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Definitions and frameworks for environmental sustainability in higher education

Tarah S.A. Wright

Keywords Sustainable development, Higher education, Policy

This paper reviews definitions and frameworks for sustainability in higher education by examining a set of major national and international declarations and institutional policies related to environmental sustainability in universities. It identifies emerging themes and priorities, and discusses how these declarations and policies are affecting various institutions in how they frame the central task of becoming sustainable and how they perceive their own commitment to sustainability.

"Sustainability" in higher education: from doublethink and newspeak to critical thinking and meaningful learning

Arjen E.J. Wals and Bob Jickling

Keywords Sustainable development, Higher education, Learning

It is higher education's responsibility to continuously challenge and critique value and knowledge claims that have prescriptive tendencies. Part of this responsibility lies in engaging students in socio-scientific disputes. The ill-defined nature of sustainability manifests itself in such disputes when conflicting values, norms, interests, and reality constructions meet. This makes sustainability – its need for contextualization and the debate surrounding it – pivotal for higher education. It offers an opportunity for reflection on the mission of our universities and colleges, but also a chance to enhance the quality of the learning process. This paper explores both the overarching goals and process of higher education from an emancipatory view and with regard to sustainability.

Shifting sights: the cultural challenge of sustainability

Konai H. Thaman

Keywords Sustainable development, National cultures, Universities

This article focuses on the need for universities, as teaching and research organisations, to recognise and act upon a more culturally inclusive interpretation of ''sustainable development'' and "sustainability". It argues for the valuing of indigenous worldviews as a means of achieving a more holistic and interdisciplinary way of thinking about the Earth as the home of all people and as a complement to the beliefs of Western science and rational objective thinking. At a more personal level, it challenges readers, especially academics, to re-examine their own ways of thinking and knowing for the sake of creating sustainable futures that are inclusive in its processes, contexts and outcomes.

Advancing sustainability in higher education: issues and opportunities for research

John Fien

Keywords Sustainable development, Higher education, Research

This paper explores issues related to the choice of goals and approaches for advancing sustainability in higher education through research. The paper argues that the diverse nature of the questions, issues and problems facing advocates of sustainability in higher education requires a willingness to adopt an eclectic approach to the choice of research methodologies or paradigms. The views of reality and knowledge embedded in alternative research paradigms – empirical analytical, interpretive, critical, and poststructural paradigms – are summarised briefly. The relevance of the four paradigms is illustrated by taking two issues of sustainability in higher education and exploring how they would be addressed by each one. The two issues are: campus catering services and integrating the principles of the Earth Charter into an engineering degree program. The paper concludes by reviewing the debate over whether this eclectic position is consistent with the goals of advancing sustainability in higher education.

Institutional assessment tools for sustainability in higher education: strengths, weaknesses, and implications for practice and theory

Michael Shriberg

Keywords Environmental management strategy, Sustainable development, Ecology

This paper analyzes recent efforts to measure sustainability in higher education across institutions. The benefits of cross-institutional assessments include: identifying and benchmarking leaders and best practices; communicating common goals, experiences, and methods; and providing a directional tool to measure progress toward the concept of a "sustainable campus". Ideal assessment tools identify the most important attributes of a sustainable campus, are calculable and comparable, measure more than eco-efficiency, assess processes and motivations and are comprehensible to multiple stakeholders. The 11 cross-institutional assessment tools reviewed in this paper vary in terms of stage of development and closeness to the "ideal tool". These tools reveal (through their structure and content) the following critical parameters to achieving sustainability in higher education: decreasing throughput; pursuing incremental and systemic change simultaneously; including sustainability education as a central part of curricula; and engaging in cross-functional and cross-institutional efforts.

Sustainability and peace in Costa Rica: the case of the University of Costa Rica

Alejandrina Mata Segreda

Keywords Sustainable development, Universities, Conservation

This article describes initiatives at the University of Costa Rica, which, in combination with national programs, have strengthened the country's commitment to sustainable development over the past 15 years. It discusses the university's role in defining a national perspective on sustainability starting in 1987, as well as the evolution of the university's Programa Institucional de Sostenibilidad y Paz (PRINSOPAZ) from being university focused to joining with the Earth Council to promote the Earth Charter both nationally and internationally.

Sustainable development in higher education in Russia: the case of St Petersburg State University

Ludmila A. Verbitskaya, Natalia B. Nosova and Ludmila L. Rodina

Keywords Sustainable development, Higher education, Russia

This article focuses on attempts to introduce elements of sustainable development education into the curriculum of one of the largest Russian universities. At St Petersburg State University, compulsory courses relevant to sustainable development have been introduced or modified in 14 faculties out of 20 during the last decade. Examples of environmentally oriented projects within and outside the university are given. The authors touch upon the state of affairs in higher education in Russia, and write about sustainable development in a wider sense, beyond the environmental context. Sustainable development in education for Russia is one of the most important prerequisites for sustainable development in society. A model for reforming the system of national higher education is given to illustrate possible ways of achieving sustainability in education.

