowered. This is actually a deterrent measure because it takes longer for example to boil a cup of water in the appliance being utilized than before. The heaters in use have no open elements and are set at lower temperatures to minimize fire risk. Fluorescent light tubes are used as they consume less electricity. Monthly accounts are used to monitor abnormal increases.

All institutions are charged a premium, thus at RU when there is a peak demand the charge is more than 75% of the normal charge rate. There is therefore a computerized power management system in place. This computerized power management system also applies to UCT and UKZN. This shuts down on high consumers when there are power surges. This is focused on the boilers. Water heating is off during peak periods and is operated by time switches. Boilers and pipelines are lagged to reduce heat loss. The majority of the reticulation system on campus is recirculating hot water continuously all the time.

### 3.6.3 SOLID WASTE (PAPER AND TRASH)

UCT had a full audit of trash and there is a commitment to reduce waste by a target of 60% but with no timeframe period for implementation. UCT states that it is committed to

reducing the input of waste coming into the university but at the same time admits paper consumption is increasing. This is because the output from the university is known from recycling programs. Paper forms about 80% of solid waste and is common to all departments. Different disposal patterns are found. Some departments are involved in private or independent projects for the recycling of waste paper. Some departments separate wastes in their offices at source. Students are not yet involved in sorting at source. There is an offsite recycling section, the proceeds of which are used to pay salaries of the sorters. Different areas on the campus have been designated for different types of waste. Food waste is sold to a pig farm. Cans are also sorted for recycling. Sorting of paper has slowed down currently because of problems in the recycling industry and manipulations by some paper producers. Littering is generally widespread in certain areas where students congregate during leisure times.

In UKZN, interested people persuaded colleagues to participate in solid waste savings as large amounts of paper are utilized. The money that is generated is used for sports. Certain buildings have waste bins in different colors for recyclable and non recyclable materials. The constraint to this program is that staff and students change often and this leads to a lack of continuity and the program collapses. Another constraint to this recycling effort was the theft of recyclable materials from the bins by individuals to sell. This led to a loss of resource in terms of monetary gains derived from the recycling projects since the money raised is ultimately used for other environmental activities like tree labeling and the provision of benches in the gardens. Recycling at the medical school was more successful as recyclable waste collection was outsourced to a private company. The company collects waste throughout the Medical school campus and then sorts it. The company takes the recyclable waste whilst the non recyclable waste is given to the Durban municipality. Conflicts arose as the municipality realized the loss of income from not benefiting from the recyclable waste of the university and this was solved by allocating waste collection on different campuses to different companies. Initially the amount of waste was checked by volume. This has however been changed to weighing as the university saves on charges for disposal this way. With the merger, more waste is generated.

In NMMU, normal waste is collected by a local company. Paper waste is sold to a reclamation company. There is no recycling on campus. The university investigated the possibility of establishing a recycling project but it was shelved because it would have been on site and the fire risk would have been too high. However, there are gathering points where cleaners deposit waste paper. The money generated from this activity is put back into nature conservation. Solid waste is sorted by cleaners at the disposal sites to generate their own income for example from cans, wood, etc. The campus has been declared a glass free zone. What this implies is that for any sporting or entertainment event, no glass is allowed; this helps to avoid the temptation to use these as weapons to cause injuries during fights and assaults. The organic waste from the cafeteria is used for composting.

At RU, an estimate of about three truckloads of waste is collected daily by tipper trucks with the size of about 10-12 cubic meters. Kitchen waste is not included in the truckload estimate and it is collected by a pig farmer. Recycling was given to a private contractor but the project collapsed in 2004 and so currently paper and cards are not being recycled on campus. The collapse of the recycling can be attributed to various factors such as the lack of personnel to oversee the running of the process. There was also a purchasing consortium to collect recycled paper but that also failed. Another major factor is that of coordination as there was no staff tasked to follow up this process and monitor. There are paper pickers at the town waste site who sort and collect the paper. Presently 300-500 paper recycle bins have been placed at various points on campus to collect paper waste. The paper is weighed due to the large volume of paper that is utilized but shredded paper is not weighed. Shredded paper is supplied to undertakers to be used as beddings for coffins. The new recycle bins seem a success because a local company has shown an interest in glass recycling and is partly utilizing the paper.

### 3.6.4 HAZARDOUS WASTE

UCT generates hazardous waste in various departments and a specific person has been employed to oversee its disposal. Hazardous, toxic and radioactive waste is given to a private company paid for by the university. The company oversees the disposal of the waste in specific incinerators. There are specific processes and procedures for hazardous waste fall out. There is a monitoring system which involves a web page available on UCT site which gives stepwise instructions on how to counteract any form of hazardous waste. There are three areas for collection; the medical school, science and engineering and fine art. The departure point at the medical school is also a waste depot. A risk assessment on hazardous waste was conducted at the beginning of this year (2005) and all the old hazardous chemicals and materials were disposed of.

Hazardous waste disposal in UKZN medical school has also been contracted out to a specialist in the field of hazardous waste disposal. This contractor disposes of the waste in special containers. In Howard College, chemicals from the chemistry department are identified to find out what chemical it is and its level of toxicity before disposal. Radioactive wastes from other laboratories are contracted out as well. Normally, before disposal, it is advertised widely on campus and skilled technicians are used to identify the chemicals. One of the monitoring systems is that cleaners are not allowed to take chemicals except technicians. This system was a response to an emergency situation in the medical school when everybody in the building started choking due to improper handling of a chemical by a cleaner. Furthermore, occupational health and safety workers are obliged to produce reports on safety every six months.

In NMMU chemical substances, biological and medical wastes have all been contracted out to a private company which oversees the disposal. All fluorescent tubes are crushed in a crusher area and disposed of by the same company. There is a treatment plant below the chemistry building where water is monitored for pH balance for the odd chance of chemical going down the drain in order to treat it.

Rhodes University's hazardous waste is managed by two private companies. Toxic waste is incinerated or cast in block. The quantity is not known but estimates of R50 000-R60 000 of toxic waste are taken annually. Hazardous wastes have pre-designated areas and collection points on campus. Batteries have their collection points. Fluorescent tubes are crushed at the electrical store, filled and taken to the waste disposal site because of the mercury content.

### 3.6.5 BIODIVERSITY

Biodiversity on UCT campus is managed by an environmental management group which oversees aesthetics and landscaping. There is a forest at the upper end of the campus which has created a debate on replanting. The historians lobby group are arguing for stone pines to be planted which have been there but are exotic to the forest whilst the environmentalist argue for indigenous species. The national parks people on the other hand argue for the planting of certain indigenous species only. The campus has waterwise and fynbos gardens. There has been a change from exotic plants to indigenous fynbos. A tree inventory has been done through GIS showing the age, type, location and condition of every tree. There is a committee dealing with safety and risk factors around research on genetically modified species. This committee meets once every six months to monitor and control the research because of the huge risk factor. The upper campus is close to the Peninsula National Park which has wildlife that is utilized for research purposes. UCT has a programme of controlling aggressive invaders and alien species.

UKZN's biodiversity programme involves a change in planting policy from African indigenous to specifically Kwazulu Natal province indigenous. There is an ongoing programme of removal of alien species from the nature reserve. Mowing of grass in certain places such as the river banks and some pathways has been stopped to allow indigenous grass to grow. However, there are constraints when planting purely indigenous species as there is opposition from certain people who want exotic flowers for their beauty. Also in landscaping campuses sometimes other areas outside the boundaries of campuses are destroyed resulting in the loss of their indigenous flora and fauna and

soil properties. This was experienced when a few rocks were imported from the veld to beautify the campus. The university was called to view the site where the rocks were being taken from. The negative impact on the veld was so huge that the importation of the rocks was stopped immediately.

In NMMU, the bulk of the university has been declared a nature reserve and thus there are serious restrictions on any form of development. An Environmental Impact Assessment is therefore a prerequisite prior to any form of development. The nature reserve has 600 hectares fenced off with game and electric type of fencing. The vegetation type in the reserve is predominantly fynbos with Cape St. Francis mosaic thicket. There are a few endangered fynbos and *Gasteria* species. As there is a well established flora, there has been migration of animals into the reserve. The fauna include cape honey badger, blue duiker and various types of snakes. The red hartebeest has been reintroduced into the reserve as it was endemic to the area. The objective in the management approach to the conservancy is to make it self sustaining in terms of cost. The conservancy serves the local community as a recreational resource and is used in environmental education. The conservancy has hiking trails and trails for horses. There is an organized trail known as the Grysbok trail. This is used for environmental education for learners from disadvantaged communities. Income derived from paper and cardboard recycling is used to fund these programs and pay the trail guides. A conservation organization known as Wildlife and Environment Society of South Africa (WESSA) contributes towards the transportation cost of these learners. In collaboration with Working for Water (WFW), an initial alien plant clearing program has been done to control aliens in the reserve. A follow up of clearing aliens in the metro areas surrounding the reserve is in place so that seeds are not dispersed into the reserve. There is the need for fire management because fynbos vegetation requires a degree of controlled burning every 15-20 years. Sometimes fire is started by outside groups so some amount of veld rehabilitation is currently taking place because of successive fires. The only constraint is the incursion of poachers into the reserve. In the South campus, indigenous plants are propagated by nursery staff. There are exotic plants on other campuses but the target is to fill it with indigenous plants. The Central campus is a built up area and does not require

much planting. It is envisaged that most of the change to indigenous plants will be on Vista and the Technikon campus.