Sustainable development in higher education in the Philippines: the case of Miriam College

Victoria M. Segovia and Angelina P. Galang

Keywords Sustainable development, Higher education, The Philippines

The Philippines is one of the signatories to the historic *Agenda 21* and was noted to be among the first countries to establish a National Council for Sustainable Development. Ten years after Rio, global society is again confronted with the question of whether sustainable development as a concept, philosophy and practice has improved the lives of peoples in different countries and cultures. This article attempts to discuss initiatives through which tertiary education has helped bring about sustainable development in the Philippines. It posits that for sustainable development to happen it must take root in the consciousness and cultures of society, a task in which education plays a very important part. The article discusses the efforts of two national networks for environmental education, the Environmental Education Network of the Philippines, Inc. (EENP) and the Philippine Association of Tertiary Level Educational Institutions in Environmental Protection and Management (PATLEPAM), which advocate for the integration of sustainable development in school curricula as well as in campus administration and organizational culture. It also includes the pioneering efforts of one institution, Miriam College, to integrate

About the Guest Editors

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Editorial

From 26 August to 4 September 2002, official governmental delegations and many heads of state will gather in Johannesburg, South Africa for the World Summit on Sustainable Development (WSSD). This summit is taking place on the tenth anniversary of the Earth Summit in Rio, and on the thirtieth anniversary of the first United Nations Summit that recognized the importance of environmental issues – the Stockholm Conference on the Human Environment. The WSSD's major purpose is to reaffirm the importance of sustainable development for the twenty-first century, and to take action to deal with critical challenges that must be addressed to create a just and sustainable future. The Johannesburg Summit is taking place in a world focused on terrorism and economic globalization. Governmental and civil society representatives will be charting a course that can provide security and economic benefits for all, while preserving the ecological and cultural diversity that is the foundation of a sustainable future.

Clearly, higher education plays a crucial role in defining the policies and practices to create a just, sustainable, and peaceful world. The International Association of Universities (IAU) has joined with University Leaders for a Sustainable Future (ULSF) to edit and publish this joint issue focused on higher education for sustainable development with the WSSD in mind. The primary goals of this issue are to highlight the importance of sustainable development for higher education and to make an academic contribution to the WSSD.

IAU has consistently encouraged member institutions to make sustainability a central focus – from developing the *Kyoto Declaration* to providing a range of resources to assist members in addressing their role in sustainable development. ULSF, as the secretariat of over 280 signatories of the *Talloires Declaration*, makes sustainable development its central focus, providing a range of services to assist colleges and universities in integrating sustainability into teaching, research, operations, and outreach.

IAU and ULSF have joined with COPERNICUS-Campus, the secretariat for European universities that have signed the University Charter for Sustainable Development, and with UNESCO in its role as task manager for Chapter 36 (Education, public awareness and training) of *Agenda 21* (United Nations Conference on Environment and Development, 1992). Together we have formed the Global Higher Education for Sustainability Partnership (GHESP). At the October 2001 international COPERNICUS conference, "Higher Education for Sustainability – Towards the World Summit on Sustainable Development (Rio+10)", the GHESP partners and conference participants formally approved the *Lüneburg Declaration*, which calls on the international higher education community and its stakeholders to mobilize around the theme of sustainability in order to speak with one voice at the WSSD in Johannesburg. This declaration also committed the GHESP partners to developing resources and regional

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centers of excellence to accelerate the transition toward sustainability in higher education.

The articles in this issue address higher education's effort to reorient itself toward sustainability. They provide an overview of work over the past decade since Rio, the research and assessment tasks that lie ahead, and they include case studies from the global south and Russia in pursuing this agenda.

A second, but arguably more important, task at the WSSD is for all of us in the education community to affirm the importance of higher education for sustainable development. Education was the second most mentioned word after government in *Agenda 21*, but it has not been given the priority it needs in preparing our transition to a sustainable future. The mobilization and full commitment of the crucial sector of education is imperative for success in our common efforts to achieve sustainable development. We are moving forward with our GHESP partners in this endeavor, and we urge you to join with us.

Hans van Ginkel
President, International Association of Universities, Paris, France
Richard Clugston
Director, University Leaders for a Sustainable Future, Washington, DC, USA

Reference

United Nations Conference on Environment and Development (1992), *Agenda 21: The United Nations Programme of Action from Rio*, UN Department of Public Information, New York, NY.

Introduction

Over the past 30 years the global community has been debating the significance of environmental problems and the meaning and urgency of sustainable development. The World Summit on Sustainable Development's (WSSD) major purpose is to affirm the importance of the sustainable development for the twenty-first century, define the central elements of sustainability and identify priorities for action.

Over the past ten years, many United Nations summits have been held, focusing on population, women, cities, food, social development, and other topics. Each has added more insights to our understanding of sustainable development. This vision of development requires not only economic progress, but peace, economic and social justice, concern for future generations and for nature itself. This requires significant shifts in the policies of our national governments, the practices of our organizations, corporations, and communities – our individual consumer choices and lifestyles.