Landscaping in RU has been changed from Eurocentric to Afrocentric, specifically to Eastern Cape floral vegetation types in certain parts. The objective of landscaping is to aim for 99 % indigenous vegetation type of the Eastern Cape. However, the 1820 settlers' monument deliberately has 18 hectares of Eurocentric planting as historical areas are going to be left the same. All interesting shrubs in these areas are left intact unless they are aliens. This principle applies to the watercourse which has been turned into a wetland on campus. Near the watercourse, there is no cutting of grass. There are alien fish species such as the Carp and Trout in the water, but the aim is to eradicate them and introduce some indigenous fish like the Eastern Cape Rocky, *Sandilia benzia*. The planting strategy is to allow for the regeneration of species by allowing self starters to develop. Ninety-six species of plants and 2 000 individual birds have been ringed and identified in the Botanical garden. Around 110 hectares has been converted into an urban conservancy, creating pockets of urban woodland which helps with the migration of fauna. As a result of this, there has been a noticeable increase in birdlife and rabbits. There has also been an increase in pigeons but this is controlled in the urban areas by using biological control in the form of retaining the predators of the pigeons, the Gosshawk. Environmentally friendly herbicides are used for the control of insects and pests. For seventeen years now there has been no spraying of chemicals for pest infestation either in the form of pesticides or aerosol sprays. This has resulted in non-residual herbicides for clover and improved quality of soil. For example, only organic matter is used for fertilizing the cricket fields. A fire management system is in place whereby various zones have been demarcated to regenerate the natural veld and manage various species. The supervisors for the fire management have not been diligent in the last couple of years and uncontrolled fires have been started resulting in some areas needing rehabilitation.

### 3.6.6 LAND MANAGEMENT

The city of Cape Town has insufficient land for development, and by implication this also affects UCT. A full GIS mapping of UCT has been done with overlays. All developments taking place are informed by the GIS. A guide plan for physical development for the next 20-50 years has been done with green corridors in between.

In UKZN, GIS has been used to indicate areas that would be used for physical development and gardens. It must be noted that it is already congested in built up areas especially Howard College. Pietermaritzburg and Westville campuses have more options for developments.

With NMMU, as the majority of the campus has been declared a conservation area, an EIA is needed for any form of development on campus together with the GIS maps.

RU is managed fairly well spatially. A GIS mapping of the campus has been done with 156 maps produced. About 4 000 different data has been captured. A mapping of all the slope contours, green belts, water drainage, walking distances, aspects and forestry areas have been conducted. The land use map and the land cover map of all essential vegetation types and unsuitable areas for development have been identified. The services areas such as rubbish collection points etc. have been mapped out. Proposed development areas have been linked and land usage is monitored. Each of these areas has been mapped such that the percentages of features like lawn, buildings, paths, roads, etc. are clearly indicated. No studies or tests on the type of substratum have been done yet.

### 3.6.7 TRANSPORT

UCT campuses provide a shuttle service for students and staff. This reduces the use of private motor vehicles by students especially where students come from a concentrated area. The buses run between high density areas and campuses on scheduled services. There are 24 of these new buses. All new buses ordered are Euro 5 and Euro II

compliant. The implication of this is that emissions from these buses are measured once every six months to ensure they are not spewing pollutants.

UKZN has not got a bus service. Presently, although Durban city has a bus service, students and staff prefer the minibus service. Parking is a great problem on Howard College campus but the other campuses have space for expansion. Bicycles were encourage and promoted in the early nineties and it became quite popular. However because of the hills and humidity in Durban its popularity started to wane.

NMMU has a shuttle service between the different campuses. The bus seats 30 people and transports students. The campuses are accessible to the minibus services but this is not run under the ambit of the University. Close vicinities within the campus are accessed by some utilizing bicycles. There are no official car pools but private individuals utilize these lift clubs. It is not clear whether this is done in response to environmental concerns or because of financial benefits for the members involved.

In RU, the environmental policy does not have an in depth position on transport. However, the GIS maps out areas for parking and the University is in a process of identifying high pressured areas of parking in order to ease the load. The campus is not widely spaced out so distance is not an issue when it comes to students' transportation. The mowing fleet of the University has been changed to efficient types of equipment in that the output per liter of fuel has increased. What this implies that for a liter of fuel, a larger area of grass can be mowed than for the same quantity of fuel before the introduction of these equipments. The new equipment has larger cutting decks and performs about four times the load that the old ones used to. Electrical vehicles would have been more cost efficient but involves huge capital cost which the university has not budgeted for.

### 3.6.8 RENOVATION AND REFURBISHMENT

UCT has a capital asset management plan. The conditions of buildings and all elements involved are audited. A matrix is made to assess risk activities and worst buildings are then prioritized.

In UKZN, any major renovation involves the use of energy efficient light fittings. The materials utilized for the building itself are checked for their environmental friendliness. Timber and wooden poles were experimented with but discontinued as a result of the cost in favor of aluminum. Local products are utilized as much as possible to sustain jobs in the local area.

In NMMU, all building development proposals require an EIA and this is supervised by the buildings and grounds committee which meet every quarter to deal with issues as they arise.

The policy at RU is that when renovating, old windows and doors are kept for reuse. Loose pavers and flagstones are recycled. Carpeting and bricks are not recycled due to cost. Toxic paints containing lead are not utilized.

### 3.6.9 DESIGN OF NEW BUILDINGS

At UCT, as much as possible new buildings are constructed in an environmentally friendly manner. An example is the African Earth Network building. This is an observatory network. These are four international buildings networked with each other. The design is based on what is termed as passive to active continuum involving heating and cooling elements. There are rock walls for heat storage and under floor ducts to distribute it. The earth walls are compacted and entirely environmentally friendly. Natural materials are used for ventilation and circulation.

UKZN incorporates environmental principles in project development by allowing the environmental committee to hold meetings with architects of projects to determine how the developments should take place in terms of the planning, design and utilization of materials. A successful example is that of the medical school, when a new energy type saving equipment was installed. This was expensive to install but the running cost is cheaper and has led to overall public savings.

NMMU's policy is based on an EIA being conducted prior to the commencement of any project.

Planners, architects and other professionals working with the RU have been sensitized with respect to the importance placed on environmental friendliness. New buildings are fitted with energy efficient and effective light fittings and energy effective heating systems (the old heaters used 1500 watts whilst the new ones use 400 watts). Furthermore as old heaters break down, they are changed into new ones.

#### 3.6.10 PROCUREMENT AND REFURBISHMENT OF CAPITAL ASSETS AND CONSUMABLES

Although it is a principle in the UCT policy, it is not implemented. This is because environmental concerns are not dealt with when procuring, generally the cost of the consumable is utilized as the main criterion governing decisions.

In UKZN, the main change in procurement is in the use of pesticides. This has been changed to environmentally friendly products. Cleaning materials utilized are supervised by the occupational health and safety section and there is great consideration for the health of cleaners. The cleaners have to undergo training in the use of the chemicals in a strictly controlled environment. No chlorofluorocarbons are utilized.

In NMMU there is no policy based on procuring environmentally friendly products.

RU purchases certain items which are environmentally friendly for example energy saving lights. However environmentally friendly products are not as actively promoted as they could be. Certain suppliers e.g. computer suppliers have been sensitized and are sometimes queried about their environmental friendliness. Recyclable cartridges are used for the printers in some cases.

### 3.6.11 ENVIRONMENTAL EDUCATION AND COMMUNICATIONS

Environmental education in this instant refers to any form of education about the proper care and utilization of environmental resources to prevent degradation and negative environmental impacts and not necessarily about a formal course in environmental education. Table 10 refers to formal structured environmental education.

Table 10: Environmental Education

Education issue	UCT	UKZN	NMMU	RU
Environmental education course in curricula	Yes	Yes	Yes	Yes
Environmental issues incorporated in specific courses	Yes	Yes	No	Yes
Specialist environmental qualification programs	Yes	Yes	No	Yes
Research programs on environmental problem resolution	Yes	Yes	Yes	Yes

#### UCT

Environmental education and training is initiated for staff of the University through an induction program for all new staff members every six months. A general induction program with an environmental awareness segment is conducted every six months. The environmental education is not aimed at target groups but at the new staff within the last six months. Communication about environmental issues involves identifying

environmental issues and sensitizing people about it in a weekly newsletter which comes out every Monday.

#### UKZN

There is no environmental education induction course for the academic and support staff but reference to the environmental policy is made in the general induction programme. Environmental education is however conducted for garden staff to help prevent soil erosion. Environmental education is not included during the orientation week for students and is not aimed at target groups. On days like Arbor days etc. there is a conscientization on environmental issues. Communication involves submission of articles and photographs to the campus newsletter but this is rarely published. Notices relating to environmental issues are posted on boards. Emails and circulars are sent to the University community on the web and into students' boxes. Issues on recycling are posted about four times a year to draw attention to the programme.