Colleges and universities are vested by society with the task of discerning truth, imparting values, and socializing students to contribute to social progress and the advancement of knowledge. They have a profound responsibility to impart the moral vision and technical knowledge needed to ensure a high quality of life for future generations. Sustainable development is the current context in which higher education must focus its mission. Many higher education institutions have responded to this major challenge of our time by making sustainability central to the critical dimensions of university life – curriculum, research and scholarship, operations, community outreach and service, student opportunities, institutional mission and structure, and faculty and staff development and rewards.

In 2000, four organizations agreed to form a global higher education for sustainability partnership (GHESP), to combine their strengths in an effort to mobilize higher education institutions to support sustainable development. The organizations are:

- The Association of University Leaders for a Sustainable Future (ULSF) serves as the secretariat of over 280 signatories of the *Talloires Declaration* in over 40 countries and promotes education for sustainability based on the Earth Charter[1];
- COPERNICUS-Campus, formerly a Programme of the Association of European Universities, is responsible for the University Charter for Sustainable Development, signed to date by over 290 university heads in 36 European countries[2];
- The International Association of Universities (IAU) provides an international centre of cooperation among 800 member universities and institutions of higher education. IAU developed and adopted the *Kyoto Declaration*[3];

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- The United Nations Educational, Scientific and Cultural Organization (UNESCO) is the task manager for the implementation of Chapter 36, "Education, public awareness and training", of *Agenda 21* and for the international work programme on education of the United Nations Commission on Sustainable Development[4].

GHESP partners believe that higher education must play a central role within the overall process of achieving sustainable development. The partners are convinced that if the leaders of major disciplines and institutions do not make sustainability a central academic and organizational focus, it will be impossible to create a just, equitable, and sustainable future.

Together IAU, ULSF and COPERNICUS represent over 1,000 universities that have committed to making sustainability a central focus of their teaching and practice. Roughly one-third of these signatory institutions are from the global south, and one-fifth from countries in the former Soviet Union and Warsaw pact.

The *Talloires* and *Kyoto Declarations*, the *University Charter* and other international statements like them, have contributed to a global consensus on higher education for sustainable development. The themes which nearly all international declarations share include promoting sustainability in all relevant disciplines, research on sustainable development issues, the "greening" of university operations, engaging in inter-university cooperation, forming partnerships with government, NGOs and industry, and most consistently, the moral obligation of higher education to work for a sustainable future. All of the priorities in Chapter 36 of *Agenda 21* are reaffirmed.

The GHESP partners realize that the adoption of these declarations does not necessarily translate into the implementation of the basic commitments in these documents. We also realize that sustainability means many different things, depending on the cultural, economic, political and geographic setting of the college or university. Thus in our initial Memorandum of Understanding, and reiterated in the 2001 *Lüneburg Declaration*[5], we committed to the following specific actions:

- Promote expanded endorsement and full implementation of the *Talloires*, *Kyoto* and *Copernicus Declarations*.
- Produce an action-oriented tool kit for universities, managers, administrators, faculty and students designed to move from commitment to concrete action. The tool kit would include: implementation strategies for colleges and universities in teaching, research, operations and outreach; an inventory of available resources; and an inventory of best practices with a compilation of case studies.
- Enhance the development of regional centres of excellence in both developed and developing countries, and effective networking among them.

The GHESP partners also agreed to conduct an assessment of progress towards sustainability in higher education within the context of the ten-year review of progress since the Earth Summit undertaken for the WSSD in August 2002 in Johannesburg, South Africa. This assessment and the critical tasks described above attempt to build on *Agenda 21* (United Nations Conference on Environment and Development, 1992) and various international conferences and programs that followed the Earth Summit, which were relevant to further defining and promoting sustainability in higher education[6].

Our assessment has indicated considerable confusion concerning the meaning of sustainability. Sustainability as an organizing principle in higher education is a relatively new concept. It gained salience only after the World Commission on Environment and Development in 1987. Steven C. Rockefeller writes:

> The concept of sustainability has a narrower and broader meaning. An activity is sustainable if it can be continued indefinitely. Patterns of production and consumption are considered to be ecologically sustainable if they respect and safeguard the regenerative capacities of our oceans, rivers, forests, farmlands, and grasslands. However, using the term in the broader sense, one can talk about building a sustainable global society. In this connection, sustainability includes all the interrelated activities that promote the long-term flourishing of Earth's human and ecological communities (Rockefeller, 2001).

Professor Rockefeller was chair of the drafting committee of the Earth Charter and is an expert on the international agreements and laws which contributed to its foundation. Begun before Rio and only completed in March 2000, the Earth Charter is a shared vision of ethical principles for sustainable development. Written over a period of ten years and involving the participation of hundreds of thousands of citizens across cultures, it is the most widely vetted and participatory international agreement in history – truly a "peoples" charter. The Earth Charter is being used as an inspiration and ethical framework for sustainability education, and is discussed in the articles in this joint issue[7].

Our assessment has also indicated little progress in implementing Chapter 36 of *Agenda 21*. As UNESCO reported to the UN Commission on Sustainable Development in 1996, "education is the forgotten priority of Rio." While many institutions have started sustainability initiatives and formed partnerships to promote the agenda, few national governments have made it a priority and there has been no fundamental change within higher education.

In March 2001, ULSF convened a consultation on "Assessing progress toward sustainability in higher education" in Washington, DC, which explored the current status of sustainability in higher education and identified factors that hinder or enhance sustainable development as a central concern. Papers were commissioned for this meeting, four of which are included here. Two others were commissioned for a "Sustainability and higher education" conference in Brisbane, Australia in December 2001.

IAU and ULSF undertook this research project to gather significant writing on sustainability in higher education. Scholarly consideration of research paradigms, historical development of the sustainability movement, and

practical perspectives on sustainability in higher education in various settings provide, we hope, resources to assist you in moving your college or university down the path toward sustainability.

These papers were written by scholars from a diversity of disciplines and types of tertiary institutions. They are both senior and young researchers and they come from five continents. Their theoretical perspectives and methods of analysis vary. By seeking this array of scholarship we hope to provide an introduction to this inchoate field of higher education for sustainability. By addressing the fundamental issues that arise and speaking to them from a diversity of perspectives, we believe these scholars have made an important contribution to an emerging literature.

Tarah Wright's review of the history of sustainability declarations, selections from various institutional sustainability statements, and discussion of emerging themes therein is a cogent introduction to the definition and current state of environmental sustainability in higher education. Dr Wright is a young Canadian scholar active in North American research circles on this topic.

The problematique of defining sustainability is a crucial one for higher education. The critical analysis of the contextual meaning of the term encouraged by Arjen Wals and Bob Jickling provides useful perspectives on the issue. Wals, from The Netherlands and Jickling, from Canada, have contributed to the critique of sustainability since the introduction of the term.

Konai Thaman explains that sustainable development and issues related to a sustainable future are culturally-derived. One of Oceania's most widely read and recognized poets, Thaman is a powerful voice from the region of the world that is most negatively affected by the developed world's unsustainable practices. She makes her points in "a Pacific way" including the orality of poetry.

John Fien discusses in turn, empirical-analytical, interpretive, critical, and post-structural research paradigms in an exposition of their viability in helping us gain knowledge and understanding of sustainability in higher education. Fien, a leader in education for sustainability in the Asia-Pacific region, provides an eclectic approach to the epistemological and methodological questions raised in this field.

The efforts to measure sustainability and address parameters for assessing it across institutions are reviewed by Michael Shriberg. He is a doctoral candidate and a leader in a new generation of scholars at work on these topics.

In the first of three case studies, Alejandrina Segreda examines the particular perspectives on sustainability and peace in Costa Rica that gave rise to the commitments of her institution. This case study sheds light on the possibilities for such a social discourse in moving a university to sustainability.

Ludmila A. Verbitskaya, Natalia B. Nosova, and Ludmila L. Rodina focus on attempts to introduce sustainable development education into the curriculum at the St Petersburg State University. They offer a model for reforming the

system of national higher education to make it more relevant to present needs and conditions in Russia and more supportive of sustainable development.

Victoria M. Segovia and Angelina P. Galang discuss efforts in higher education to foster sustainable development in the Philippines, with specific focus on the pioneering work of Miriam College. They argue that for sustainable development to occur it must take root in the consciousness and cultures of society, a task in which education plays a critical part.

Readers of this jointly-published special issue of this journal are a key audience. It is likely that you are affiliated with an institution that has made a commitment to sustainability through one of the several declarations described above. With this issue, we encourage you to more actively participate in the community of scholars of sustainability active around the world, and to become more deeply involved in the research and capacity-building programme that we are developing with our GHESP partners.

Notes

1. See www.ulsf.org
2. See www.copernicus-campus.org
3. See www.unesco.org/iau/
4. See www.unesco.org
5. In October 2001, In Lüneburg, Germany at the annual conference of COPERNICUS-Campus, participants and the four GHESP partners adopted the *Lüneburg Declaration*, calling for a renewed commitment to higher education for sustainable development. For the full text, see www.lueneburg-declaration.de
6. In particular, the International Work Programme on Education, Public Awareness and Training for Sustainability adopted by the UN Commission on Sustainable Development in 1996; the International Conference on Environment and Society (Thessaloniki, 1997); the World Conference on Higher Education (Paris, 1998); the World Conference on Science (Budapest, 1999); and the World Education Forum (Education for All) (Dakar, 2002).
7. For more information on the global Earth Charter Initiative, see www.earthcharter.org

Reference

Rockefeller, S.C. (2001), "The Earth Charter: building a global culture of peace", a speech given at the Earth Charter Community Summits, Tampa, FL, 29 September.