#### NMMU

Environmental education is aimed at various target groups including lecturers, laborers, administration staff and students. There is staff induction on environmental issues which includes safety, health and environmental issues. Communication strategies involve workshops when required, staff meetings and via e-mails. However the responses to e-mails are very erratic with responses coming in sometimes months after the mail has been sent.

#### RHODES

There is no formal course in environmental education for the University staff and no staff induction or induction during orientation week for students. There are periodic communications on environmental issues such as on Arbor Day etc. where functions are organized to highlight issues. Environmental issues are communicated by the estate

management team and the environmental policy working group using a variety of strategies. Findings are reported at the working group meetings which generally takes place once a quarter. There is the use of an imaginary character, *EcoSonke*, to communicate about environmental issues in the Education department. There are environmental action news-flashes via email. There are also colourful posters in appropriate locations to act as reminders to conserve energy, recycle and any other environmental issues.

### 3.7 GENERAL MATTERS

#### UCT

The environmental policy is aimed at a reduction in usage of environmental resources. Although there are no timeframes, there is a cyclical program of action which involves planning, implementation and review of the actions taken (adaptive management). Specific persons have been designated duties and all in turn report to the environmental management working group through quarterly feedback. The whole process is supervised by the environmental manager. There is no specific budget for environmental problems but environmental problems are run off the maintenance budget. In addition, savings made from any utility is allowed to be utilized as seed money for environmental projects. The major problematic areas relating to the implementation of the environmental issues are lack of personnel, finance and time. It was observed that other activities tended to interfere with environmental initiatives and that it was difficult to strike a balance and prioritize issues. There were also conflicts with some internal goals of the institutions and certain environmental issues, for example when fencing is considered for security reasons as opposed to no fencing for aesthetics and fauna movement. The only coordination between the different spheres of the university is through the environmental management working group. The interviewee views of people's attitude towards environmental issues were that there were few dedicated people prepared to work and administrators or financial officers generally felt it was costly.

## UKZN

The environmental policy is aimed at reducing the utilization of environmental resources. This is done with the help of an environmental management committee and feedback is given regularly on a quarterly basis. In UKZN there is no overall environmental manager employed to oversee the implementation of the policy with the reason being that the campuses are vast and separate. However, the environmental management committee oversees the implementation process. There is no specific budget for environmental issues and this sometimes results in conflicts when there is the need for funds to be utilized to address environmental problems. Apathy, which translates into not having time for environmental issues, seems to be the greatest problem, followed by lack of finance and personnel. The environmental committee is made up of interested academics and some administrators by virtue of their job description. This causes certain people to feel excluded from the process. Some of the changes in the university which does not augur for continuity in environmental projects are that keen and enthusiastic students and staff leave after a few years and new ones have to be sought. As a result of the merger, there is a lot of apprehension and negativity as there is resistance by academics to move to the Westville campus. This in itself is positive for Westville in that it has led to pressure on the Vice Chancellor to enhance Westville aesthetically and academically to attract academics.

Other activities interfere with environmental initiatives and sometimes lead to conflicts with the internal goals of the university. This was manifested when some exotic Jacaranda trees were being removed to make way for indigenous plants. There was conflict in the sense that some members felt the trees had historical roots on campus in an urban environment and therefore not all the exotics should be removed. There are also conflicts with developments in Westville as it is to become a flagship campus and it seems areas which had been marked out as conservancy are being utilized. There is a level of coordination between the different spheres of the university on environmental issues as when it comes to the development of new or renovated buildings; the environmental committee meets regularly for discussions in this respect. Peoples attitude

towards environmental problems are generally one of apathy and not caring as to what happens. Even the undergraduates in the environmental sciences department attitude seem to be that it is an opportunity for gaining employment and they are therefore detached from their immediate environment by their own conduct. Furthermore, this apathy can be attributed to lack of environmental education and the era of consumerism in which we exist.

## NMMU

NMMU's policy implementation is a continuous process which is supervised by a manager whose main duty is health and safety issues with the environment as additional. There are quarterly feedbacks given to senior administrators. The merger poses challenges in that the organizational structure is changing and the final structure has not yet been finalized. This implies that other campuses which did not have environmental policies have to be environmentally educated. On the positive side, it may mean that more funds might be available for environmental issues. There is no specific budget allocation but different sectors like cleaning, maintenance are given budgets. For example in the case of a major chemical spill, insurance and health and safety unit budget would take care of it. When it comes to lack of resources, the most problematic is the issue of personnel, followed by time and finance. Conflicts do arise with the internal goals of the university but these are dealt with as they arise and there is coordination between the different spheres of the university as every union and members of the administration and academic staff are all represented on the environmental committee which meets quarterly. Peoples' apathetic attitudes towards environmental problems on campus stem from a lack of awareness of their behavior and how they relate to or affect the environment. The student population which makes up the majority is often more concerned with passing academically and having a good time whilst they are on campus. There are usually just a few of them who are environmentally conscious and this is what leads to littering.

RU

The overall aim of the environmental policy is aimed at specifically decreasing negative environmental impacts and minimizing campus environmental degradation. There is a system of feedback to administrators where there is a quarterly meeting of the environmental committee on a regular basis. Although there is no budget set aside specifically for environmental issues, there is an account for grounds and maintenance against which environmental issues are charged. Permission is granted to use savings generated from environmental programs to be ploughed back into other environmental projects. For example, profits from the last Environmental Management for Sustainable Universities International Conference (EMSU) were utilized for other environmental issues such as biodiversity improvement. Constraints to the implementation process are attributed to lack of personnel, finance and time. Furthermore, consultation within the academic community tends to be difficult with a lack of awareness on environmental issues experienced at the higher levels of administration. Other activities interfere with environmental initiatives as in this case the primary function of grounds management takes precedence over environmental initiatives. There are conflicts with the internal goals of the university and some environmental initiatives when the financial cost of products is considered and not the products environmental quality. Financial managers tend to look at the present cost instead of a lifecycle analysis of the cost benefit. At the academic level, there are problems with coordination of environmental issues as departments have their own schedules within the year's calendar. Finally, the attitude of people towards environmental problems is that of not caring with just a few dedicated people having empathy with the environmental cause.

### 3.8 CONCLUSION

In interviewing the respondents on the implementation of the environmental policy in their respective universities, one gets a sense that environmental issues are being addressed to a certain extent. However, due to the fact that there are no measurable tangibles on targets and time frames, one cannot conclude without doubt that

environmental issues are being addressed appropriately. This view is vindicated by a criticism emanating from UKZN and UCT's environmental policy. In UKZN, many leading academics both in the environmental and political arenas were not aware nor were they part of the consultation process in Natal (Masters students, School of environment and development 1998). The writers concluded that on the whole, the environmental policy was not being implemented by the university as awareness of the policy ranged from no knowledge of its existence to knowledge of it with, uncertainty as to its contents. No faculties were implementing the policy intentionally although activities in accordance with certain principles and the broad environmental policy were being conducted. Most faculties reported that individuals became involved in programs but the faculties as a whole are not involved (Masters students, School of environment and development 1998).

UCT's criticism was that only solid waste had targets set but with no timeframes. Therefore there were recommendations that implementation must have objectives and targets with timeframes set for every aspect of UCT's operations. Also internal performance criteria needed to be developed and implemented. Furthermore apart from employing an Environmental officer and other personnel with environmentally related responsibilities, no other steps towards the EMS implementation had been undertaken (Handler *et al.* 2003). Thus, these examples give the real indication of what is happening on implementation.

In NMMU, gradually, the shift has moved from environmental concerns to safety and health issues. This is because although initially the policy was an environmental policy, after the incorporation of health and safety, the manager that was chosen to oversee the implementation is a safety and health personnel.

RU's policy implementation seems to be done more on departmental levels and not across all the faculties on campus for a selected principle. However, generally all the universities are trying to decrease environmental impacts on their campuses and this can be considered a step in the right direction towards environmental friendliness.

**CHAPTER 4**  
**DISCUSSION AND CONCLUSION**

4.1 COMPARISON OF THE CRITERIA OF WHAT CONSTITUTES A GOOD ENVIRONMENTAL POLICY WITH THE ENVIRONMENTAL POLICIES OF THE SOUTH AFRICAN UNIVERSITIES

Table 11: Key elements of a good environmental policy compared with the environmental policies of the South African universities

KEY ELEMENTS	UCT	NNMU	RU	UKZN
Care for the environment	Yes	yes	yes	yes
Care for humans	Yes	yes	yes	yes
Economic and social development	Yes	yes	yes	yes
Environmental education	Yes	yes	yes	yes
Partnerships with government, business and NGO	Yes	yes	yes	yes
Written mission/vision	Yes	yes	yes	yes
Definition of the problem	Yes	yes	yes	yes
Environmental review	Some sectors	Some sectors	Some sectors	Some sectors
Decrease impacts and prevent pollution	Yes	yes	yes	yes
Written aims and objectives	Yes	yes	yes	Yes
Compliance with relevant regulation and legislation	Yes	yes	yes	Yes
Coordination with other policies	Yes	yes	yes	Yes
Setting of environmental objectives and targets	No	no	no	No
Approval by top management	Yes	yes	yes	yes
Implementation strategy	Not clear	Not clear	Not clear	Not clear
Inbuild feedback or evaluation system	Yes	yes	yes	Yes
Identification of personnel and authority to oversee the process	Yes	yes	yes	Yes
Communication with interested and affected parties	yes	yes	yes	Yes

Table 11 shows that the environmental policies of the South African universities have the majority of elements common with the criteria of what a good policy may contain. However, the glaring differences are the fact that implementation strategies are not clear and environmental reviews have not been done for these universities as a whole but in certain chosen sectors. Also, a quantifiable and measurable factor such as the setting of targets has not been done in the policies. This may make it difficult to assess or evaluate progress in terms of the effectiveness of the policy in preventing pollution and decreasing impacts.

#### 4.2 IMPETUS FOR POLICY FORMULATION

Sheate (2003) explained that in the European Union, there is widespread agreement that the concept of integrating the environment into policy making is a key principle of moving towards sustainable development. Carley (1996) and Noeke, (2002) also agree that formulating an Environmental Policy is the first step in the commitment towards creating an institutional culture of environmental sustainability. Wright (2002) summarized that university sustainability policies are important because they determine the degree to which a university will attempt institutional and environmental change and engage in sustainability initiatives. However, the factors pushing institutions in that direction are complex as explained by Parsons (1995 in Booysen and Erasmus 1998) (Refer to section 1.6.2, chapter1). This was depicted by the universities surveyed. This model that policy making is a simple cyclical process is criticized on the argument that the real context of policy making is far more complex.

This complex model is illustrated in how each of the four universities initiated the formulation of its environmental policy and the process of policy formulation. Whilst Rhodes and UCT listed International trends, the protection of their own local environment and the signing of International declarations for environmental protection as the factors that initiated the policy formulation process, NMMU stated issues of environmental safety for members of staff and students whilst on campus and secondly, the realization that protection of the environment should be given the full attention it

deserves and not as add-ons in addition to academic functions as the main driving force. The impetus for UKZN arose from the competition with UDW, a historically black university in the same province which had taken the initiative. All the universities agreed that being environmentally friendly portrayed the university in a good light. An important acknowledgement was that there was a champion dedicated to the environmental cause who initiated the environmental policy process and took it forward. Thus, apart from UCT and RU, the policy formulation process on all campuses started with such an individual. From the survey, of the 35 tertiary institutions, in South Africa, only four had environmental policies. This indicates that only 11 % of all universities in South Africa possess Environmental policies. This is a very low percentage compared to Sweden. Arvidsson (2004) provides a review of the activities of Swedish universities where government has legislated that all public authorities, this includes universities should act as role models in contributing to the long term sustainable development of society. They were therefore required to have environmental policies and an Environmental management implementation system. They were required to provide yearly environmental reports to the National Agency for Higher Education and the Swedish Environmental Protection Agency. This was started in 1997. Arvidsson reports that of the 31 higher education institutions reviewed in 2001, only 4 had not set environmental policies by the end of 2001 and 4 other higher institutions had not yet taken part in the program (Arvidsson 2004) representing 80 % of tertiary institutions. The low percentage of higher educational institutions in South Africa with an Environmental Policy or statement points to the fact that there is no legislation compelling tertiary institutions to manage their environment sustainably apart from the National Environmental Management Act (NEMA) which regulates environmental development that requires EIA in general.

The duration of the policy development process before its adoption ranged between one to two years for all the universities. This could be shortened by creating a template for utilization by tertiary institutions to allow others to follow the process of environmental policy formulation easily. The main factor that aided the policy process is the environmentalists who championed the process. The lessons learned from the policy

process is that an impetus of some form is needed and in the UKZN case, it was human emotions like peoples shame, pride and embarrassment at calling themselves environmentally friendly university, whilst actively there was no policy involved in greening their campus that drove the policy formulation process.

Apart from UCT, the South African universities surveyed do not have people specifically employed as environmental managers to oversee the implementation of their environmental policies. The implementation process is added on to their normal duties by virtue of their job descriptions. UKZN did not have such a person and its policy is supervised by the environmental committee and it was therefore difficult to collect information on the various activities involving the environmental policy implementation. To ensure the effective implementation of an Environmental Policy it is important to employ a manager to oversee the process (see chapter 3, section 3.6). Rhodes University has added it on to the duty of the grounds manager whilst NMMU has added it on to the Safety and Environmental Health officer's duties. This in effect affects the implementation process of the policy as these individuals are doing the environmental job by virtue of their job description as an add on. The implementation process therefore is secondary to their initial job specification. Furthermore there is no additional remuneration whatsoever for implementing the environmental policy.

Wright (2002) in a study of the implementation of the Halifax declaration found that the majority of signatories have not implemented the declaration and have not worked towards sustainability within their institutions. She posits that it may be a public relations effort. Although RU and UCT signed the Talloires Declaration in 1990, both universities did not implement it immediately. They formulated their environmental policy incorporating Talloires within the context of their own institutional situation and adopted it in 1997 and 2002 respectively after more than a decade. The lessons that can be drawn from all these in the policy formulation process is that signatories to the declarations may not implement it immediately. However, if a template of an environmental policy can be created as there are similarities then perhaps its implementation may be faster.

Furthermore interested people must be included in the policy process and dispassionate people must be changed as soon as their interest wanes.

Wilson (2000) puts forward the argument that environmental policies cut across sectors with a shift in the 'definitions' of the environment from nature to incorporate urban areas and conservation as an integral part of development. The implementation of the policy therefore requires three major components, namely institutions, instruments and procedures. Wilson (2000) states that in order to operationalize the commitment to the environmental policy, the institution given the responsibility must be given the resources to carry it out. However, all the universities do not have the basic resource of a specific budget set aside to implement their policy and this makes it difficult to make the environmental policy operational although many have done a lot. Wright (2002) cited Macalester College in Minnesota that despite the signing of the International Declaration and creating its own implementation plan, the Campus Environmental Committee had still not committed itself financially and were therefore indifferent on sustainability issues as no one wanted to pay for it. This interpretation may hold in the South African situation and can be correctly interpreted as indifference.

Wilson (2000) argues that instruments for implementation of policy include regulation, economic instruments, voluntary agreements, and education with the inclusion of guidelines on how to carry out the principles. The stages of the policy process must have room for monitoring and evaluation to allow input from all stakeholders. The input from all stakeholders is missing from the universities surveyed except for NMMU whose environmental committee includes all representatives from the different associations and unions on campus. It is important that the institutional structures for the implementation process must include representation from the highest echelon to the lowest to ensure stakeholder participation and buy-in (see chapter 1, 1.6.3).

Hopkins and Trevor (2002) observed that there is a general indifference to environmental studies and activities in historically black universities and colleges. This is in spite of the fact that in the USA, whilst most academia in historically black colleges and universities

are visible in environmental deliberations at the national policy-making level and in political debates and admit that there are threats to the environment, faculties are however not committed to greening actions. This trend is noticed in South Africa as none of the historically black Universities had an environmental policy except University of Durban Westville.

#### 4.3 MEASUREMENTS OF OBJECTIVES AND TARGETS

Operationally, commitment to “greener practices” is synonymous with a commitment to “sustainability” (Fisher 2003). However, Shriberg (2002) makes a distinction between sustainability efforts and eco-efficiency. Eco-efficiency indicators stress material utilization, environmental performance, regulatory compliance and the promotion of incremental change and conservation whilst sustainability indicators include the environment, society, and economy with no negative impacts and the promotion of a systemic change incorporating eco-efficiency and change in mindset. However, both sustainability and eco-efficiency efforts need to be measured, calculated and compared since according to Shriberg, what gets measured gets done (Shriberg 2002). All assessment tools reflect the need for campuses to decrease usage of energy, water, and other materials and inputs (Shriberg 2002). Thus all the four South African universities need to institute objectives or targets in order to be able to assess progress on the decrease of usage of resources. A useful framework for policy implementation may be provided by an environmental management system (EMS) approach (Mason *et al.* 2003). Furthermore, assistance can be obtained from studying best practices from business which have developed responsible management of environmental issues. Some businesses have adopted the ISO 14000 approaches which can also be applied to higher educational institutions. ISO 14001 recommends an initial environmental review before establishing an environmental management system (EMS) (Chen 2004).

All the universities surveyed had not performed an environmental review for their whole institution, and where an environmental review had been performed, this was specific to certain departments only or a particular environmental issue such as water conservation

only. The ISO 14000 series provide useful benchmarks to which an institution's policy can be compared and provides a solid methodology for assessing an environmental policy (Fisher 2003). Therefore, because targets had not been set initially, although all institutions reported an increase in water and energy usage, there was no benchmark to compare it to, so it cannot be clearly stated whether the increase was due to student numbers only as per interviews or to inefficient strategies for conservation. This should be understood from the context that UCT and Rhodes had no measurable quantity of water consumption whilst UKZN and NMMU cited the merger process. If targets were in place before the mergers, water saving quantities should have been available and improved on during the process.