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Definitions and frameworks for environmental sustainability in higher education

Tarah S.A. Wright
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Keywords *Sustainable development, Higher education, Policy*

Abstract *This paper reviews definitions and frameworks for sustainability in higher education by examining a set of major national and international declarations and institutional policies related to environmental sustainability in universities. It identifies emerging themes and priorities, and discusses how these declarations and policies are affecting various institutions in how they frame the central task of becoming sustainable and how they perceive their own commitment to sustainability.*

Declarations for environmental sustainability in higher education

Beginning with *The Stockholm Declaration* (UNESCO, 1972), there has been a steady development of national and international sustainability declarations relevant to higher education (Table I). Many institutions of higher education attempt to become more sustainable by signing these declarations. This section will examine the various international and national sustainability declarations, in order to better understand the general trends and frameworks that have emerged in the area of sustainability in higher education. Further, the paper will examine how some of these declarations have been incorporated and implemented in signatory colleges and universities. It is conceivably a daunting (and perhaps impossible) task to understand how these declarations have been implemented as a whole, but an examination of a few individual universities who have endeavored to implement these declarations reveals the extent to which some universities have honoured their commitments as signatories.

The Stockholm Declaration

The Stockholm Declaration of 1972 was the first declaration to make reference to sustainability in higher education, albeit in an indirect way. While the conference was not specifically focused on university sustainability initiatives, the principles offered in the declaration have relevance to this study.

Situating itself primarily in environmental law, the *Stockholm Declaration* recognized the interdependency between humanity and the environment. This was one of the first documents to discuss inter- and intra-generational equity amongst humans, but was anthropocentric in that little was mentioned about

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Year	Declaration
1972	*The Stockholm Declaration on the Human Environment* (UNESCO, 1972)
1977	*Tbilisi Declaration* (UNESCO-UNEP, 1977)
1990	*The Talloires Declaration* (UNESCO, 1990)
1991	*The Halifax Declaration* (see Lester Pearson Institute for International Development, 1992)
1992	*Report of the United Nations Conference on Environment and Development* – Chapter 36: Promoting Education, Public Awareness and Training (UNESCO, 1992)
1993	Ninth International Association of Universities Round Table: *The Kyoto Declaration* (International Association of Universities, 1993)
1993	Association of Commonwealth Universities' 15th Quinquennial Conference: *Swansea Declaration* (UNESCO, 1993)
1994	*CRE Copernicus Charter* (CRE-Copernicus, 1994)
1997	International Conference on Environment and Society – Education and Public Awareness for Sustainability: *Declaration of Thessaloniki* (UNESCO, 1997)

Table I.
Chronology of some declarations related to sustainability in higher education

the rights of nature. The declaration clearly had a human-centred focus, stating that nations must "improve the human environment for present and future generations . . . a goal to be pursued together with, and in harmony with, the established and fundamental goals of peace and world-wide economic and social development" (UNESCO, 1972, p. 1).

The Stockholm Declaration offered 24 principles to achieve environmental sustainability, stressing bilateral and multilateral arrangements. While the majority of principles focused on legislation, Principle 19 stated the need for environmental education from grade school to adulthood. The rationale offered was that education would "broaden the basis for enlightened opinions and responsible conduct by individuals, enterprises and communities in protecting and improving the environment in its full human dimension" (UNESCO, 1972, Principle 19).

The Tbilisi Declaration

One of the most important moments in the evolution of international sustainability declarations related to education was the Intergovernmental Conference on Environmental Education in Tbilisi. This conference, sponsored by United Nations Educational, Scientific and Cultural Organization (UNESCO) and the United Nations Environment Program (UNEP), is considered to be one of the starting-points for formal international environmental education initiatives.

The Tbilisi Conference echoed the sentiments of the *Stockholm Declaration* by stating that environmental education should be provided to people of all ages, all levels of academic aptitude and must be delivered in both formal and non-formal environments. The declaration discussed the need for

environmental education, the principal characteristics of environmental education and offered guidelines for international strategies of action including specific recommendations for university education, specialist training, international and regional co-operation, access to information, research and experimentation, training of personnel, informing and educating the public, technical and vocational education and educational programs and materials. The declaration implored higher education to consider environmental and sustainability concerns within the framework of the general university. The *Tbilisi Declaration* further recognized requirements for the development of sustainability initiatives within the university amongst faculty, students and support staff and was the first declaration to take an international and holistic approach to the environment within a higher education context.

The Talloires Declaration

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 their institutions respond to this urgent challenge" (UNESCO, 1990, p. 2). It concluded that signatory universities must work together towards environmental sustainability and encourage universities who were not present at the conference to sign the declaration and join administrators in their efforts. This task was indeed realized as the signatories to the Talloires have increased from 20 in 1990 to over 275 signatories in 2000 (University Leaders for a Sustainable Future, 2000).

An initial examination of the implementation of the *Talloires Declaration* has revealed three categories of signatories to the Talloires:

(1) those that have made no attempt to implement the declaration within their institutions;

(2) those that are attempting to implement the declaration within their institution; and

(3) those that have incorporated the umbrella principles of the declaration into their own institutional sustainability policy and are attempting to implement that institutional policy rather than the declaration itself within their institution.

For the purposes of this paper, we will examine signatories to categories (2) and (3).