The lack of objectives can be blamed partly on institutional structures. Wilson (2000) puts forward the fact that policy implementation requires that if an institution is given a responsibility, it must be given the resources to carry it out. Since only UCT had employed a full time manager to oversee the implementation of the policy this emphasizes the lack of commitment by management to prioritize the implementation of the environmental policy. This is supported by Segovia and Galang (2002) who argue that often, the environmental job is an adjunct of an existing office and the person in charge may have a traditional degree like engineering and not environmental sciences. Staff induction and students orientation sessions which could be used as platforms to promote awareness of the policy are generally not utilized by the institutions. Furthermore, Segovia and Galang (2002) suggested that sustainability issues could be advanced if the administrators and management take concrete steps to show its commitment by allocating a budget to a specific department to monitor the integration of sustainable development concepts into the academic curriculum and operations.

The setting of objectives and targets needs to be done within specific time frames. Evans and Theobald (2003) suggested that the pursuit of sustainable development involves timescales that are longer than those associated with policy making but authorities however, generally operate with short policy timescales for implementation because work is done on the basis of annual budgeting. However, whether the issue is sustainability or

eco-efficiency, it involves a reduction in usage of resources, thus, the time frames within which the reduction is supposed to be undertaken needs to be set so that implementers could work within those limits. This would allow evaluation of progress on environmental issues to be conducted at the end of specific periods and a review of the specific policy made thereafter.

#### 4.4 STRATEGIES TO ACHIEVE REDUCTION IN USAGE OF NATURAL RESOURCES

Strategies to achieve reduction in usage of natural resources are numerous and varied for each environmental principle or issue. Energy usage reduction involved the utilization of energy efficient lights in renovated and new buildings, special heating systems for boilers in order to reduce electricity usage, utilization of energy reduced heaters, computer controlled timing of electricity utilization during different times of the day and switching on energy utilization appliances at appropriate times when the tariff are low. UKZN had installed an alternative system of energy usage by harvesting solar radiation which helped to reduce energy usage.

These strategies involve contributions from all personnel such as students, academics and other members of staff in the form of time and compliance with initiatives. However, in the majority of the institutions, involving students provided both negative and positive comments. At UKZN student's participation in environmental issues were positive in the sense that they contributed a great deal to the recycling process whilst the negative side was the fact that the duration of their stay on campus was linked to the length or years of study. This created a problem of continuity as it was difficult to identify and train another group of students after the original set have completed their studies and left the campus. In NMMU students were viewed more negatively in their contributions towards sustainability efforts as they were observed as only being interested in entertainment and passing their courses. Generally, students' participation is minimal and students are utilized more in research work on environmental issues for academic purposes. Male residences tended to tamper with water saving devices installed in the shower nozzles in

residences of the NMMU, RU, and UKZN campuses. Downey (2004) suggested that there is tremendous potential resource in the student body but the means of harnessing it remains a challenge.

Water reduction measures involved a reduction in flush water systems, recycling of grey water especially for landscaping purposes and harnessing water by building catchment dams. A key environmental issue that seemed to create conflict was indigenous planting as opposed to exotics. This was raised in both UCT and UKZN. In RU although there is no conflict certain parts of the 1820 settlers' monument has still been left with exotic planting for historical reasons. This seems to point to a lack of environmental education and commitment on indigenous flowering plants.

When all the environmental issues are examined, procurement of consumables, renovation and refurbishment need a drastic improvement. All the universities asserted that although environmental products were in the long term cheaper, these cost benefits were not utilized to determine procurement policies and the short term view of the cost is what is considered. For example in RU cheaper chemicals were purchased for cleaning purposes as opposed to environmental friendliness of the products. It has however been proven that if long term cost benefits are considered, in the long run it is cheaper to be environmentally friendly Leal Filho (2000). This was the case with the installation of solar energy on the UKZN campus. The proceeds from the savings were utilized for the renovation of another residence. Also, in UCT, by expanding the capacity of the catchment dam, cost savings were made and utilized for other environmental initiatives. This life-cycle cost analysis is explained by Gardstrom and Norrthon (1994) who assert that the development and transfer of life-cycle costing analysis is a crucial factor in motivating enterprises to select cleaner productions through incorporating economic objectives tempered with ecological objectives of sustainable living. This implies that company's will both save the environment and receive economic benefits by being environmentally friendly. This simple principle could be borrowed by universities.

Furthermore the financial managers should be educated in order for them to comprehend the competitive advantages in having a proper environmental management system in place. An environmental management system would reduce the running costs and risk factors associated with campuses thus lending more cost benefits to the running of campuses.

#### 4.5 MONITORING SYSTEMS OR EVALUTION TO GAUGE POLICY SUCCESS OR FAILURE

None of the universities had measurable monitoring systems to determine whether targets were being met or not. The common monitoring system was the use of bills and accounts from municipalities to query high accounts. So long as the accounts were not marginally high it was accepted. This does not give any indication as to whether a particular environmental principle like energy in the policy was being successfully addressed or not. Roorda (2004) and Shriberg (2002) stress that “what gets measured gets done”. Measuring the success of the implementation process requires that short term, medium term and long term goals are set in relation to each environmental issue in the policy. Fortunately there are many tools for assessing sustainability efforts in higher educational institutions which can be utilized. The major strengths and weaknesses of these sustainability assessment tools have been described in detail by Shriberg (2002). Some of these assessment tools focus on the physical operations (operational eco-efficiency) of the university whilst others focus on all sustainability issues. Furthermore, measuring a policy’s success or failure as a management principle helps universities to shift away from just compliance with environmental legislation and laws and allows the university to be more proactive towards saving the environment.

#### 4.6 ENVIRONMENTAL EDUCATION AND COMMUNICATION

Literature on environmental response of universities in developing countries is very scarce and where universities have established interdisciplinary environmental centers, courses and programmes, no systemic analysis has been undertaken (Wemmenhove

2001). In this study, Environmental Education (EE) has been incorporated in the curricula of UCT, RU, and UKZN through specific courses and specialized environmental qualification programmes. Although this has been done, Calder and Clugston, (2004) assert that except for a few disciplines such as some environmental sciences and the land use related professions such as engineering, and architecture, EE is not part of the cutting edge of disciplines and this applies even in the South African context. Calder and Clugston, (2004) explained that interdisciplinary research receives little support and environmental work is rarely on the agenda of accrediting boards or funding agencies for research. Consequently research on the environment and sustainability initiatives are typically also not initiated by Faculties. Since education for environment and sustainable development is under-funded and under-supported, it hampers EE (Calder and Clugston, 2004). NMMU had no environmental education in their curriculum although they were “greening” their campus. Other Universities in South Africa, like the University of South Africa (UNISA) and Stellenbosch have specialized environmental programs in their curriculum but from the survey, UNISA responded as not having an environmental policy and there was no response at all from Stellenbosch. It is therefore not possible to determine whether they are “greening their campuses”. South African universities’ offering environmental programmes start from the undergraduate level right up to the Doctoral level (Dewar and Shippey 2002).

Dewar and Shippey (2002) assert that despite the existence of an active and innovative professional environmental sector for 15 years, as a result of which there has been an influx of individuals with varying backgrounds and a diverse range of qualifications into the environmental market, nominally professional qualifications were (and still are) being awarded. Evidence suggests that commensurate competence is frequently lacking. An analysis of all South African universities that included the word “environment” in the title of their postgraduate degrees including the full range of subjects relating to substantive environmental theory and management and the frequency with which the courses were offered, showed variability with courses that are offered across tertiary institutions and points to the very limited degree that subjects, considered fundamental to

any degree program with internal integrity or coherence in environmental management are included in the curricula (Dewar and Shippey 2002).

The above is corroborated by Segovia and Galang (2002) who argue that education plays an important role in establishing sustainable development and care for the environment in the consciousness and cultures of various nations. They conclude that Environmental Education (EE) hopes to develop responsible environmental behavior in citizens and individuals, and that it is imperative that there is a reorientation in the fundamental values of society to create a well-informed and motivated mass base in the long term conservation of natural resources and the protection of ecosystems (Segovia and Galang 2002). Yet apart from UCT where EE forms a miniscule part of staff induction, EE does not form part of the educational approach during staff induction and student orientation week in the Universities surveyed. This does not foster a common understanding of environmental issues amongst students, faculty and staff. Segovia and Galang (2002) contend that EE should develop at the tertiary level a critical mass of specialists for the management and sustainability of environmental resources and for non-specialists, EE should incorporate important environmental perspectives in the general education curriculum as well as specialization in subjects of all professional disciplines.

Although degree programmes are highly structured, it is possible for all students in tertiary level to undertake some environmental courses in their programmes to effect the change in environmental understanding. Calder and Clugston (2004) described how such a programme was initiated at the University of South Carolina where students were taught environmental literacy and sustainability with a community service component which required students to work and learn in the community to expose them to the social and economic dimensions of sustainability. This could be applicable in South Africa as there is none. In South Africa, there is the need to establish linkages and form networks in the academic community at the tertiary level in order to optimize the delivery of EE, training and research for sustainable development at the local levels. This has been done in other developing countries like the Philippines, where 380 universities have formed The Philippine Association of Tertiary level Educational Institutions in Environmental

Protection and Management (PATLEPAM) and are enjoying successes in the environmental arena because of the network (Segovia and Galang 2002). These successes include partnerships with secondary schools in order to help them to be more environmentally friendly and teachers graduating with EE in their repertoire.

Communication issues seem to be problematic because the implementers of the environmental policy stated that replies to e-mails on environmental issues were not forthcoming on all campuses. Furthermore, apart from posters, which are visible because of their very nature, other means of communication seems to be relegated to special event days like Arbor Day. RU complained that even then it was difficult to get permission from administrators to pass information through. UKZN had articles submitted to the campus newsletter which were rarely or never published. UCT however, had a weekly newsletter in which environmental issues were published. Thus it seems that although the personnel involved are doing their best, yet they are not receiving the institutional support needed for the dissemination of information.

#### 4.7 CONSTRAINTS

The main constraints to effective implementation were cited as lack of personnel and finance. These two were interrelated and created a catch 22 situation in the sense that interviewees acknowledged the need for personnel to engage in implementing the environmental policy and work with to a successful completion. However, the employment of personnel was hindered by budgetary constraints and this in turn affects the availability of personnel.

Environmental work tends to be more successful when given to full time workers. For example, the collection of trash from UKZN campus failed until full time personnel were employed for it. In UCT their recycling project was successful because there were full time sorters. When the leader or personnel driving their recycling campaign left the university; the recycling initiative came to a standstill until another person volunteered.

Another important constraint is that the environmental initiatives are not financially viable. For example, recycling tends to be labor intensive and when the income generated is not enough to cover the cost of the project; it falls through e.g. the UCT recycling project.

A further constraint is that the market for environmental initiatives end goods is not well developed. RU needed a market to sell the end products of their recycled program and when the few companies interested in the product turned it down, the recycling initiatives were stalled.

A major constraint to environmental policies is the setting and adoption of targets and timetables in the implementation plans. The Earth Charter and World Summit on Sustainable Development (WSSD) (report 2002) states that the most intense debate at the summit were about the adoption of targets and timetables in implementation plans. A proposal from the European Union involving targets and timetables for increase in the production of renewable energy was defeated. Yet without timeframes and targets, it is impossible to evaluate progress on implementation effectively. It is a general trend that all the universities have no timeframes and targets set for reducing the quantity of environmental resources used. This is why Shriberg (2002) advocates institutional assessment on sustainability issues and cross-institutional assessment in order to be able to measure and calculate progress both quantitatively and qualitatively.

An Environmental Management System (EMS) is not developed as part of the environmental policy of the universities surveyed. This is one of the main reasons why monitoring of the success or failure of the policy is difficult. This is because an EMS is a component of the overall management system that includes procedures and processes that can help in compliance of environmental regulations, and economic benefits to ensure that environmental policies are followed. An EMS ensures that an organization's environmental targets and objectives are being effectively pursued because it links important environmental management processes through a network of management actions, procedures, and records and is designed with the purpose of promoting

continuous environmental improvement (Hilson and Nayee 2002). An EMS is a tool that has three basic benefits when utilized. Firstly it enables an organization to systematically control its level of environmental performance. This helps management to identify potential environmental impacts arising from activities, set appropriate environmental objectives, establish programs to achieve environmental goals and review activities to ensure that environmental policy objectives are being properly carried out. It is therefore a proactive preventative tool rather than a reactive one and incorporates strategies for continual improvement (Hilson and Nayee 2002). Secondly personnel are better able to examine all processes and activities for their potential impacts on the environment, identify legal requirements, and to evaluate alternative hidden cost, thereby providing staff with a better understanding of environmental impacts and a proactive action to ensure that the required targets are met (Hilson and Nayee 2002).

Thirdly an EMS makes practical business sense and despite being potentially costly in the beginning, it usually pays for itself over the long term through reduced operating costs and improved efficiency. Life-cycle cost benefits on environmental projects are not utilized in decisions on environmental projects although it has been shown consistently that it leads to savings cost wise Bhat (1999) in (Hilson and Nayee 2002). An EMS developed and implemented by the universities would help towards solving some of the problems around the implementation of environmental policy.

Effective communication about sustainability has been shown to be lacking especially when feedback is required. This is because apart from NMMU whose environmental committee is made up of all stakeholders including unions on campus, the environmental committees were made up of mostly academics who had volunteered.

#### 4.8 SUMMARY

More than thirteen years after the Rio declaration, and all the international declarations signed by the South African government like Ubuntu and WSSD, a commitment to the environment and sustainable development nationally may be found in National

Environmental Management Act and may be applied by businesses and manufacturing industries because of the need for an EIA for certain developmental activities and in the general care for the environment and the people living in it. However, sustainable development principles and environmental care need to be applied and brought down to the future leaders of the country studying in tertiary educational institutions. This can be done consciously by tertiary institutions owning environmental policies and implementing them. This is because policies serve to coordinate behavior and actions so that intended outcomes are reached (see section 1.6). Although during the course of this survey, some South African tertiary institutions were in the midst of mergers, the merger situation does not explain the low level of the number of tertiary institutions that did not possess environmental policies as there were two institutions that were merging which took part in the study. Therefore it would seem to be a matter of slow response to the global and national environmental changes that are taking place currently.

According to the responses received, it seems as if out of 35 tertiary institutions in South Africa, only four had adopted environmental policies as established by the web search and mail survey. Whereas some institutions are working on developing environmental policies, these points to a very low number of tertiary institutions in South Africa involved in education for sustainability or in the implementation of physical operations on environmental issues on their campuses. This is because as stated in sections 1.5 and 1.6, without an environmental policy to direct greening actions on the environment and integrate environmental principles in to the curricula environmental actions may not be coordinated and may be done in piecemeal efforts, thus supporting Allwright in Shriburg (2002) that campus environmental actions are lacking in coordination and at most are piecemeal efforts referring mostly to examples of “what we have done on our campus.”

That is why there is a need to develop and adopt environmental policies in order to integrate sustainable development into the curricula of tertiary institutions as a conscious effort and as an example of caring for the environment as well as for the production of candidates for the environmental market. This is supportive of the fact that undergraduates are the future leaders and policy makers in the country and by being

environmentally educated, might influence future policy making decisions in the direction of environmental friendliness. Furthermore, in the South African context the market for these types of graduates is growing (Dewar and Shippey 2002) and this would result in the production of candidates for the market.

Secondly, universities that are in possession of environmental policies seem to be having problems with the implementation of the policy. The problem seemed to be mainly in terms of budget and personnel and setting of objectives and targets. These are issues that can be rectified as there are strategies in place already to reduce usage of natural resources such as energy and water. The priority given to environmental issues is low as the respondents in the interviews felt they had to strive to be heard and noticed.

The barriers to implementation are not only financial but lack of environmental education. This is because although initial environmental projects such as the expansion of the dam in UCT and energy saving equipment in UKZN proved that savings are made through environmental projects and yielded profits yet there is no separate environmental budget. What may seem to be lacking therefore is the education of financial managers on environmental issues in order to commit these managers to release funds to initiate projects. Also, generally all the staff and students need to be environmentally educated to get them on board to be more environmentally friendly in their everyday lifestyle.

Calder and Clugston (2004) assert that interest in sustainability is growing, as sustainability is a winning proposal for higher educational institutions because it bestows status and authority through the approach to operations. Institutions therefore, can save money through eco-efficiency initiatives which is valued by the fiscally minded members of the institution. However, it must be noted that for the universities with environmental policies, strategies for resource reduction are comparable with other developed countries strategies and although there are no measurable targets, yet what is being done is better than not doing anything at all.

#### 4.9 RECOMMENDATIONS

It may be important to introduce environmental education to all academics, administration, undergraduates, service providers and suppliers to universities in order to enlighten them on the importance of being environmentally educated friendly. General environmental education should form part of staff inductions. In the case of students incorporating environmental education in their orientation week and as short courses in the curricula would ensure that they are knowledgeable on environmental issues.

Furthermore effective communication strategies on environmental issues affecting individual campuses must be found by allowing representations from all the various stakeholders on campuses to be part of the environmental committees and decision making processes in connection with environmental problems.

As the interview respondents felt the implementation efforts seemed more of a public relations exercise because senior management do not show the commitment in terms of allocation of time, budget and educating or making people aware of general environmental issues on their campuses, senior management could easily allocate some money and be more visible environmental matters.

South Africa could adopt the Sweden route by means of legislating to ensure that tertiary institutions develop environmental policies and engage in consultative processes in order to gently channel institutions in the direction of sustainability. What ever route is chosen, there is the need for tertiary institutions to act fast in order to join especially other developing and developed nations which have started sustainable development practices on their campus as it is widely accepted that a university is a microcosm of society.

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## LIST OF APPENDICES

### Appendix 1

List of names of people interviewed

#### UCT

Mr. John Critien

#### NMMU

Mr. Riaan Louw

Mr. John Elliot

#### UKZN

Dr. Helen Watson

Mr. James Trinder

#### RU

Mr. Mark Hazell

Ms Nikki Kohly

Appendix 2: Questionnaire

**QUESTIONNAIRE**

**POLICY PROCESS**

1. Who or which group initiated the process?

1.2 Thereafter who drove the process?

2. When was it initiated?

3. Choose from the groups presented below those who were involved in the policy formulation process. You may add other groups not represented here.