Ball State University in Muncie, Indiana, USA, is an excellent example of category (2). The university has adopted the *Talloires Declaration* as its primary environmental policy and is making an attempt to respect its signatory commitments. The university offers only one broad statement relevant to sustainability in the *University Strategic Plan* (Ball State University, 2001), however, as a signatory to the *Talloires Declaration* in 1999, Ball State is making an attempt to implement the declaration within its institution. The

University Green Committee has been asked by the University President to examine the implications of the *Talloires Declaration* for the university. This committee has divided itself into nine subcommittees, each being charged with the "examination and development of recommendations for the continued management and/or implementation of one of the Talloires tenets" (Ball State University, 2000). A report of the findings of these committees is anticipated to be available at the end of 2001.

Macalester College in Minnesota, USA, has adopted the *Talloires Declaration*, and has created its own implementation plan in order for the declaration to be meaningful within its institutional context (category (3)). Macalester College is a unique signatory in that over 11 individuals from the college, representing administration, trustees, faculty, staff, alumnae and students, signed the *Talloires Declaration*, while most universities have one representative sign the declaration. Becoming a signatory to the *Talloires Declaration* on 4 May 2000 was a carefully contemplated act for Macalester College. This is demonstrated in the minutes of the Subcommittee on College Environmental Policy Statement of 17 February 2000 which met to develop "an implementation plan that the college would commit to when the *Talloires Declaration* is signed to assure that the declaration would be meaningful" before signing the declaration (Macalester College, 2000). The impetus for the creation of the implementation plan came from the Campus Environmental Committee (CEC) (see Campus Environmental Committee, 2000). The CEC appointed itself as being the primary committee responsible for implementing the Talloires Principles at Macalester College. The Implementation Plan outlined actions to be taken on campus including the preparation and dissemination of an annual environment report, the creation of a procurement policy within one year of the signing of the *Talloires Declaration* which recognizes the importance of environmental factors in making decisions about purchases, and the appointment of a Director of College Environmental Affairs to work with the CEC to implement the principles of the *Talloires Declaration*.

Regardless of the CEC's attempts to raise awareness of sustainability issues on campus, the *Talloires Declaration* and the Implementation Plan have been received with indifference within the institution (Romero, 2001). Nine months after signing the *Talloires Declaration*, the *Annual State of the Environment Report* was prepared and published, but no procurement policy was created and a Director of College Environmental Affairs had not been appointed. When asked why the university had not yet honoured its commitments, Romero stated "because nobody wants to pay for it" (Romero, 2001). Such challenges need to be examined in more detail and will be revisited in the discussion section of this paper.

The Halifax Declaration

The Halifax Declaration was a direct result of the Conference on University Action for Sustainable Development in Halifax, Canada, 1991. The principal goal of the conference was to consider the role universities could play in

improving the capacity of countries to address environment and development issues, and to discus the implications the *Talloires Declaration* had for Canadian universities. The result was the Halifax Declaration, which recognized the leadership role universities could play in a world at serious risk of irreparable environmental damage and asserted that the university community must be challenged to re-think and re-construct their environmental policies and practices in order to contribute to sustainable development on local, national and international levels. The *Halifax Declaration* offered a new dimension to sustainability declarations as it volunteered an Action Plan that outlined short and long-term goals for Canadian universities and identified specific frameworks for action within the university.

In a study of the implementation of the *Halifax Declaration*, Wright (2002) has found that the majority of signatory universities have not implemented the declaration within their institution. The few that have attempted to implement the declaration have incorporated the general concepts and value statements of the declaration into their own institutional environment and sustainability policies rather than use the declaration as the sole sustainability policy for the university.

The University of British Columbia (UBC), for example, mentions the *Halifax Declaration* in their Campus Sustainability Policy, but created its own institutional policy based on the principles of the Halifax and Talloires Declarations. On the east coast of Canada, Dalhousie University is currently in the process of creating a new environmental policy (replacing the environmental policy of 1994 in light of its commitments in signing the *Halifax Declaration*, the *Talloires Declaration* and the *International Declaration on Cleaner Production*). McGill University in Montreal, Canada also refers to the Halifax and Talloires Declarations in its draft institutional environmental policy. The major challenges and barriers to the implementation are listed as a lack of leadership, a lack of accountability mechanisms, and fiscal constraints (Wright, 2002).

Agenda 21 – *Chapter 36*

Agenda 21 was the result of the United Nations Conference on Environment and Development held in Rio de Janeiro, 1992. While practically all of the chapters in *Agenda 21* are related to environmental sustainability, Chapter 36 (Education, awareness and training) specifically addresses issues related to sustainability in education (UNCED, 1992). Chapter 36 first recognized past university sustainability directives, and stated that the *Tbilisi Declaration* provided the fundamental principles for the proposals listed in *Agenda 21*. The three main thrusts were:

(1) reorienting education towards sustainable development;

(2) increasing public awareness of environmental issues; and

(3) promoting environmental training among educators.

Chapter 36 includes initiatives that individuals, governments and nations can take to ensure sustainable development, recognizing that various countries will develop their own programs according to their specific needs, policies and responsibilities. Chapter 36 identified a lack of environmental awareness throughout the world, and recognized formal and informal education as a solution to environmentally unsustainable behavior.