Students groups

Academic staff

Other workers

Administration staff Senior Management

Local community

4. How were these groups identified to join the process?

5. Which factors influenced your university's policy statement? Choose from the list below. You may add other factors.

Core values and beliefs of the institution

Global environmental policies

Environmental threats

Other factors

6. Is the policy based on an international declaration or charter?

7. If yes, name the charter/s.

8. If no, is it based on the institute's local or unique conditions?

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9. Was an environmental review or audit detailing the environmental problems undertaken Before the policy was written? After the policy was written or Never?

10. What was the duration of the policy process from the beginning to completion?

11.1 Was the policy process approved by top management?

11.2 If yes which authority?

12. When was it formally adopted?

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13. How frequently is it reviewed or updated?
14. Briefly describe the process or is there a document that does?
15. What factors aided the process?
16. What factors posed hurdles to the process?
17. What lessons were learned from the process that would be useful to others?

### **IMPLEMENTATION AND CONSTRAINTS**

1.1 Do you have an objective /target/s?

If yes: 1.2 what is the objective/target? (It could be more than one)

1.3 what time has been set to achieve the objective or target?

2.1. What measures or strategies are you using to achieve the target?

2.2 If no, how do you gauge policy success or failure?

3.1 Do you have a monitoring system?

3.2 If no how do you know that the target is being approached or met?

3.3 If yes, please describe it:

what measures or indices are recorded?

Who monitors it? (levels of skills required)

What is the frequency of monitoring?

4. What constraints have you experienced, or are currently experiencing in trying to reach targets?

5. Are there any successes that you would like to share?

The above questions are going to be applied to each of the key environmental policy issues below

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- Water
  - Energy
  - Solid waste (paper and trash)
  - Hazardous waste
  - Biodiversity
  - Land management
  - Transport
-

- Renovation and refurbishment
- Design of new buildings in an environmentally friendly manner
- Procurement and refurbishment of capital assets and consumables

### **ENVIRONMENTAL EDUCATION AND COMMUNICATION**

- 1 Do you have environmental education courses in curricula?
2. Are environmental issues integrated into specific courses?
3. Are there Programs and modules that lead to a specialist environmental qualification?
- 4 Are you aware of research programmes aimed at the resolution of environmental problems?
- 5 Has environmental education and training been initiated for the staff of the university?
6. Is environmental education aimed at target groups?  
Lecturers                  Laborers                  Administration staff                  students
7. Do you have staff induction on environmental issues?
- 8 What is your communication strategy on environmental issues?

### **GENERAL**

1. Is the overall policy aimed at specifically decreasing environmental impacts of campus environmental degradation and pollution prevention or at what is termed zero targeting of specific environmental issues ( aiming not to have any form of emissions and pollution or degradation?
2. Does it have a time frame for the various environmental operations listed in the policy?
3. Have environmental targets been set in the policy?
- 4 Does the policy comply with relevant environmental regulations and laws?
5. Is there an Environmental Management System (EMS) in place?
- 6 Has an environmental manager or personnel been identified to oversee the implementation process?

7 If yes, who?

8 Have environmental reviews been done for departments and or the whole university?

9 How often are feedbacks/reports given to administrators on the implementation process?

Monthly                  Quarterly                  Half yearly                  Yearly                  Longer

10. Is there a budget set aside specifically for environmental problems?

11. If yes are you able to say how much?

12 In terms of lack of resources, which of these ranks as the biggest /most problematic?

Time                  Finance                  Personnel

13 What frequent changes in the organizational structure does not augur for continuity?

14. Do other activities interfere with environmental initiatives?

15 Are there conflicts with the internal goals of the institute and some environmental initiatives?

16 Is there coordination between the different spheres of the university on environmental issues?

17 How would you rank peoples attitudes towards environmental problems?(which is the most prevalent)

Not caring                  Tiresome and onerous                  Few dedicated people  
Sustainable development and environmental issues are confusing

It is costly to be environmentally friendly.

NAME OF UNIVERSITY:  
ENVIRONMENTAL ISSUE:

PERSON:

---

Appendix 3: Environmental policy of Massey University

Appendix 4: Environmental policy of Dalhousie University

Appendix 5: Environmental policy of University of Wales Swansea

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 Institution: Massey University  
 Country: New Zealand  
 Type: Environmental  
 Status: Final  
 Link URL:  
 A member of [ULSF](#).

MASSEY UNIVERSITY

MASSEY UNIVERSITY ENVIRONMENTAL POLICY

### 1. PREAMBLE

This Environmental Policy Statement defines the environmental interests and obligations of Massey University in the context of the University Charter and Strategic Plan. In doing so it clarifies the University's objectives in environmental education and sustainable resource management, and their relationship to the Treaty of Waitangi and to existing national and international agreements and guidelines on environmental issues (see Section 6.2).

The Policy recognises the important academic function of the University in developing understanding of, and encouraging sensitivity to, environmental principles, and acknowledges the importance of establishing clear links between education for sustainability and the adoption of sustainable resource management procedures. Its purpose is to develop the broad statements made in the Charter and Strategic Plan regarding environmental issues both within and outside the University community.

### 2. ENVIRONMENTAL MISSION STATEMENT

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7/2/2004

Massey University is committed to the principles of environmental responsibility and sustainable resource management at local, national and international levels. It will meet this commitment through community involvement and leadership in education, research and sustainable management practices.

### 3. GENERAL PRINCIPLES AND KEY CONCEPTS

Massey University's environmental mission statement is based upon the following principles:

- " A commitment to the principles of sustainability and to raising environmental awareness, understanding and responsibility throughout the University, the local communities within which its campuses are situated, and in all the wider partnerships and associations beyond the University;
- " A whole-institution response to environmental responsibility and to sustainability, fostered by wide and continuing consultation;
- " A commitment to Education for Sustainability as a life-long process for all, through interdisciplinary and holistic learning programmes;
- " A commitment to research into environmental issues at local, national and global levels and into the processes of education for sustainability;

The above principles define the general concept of environmental responsibility for the University. They also identify the context for three specific areas of responsibility:

- 3.1 Education and research for sustainability
- 3.2 Sustainable resource management
- 3.3 Wider community involvement

The strategies required to implement environmental policy in these three areas of responsibility are outlined in Section 4.

## 4. OBJECTIVES

### 4.1 EDUCATION AND RESEARCH FOR SUSTAINABILITY

The Massey University Environmental Policy recognises the central importance which environmental matters will occupy in human affairs in the coming decades, and the need to promote sustainability and environmental awareness, understanding and responsibility in research and teaching. Universities and other tertiary institutions, throughout the world, are committed to environmental responsibility in management, education and research. As part of its long-term development strategy, Massey University aims to be involved in this process and to be recognised as a centre of excellence in environmental education and research, both within New Zealand and Internationally.

This is a commitment which includes the provision of opportunity for environmental education as a life-long process for all, delivered through inter-disciplinary and holistic

approaches to the curriculum, and taking into account the interests of indigenous people. It also recognises that research is needed to increase our knowledge and understanding of the environment in both basic and applied scientific disciplines, in the interrelationships between environment, the individual and society, in the problems which these interrelationships produce, and in the development and adoption of positive actions to address the problems.

The above aim acknowledges the considerable reservoir of environmental knowledge, expertise and commitment already established across the academic spectrum at Massey University, and exemplified in the number of undergraduate and postgraduate degree programmes listed in the University Calendar. To meet the aim specified, the strategy of University management must be to provide encouragement and support for new initiatives within these programmes, and also to develop maximum opportunity for collaboration and coordination of activities across discipline boundaries.

#### 4.1.1 Curriculum

Objective: To augment and enhance the level of environmental literacy and competence of Massey University staff and students

- encourage and support the development of new papers and specialist programmes with an environmental focus.
- encourage and support departments and staff to incorporate environmental material and values into existing papers and to facilitate student awareness and use of such papers.
- include awareness of environmental matters in staff professional development programmes.
- encourage and support community and business partnerships based on environmental interests, and programmes of education in the wider community.
- promote awareness and pedagogic use of sustainable resource management programmes (Section 4.2).

#### 4.1.2 Research

Objective: To augment and enhance research into all aspects of the environment, across the range of disciplines

- encourage development of research programmes concerned with aspects of the environment, the relationship of people to the environment, and environmental problems, particularly in collaborative projects both within and across disciplinary boundaries.
- encourage and support postgraduate research programmes aimed at the resolution of environmental problems.
- actively support collaborative development of environmental research capability with local, regional, national and international agencies.
- promote to funding bodies the importance of inter-disciplinary environmental research,

and the need for appropriate funding structures to support such research.

“ promote widespread dissemination of the results of environmental research.

#### 4.2 SUSTAINABLE RESOURCE MANAGEMENT

In the Environmental Mission Statement above, Massey University acknowledges its commitment to environmental awareness and to the sustainable management of its resources. This commitment is important not only in relation to the University’s direct contribution to society’s efforts to maintain and enhance the quality of life, but also to the integrity of the links between academic programmes and management practices. It is important to promote the responsible use of the University’s resources to avoid, remedy or mitigate any adverse effects on the environment, so that the University can grow and prosper while meeting the ethical objectives outlined under General Principles and Key Concepts (Section 3).