The Kyoto Declaration

The Kyoto Declaration was the result of 90 international university leaders assembling for the Ninth International Association of Universities Round Table in 1990, and was closely tied to *Agenda 21* and the United Nations Commission on Environment and Development Conference in Rio de Janeiro. The main contribution of the *Kyoto Declaration* to our current discussion of frameworks for sustainability was a call for a clearer vision of how to achieve sustainability within universities. The *Kyoto Declaration* claimed that the international university community must create specific plans of action in order to pursue of the goal of sustainability. The *Kyoto Declaration* also stressed the ethical obligation of universities to the environment and to sustainable development principles. A final feature of the declaration was its challenge to universities to not only promote sustainability through environmental education, but also through the physical operations of a university.

An understanding of the impact of the *Kyoto Declaration* is difficult to understand, as there are no signatories. The *Kyoto Declaration* was endorsed by all International Association of Universities (IAU) members and the General Conference of Members meeting in South Africa, August 2000. Included in the text of the endorsed declaration was the IAU Policy Work Plan 2000-2004, which highlights sustainability initiatives universities are asked to embark upon immediately. However, the degree to which IAU universities have initiated the recommendations of the Declaration and Work Plan to date is unknown (Salinas-Meoni, 2001).

The Swansea Declaration

The Swansea Declaration of 1993 brought together representatives from over 400 universities in 47 countries, and echoed the sentiments of past declarations, asserting that universities had a major responsibility to help societies develop in an "environmentally secure and civilized world" (UNESCO, 1993, p. 1). The declaration repeated many of the tenets of past university sustainability declarations. These included the need for universities to review their physical operations, the desire for environmentally literate students and faculty, and an emphasis on the ethical obligations universities have to present and future generations. The *Swansea Declaration* added an interesting dimension to the discussion of sustainability in higher education in that it stressed equality amongst countries as an important factor in achieving sustainability. The members of the Association of Commonwealth Universities recognized that

while environmental sustainability was of great importance to developed countries, less developed nations have more pressing and immediate priorities. The *Swansea Declaration* also appealed for universities of richer countries to aid in the evolution of university environmental sustainability programs in less wealthy nations worldwide.

The CRE-Copernicus Charter

The Copernicus Charter was developed by the Conference of European Rectors (CRE), now called the Association of European Universities, in 1993 and was presented to its membership in 1994. The *Copernicus Charter* was a direct result of discussions within the organization, culminating in a call for a higher education sustainability statement that would be relevant to the over 500 universities within 36 countries that CRE represented. The charter reiterated the need for universities to be leaders in creating sustainable societies, and stressed the need for a new frame of mind and set of environmental values within the higher education community.

Key areas in the charter include public outreach, environmental literacy and encouraging partnerships. The document discussed environmental literacy, explicitly stating that universities must not only provide opportunities for students, but for university employees as well so that all individuals within the university can work in an environmentally responsible manner. Additionally, the *Copernicus Charter* emphasized the need for networking amongst universities. The charter has been very popular to date, with over 280 signatories in January 2000 (Copernicus secretariat, 2000). The signatory list is currently held at the Copernicus secretariat office and the list of universities signing the charter continues to grow. Very little is known, however, regarding the implementation of the charter. Once universities have become signatories, there is no system for information exchange currently in place (Winkelmann, 2001). While CRE-Copernicus is currently assessing the potential for systematic monitoring of the entire process, the only information that the Copernicus secretariat has to date regarding the implementation of the charter is that which is offered on the initiative of individual universities.

One example of a university attempting to implement the principles set forward in the *CRE-Copernicus Charter* can be found in Sweden (Jenstrom, 2000). Göteborg University signed the charter in 1994 and subsequently created an implementation plan based on the tenets of the charter. This plan covers six basic goals, which include minimizing any environmental harm from campus physical operations, encouraging environmental consciousness on campus, considering environmental ramifications in all decision making, continuously assessing and updating the environmental policy and acting in compliance with current environmental laws and regulations. Officials at Göteborg University admit that they have faced challenges in implementing the *CRE-Copernicus Charter*:

> Some university staff members still say that it cannot be a main goal for the University to work actively with Sustainable Development, the Society has to go first. At all universities

> you have to accept that some staff members will hold a different view. At Göteborg University we try to bypass these staff members and instead activate those that see sustainability as a natural step. We often talk about a bottom-up-perspective where we activate the people at the departments and encourage them to do environmental work that will influence other staff members. This process takes time, but we have to accept that changes in lifestyle are not made overnight (Jenstrom, 2000).

Indeed there are many challenges and barriers that have been identified in the course of this study regarding the implementation of sustainability declarations. These are discussed below.