The commitment to environmental responsibility involves concerns for natural and developed environments, for the effective use of consumable resources, and the development of best management practices on all of the University’s land holdings. These concerns are implicit in the following statements of objectives and implementation strategies, which are in keeping with existing Resource Management and Health and Safety legislation, as outlined in Section 5.2.

##### 4.2.1 Natural Environment

Objective: To manage the University’s natural environment in a sustainable manner, and to protect and, where possible, enhance the environmental quality of its natural resources

- “ manage University lands in an environmentally responsible and sustainable manner
- “ manage natural resources responsibly and with environmental and cultural sensitivity
- “ minimise the impact of potential pollutants on air and water quality

##### 4.2.2 Developed Environment

Objective: To continue to enhance the aesthetic values of the University campuses and maintain a stimulating environment for the work, recreation and cultural activities of staff and students

- “ continue to enhance the natural character of the University’s environs
- “ aim for architectural congruence with the natural environment and the provision of a healthy working environment

##### 4.2.3 Resource Conservation

Objective: To continue to develop effective management of procurement, use and disposal of consumable resources and materials, consistent with sound environmental management

- adopt environmentally responsible procurement procedures
- manage utilisation and disposal of consumable resources with environmental sensitivity
- develop effective and environmentally sensitive energy and transport management practices

#### 4.3 COMMUNITY INVOLVEMENT

The environmental Mission Statement defines the University's commitment to the environmental concerns of society at the local, national and international levels. This commitment will be met by the promotion of environmental responsibility at all levels, sharing of resources and information for community education on environmental matters, and providing leadership, as appropriate, in the investigation and development of community-based strategies of sustainable resource management. In all of these functions the University will seek to interact with community groups and community representatives.

Objective: To play a constructive part in the development, promotion and resourcing of environmental awareness and best management practices in the wider community

- encourage communication with the wider community on environmental issues
- ensure that lessons learned through research and curriculum are made available in a timely and appropriate manner for community use
- encourage acceptance and maintenance of good environmental practices within the wider community
- develop community leadership in improved environmental management

#### 5. IMPLEMENTATION AND REVIEW

5.1 Implementation of the objectives set out in Section 4 above will be achieved through a series of Management Practice Statements administered by individual Resource Managers or Management Groups. These Management Practices statements will be subject to regular Audit and Performance Assessment procedures identified within the terms of reference for AVC (Academic), AVC (Research), AVC (Support Services), and AVC (Resources).

5.2 The Management Practices Statements specified above should take into account, as necessary, the specific responsibilities defined in statutory and regulatory legislation, standards and directives. These bodies of legislation include, but are not limited to:

Resource Management Act, 1991  
Building Act, 1991  
Health and Safety in Employment Act, 1992  
Hazardous Substances and New Organisms Act, 1996  
Regional Plans/Policy Statements  
District Plans

The Education Act, 1989  
The Massey University Act, 1963

5.3 This Environmental Policy Statement will itself be subject to regular review, on a 3-yearly basis, at the instigation of Council.

## 6. APPENDIX: CONTEXT FOR THE ENVIRONMENTAL POLICY STATEMENT

The Environmental Mission and Policy Statements have been developed within the context of the University Charter, and existing national and international agreements and guidelines, and with reference to a broad and internationally recognised definition of the principles of sustainable society. This context is outlined briefly below.

### 6.1 MASSEY UNIVERSITY MISSION STATEMENT AND STATEMENT OF VALUES

The Massey University Mission Statement and Statement of Values, as specified in the University Charter (1997) and Strategic Plan (1997) are as follows:

#### Mission

The University will advance, preserve and respect knowledge through research and scholarship to the benefit of the wider community. It will play a constructive part in the economic, social, and cultural life of New Zealand at the local, regional, national and international levels.

#### Values

Massey University is committed to:

- “ Academic freedom
- “ Retention and advancement of knowledge
- “ The principles of the Treaty of Waitangi
- “ Accessibility, equity and diversity
- “ Sensitivity to the needs of staff, students and the wider community
- “ Collegiality
- “ Excellence in research-led education
- “ Creativity and innovation
- “ Integrity and high ethical standards
- “ Environmental responsibility
- “ Accountability

### 6.2 NATIONAL AND INTERNATIONAL AGREEMENTS AND GUIDELINES

6.2.1 This Policy Statement enshrines the concepts of cultural heritage implicit in the Treaty of Waitangi, and the associated concerns for environmental responsibility and sustainable resource management.

6.2.2 In establishing the general principles and key concepts upon which the environmental mission statement and policy are based, the following national and international agreements and guidelines have been taken into account:

Our Common Future (The Brundtland Report), WCED, 1987  
 Caring for the Earth, 1991 (The new World Conservation Strategy), IUCN  
 Agenda 21, 1992  
 The Talloires Declaration of University Presidents for a Sustainable Future  
 Environmental Responsibility - An Agenda for Tertiary Education, 1995. New Zealand  
 Guidelines. New Zealand Natural Heritage Foundation/ Massey University.

### 6.3 SUSTAINABILITY

The principles of sustainability which underpin the environmental policy statement are those defined in the new world conservation strategy, 'Caring for the Earth' (1991).

Principles of Sustainable Society (pp 8-12)  
 Respect and care for the community of life  
 Improve the quality of human life  
 Conserve the Earth's vitality and diversity  
 Minimise the depletion of non-renewable resources  
 Keep within the Earth's carrying capacity  
 Change personal attitudes and practices  
 Enable communities to care for their own environments  
 Provide a national framework for integrating development and conservation  
 Create a global alliance

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## **An Environmental Policy for Dalhousie University**

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Country: Canada  
Type: Environmental  
Status: Final  
Link URL:

# **An Environmental Policy for Dalhousie University**

Dalhousie University is an educational institution, an employer, a corporate citizen and a property owner. Dalhousie University recognizes that, in all of these contexts, it has a special responsibility to conduct its activities in an environmentally sound manner.

Dalhousie University realizes that its diverse academic and operational activities have significant impacts on the environment. Some of these impacts are positive, and these are to be encouraged. Some negative impacts may be unavoidable, but others can be eliminated or substantially mitigated. Dalhousie University believes it should take a leadership role in regard to environmental management.

It is the policy of Dalhousie University to strive to conduct its activities in ways that do not cause unacceptable degradation of the environment. The cornerstone of Dalhousie's environmental policies are as follows:

1. Dalhousie University will offer academic choices that will ensure that its students, employees, and the broader community will have opportunities to become well versed concerning environmental issues and solutions.
2. Dalhousie University will strive to conduct its research activities in ways that are environmentally appropriate. Dalhousie University will also encourage its faculty and associates to conduct research that investigates the causes and mitigation of environmental degradation,

as well as social, economic and industrial pathways towards sustainable development.

3. Dalhousie University will strive to manage its buildings and grounds in ways that are environmentally appropriate.
4. Dalhousie University will strive to achieve a working and educational environment that is acceptable in terms of health.
5. Dalhousie University will plan an exemplary role by ensuring that its corporate operations become as environmentally sound as allowed by technology, economics and common sense.

It is the expectation that all persons and units affiliated with Dalhousie University will strive towards the attainment of these environmental objectives.

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### UWS Environmental Policy Statement

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Institution: University of Wales Swansea

Country: Wales, Great Britain

Type: Environmental

Status: Final

Link URL: <http://www.swan.ac.uk/environment/uwsenpol.htm>

PRIFYSGOL CYMRU  
ABERTAWE,

UNIVERSITY OF WALES SWANSEA.

## Environmental Policy Statement.

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The University of Wales Swansea acknowledges the impacts of its activities on the environment at a local, national and global level. The University therefore seeks solutions to environmental problems by adopting sound principles and best practice according to the

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7/2/2004

principles of sustainable development.

The University is therefore committed to:

- promoting the protection of the environment and minimising the impact of all of its activities upon each of the local, regional and global environments both directly and through its influence on others;
- integrating environmental management policies and practices into every level and every department of the University;
- providing safe, healthy working conditions for staff and students.

In order to achieve the above the University aims to:

- reduce the use of fossil fuels through improvements to energy efficiency and the substitution with renewable energy sources;
- avoid the unnecessary use of hazardous materials and processes and to take all reasonable steps to prevent damage to either public or ecological health where such materials are in essential use;
- minimise waste by reduced consumption and develop effective waste management and recycling procedures;
- use recycled and recyclable materials where appropriate; choosing products and suppliers which minimise negative environmental impacts, thereby promoting sustainable development;
- co-operate with local initiatives to establish an integrated transport policy, providing improved facilities for disabled people, pedestrians and cyclists and encouraging the greater use of travel by foot, bicycle and public transport;
- protect natural habitats and local wildlife and preserve biological diversity;
- increase awareness of environmental responsibilities among staff and students;
- encourage collaborative interdisciplinary research on sustainable development themes;
- continually monitor and audit its environmental policies and practices.

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Swansea. 13 April 2000  
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