The Thessaloniki Declaration

The most recent declaration which has a link to university environmental sustainability was completed in Thessaloniki, Greece, in 1997 at the UNESCO Conference on Environment and Society: Education and Public Awareness For Sustainability, hosted by the Government of Greece. This event was a follow-up, 20 years later, of the UNESCO Tbilisi conference. The participants at this conference felt that radical social change must occur before environmental change can transpire. The declaration also recognized that sustainability initiatives must take place at all levels of society and must be interdisciplinary in nature. The declaration argued that the concept of environmental sustainability must be clearly linked with poverty, population, food security, democracy, human rights, peace and health and a respect for traditional cultural and ecological knowledge.

With regard to formal education, the *Thessaloniki Declaration* affirmed that all subject disciplines must address issues related to the environment and sustainable development and that university curricula must be reoriented towards a holistic approach to education. Finally, the declaration called for governments and leaders in education to honour the commitments they had already made in signing past declarations of environmental sustainability.

The previous examples have shown that sustainability declarations have had an impact on some institutions of higher education. However, many universities were found to have signed national and international declarations and not to have worked towards sustainability in their institutions at all. This raises the issue of accountability in becoming a signatory to a national or international declaration. Some institutions may be signing declarations for public relations purposes only and may not be supporting the overall effort to bring sustainability to higher education. Endorsing a declaration is no longer adequate proof of a commitment towards becoming more sustainable (Walton, 2000). The ability of universities to "greenwash" their institutions by signing such declarations is a concern that will be returned to at the conclusion of this paper.

Institutional statements of environmental sustainability

While many institutions have focused attention on national and international sustainability declarations, some have chosen to take a micro approach to sustainability in higher education by creating institutional environmental

sustainability policies that are meaningful for their particular situation. This section examines a few of these policies, which have been highlighted as "best practices" in the literature, and investigates the degree to which they have been implemented.

The University of Waterloo

The University of Waterloo is an example of an institution that has not signed any national or international sustainability declaration, but has created a strong environmental policy and is considered a high profile best practice case for sustainability in higher education (Dearden and Mitchell, 1998). The terms of reference for the University WATgreen Committee have served as the university policy for ten years and to date have been very successful.

The WATgreen Committee is in charge of implementing the university environmental policy and includes a consortium of representatives from each university faculty, the waste management coordinator, a representative from the student population, and the Associate Provost-General Services and Finance. The responsibilities designated to the committee are to animate environmental activities on campus; coordinate project activities of students, staff and faculty; raise awareness in the campus community; and develop guidelines for environmentally responsible design practices on campus (WATgreen, 1996).

Most of the underlying philosophies that guide the committee and the greening efforts on campus are similar to those offered in the national and international declarations; however, the committee must also work within specified economic parameters (WATgreen, 1996). WATgreen's mandate is to take into account both environmentally appropriate as well as financially sound practices. The WATgreen Committee has been very successful in being a leader in sustainability initiatives both within the university and the surrounding community, and has become fully integrated into the operations of the university (Baker, 1998).

The University of South Carolina

The University of South Carolina (USC) is another example of a university that has developed an institution-specific environmental policy but to date has not signed any of the major sustainability declarations directed towards higher education. USC is also a part of the South Carolina Sustainable Universities Initiative, which began with the state's three research universities in 1998. All three presidents signed a special declaration geared toward cooperation within the state. University administrators felt this would be a stronger statement than signing one of the international agreements.

The USC Environmental Policy, written in spring of 2000 by the University wide Environmental Advisory Committee, states a moral obligation on the part of the university to become a leader in creating a sustainable society. The goals stated in the policy focus on both the educational and physical operations of the university. The policy states that sustainability must be built into the

university curriculum and recognizes the need for environmental literacy amongst faculty and staff. It stresses the obligation of the university to the local community and environment, and commits the university to implement an environmental management system for auditing inputs and outputs and quantifying savings from sustainable practices, as well as producing an annual "Environmental State of USC" report.

When asked how the policy was received by the campus at large, however, the Dean of the School of the Environment stated "it is pretty much a secret" (Coull, 2001). Yet Dr Coull also indicated that passing the policy through the university board of trustees was a tremendous accomplishment, and while no implementation of the policy has occurred to date, an implementation plan is currently being created.

The University of Buffalo

The University of Buffalo (UB) has multiple policies relevant to environmental sustainability. The university's Environmental Task Force (ETF) was created in 1990 with the primary task of developing campus environmental policies. While UB signed the *Talloires Declaration* in June 1999, many of the university environmental policies were well established prior to becoming a signatory. The university has 15 policies directly related to environmental activities on the campus including an Environmentally Sound Products Procurement Policy, an Electric Purchasing Policy, and the UB2025 Policy, which aims to transform the northern campus into a diverse, biologically rich and less energy intensive campus. A review of the 15 environmental policies at UB revealed a focus on energy efficiency and consumption issues, and has very little mention of environmental literacy or pursuing sustainability through the modification of curriculum. This focus on physical operations is further illustrated by the UB definition of a sustainable university, which states that a sustainable campus is one that has minimal resource consumption, uses 100 percent post-consumer recycled materials or materials from renewable resources, recycles, and whose energy supplies are totally renewable and non-polluting (UB Green, 2001). While environmental education initiatives might be in place on the UB campus, it is not a priority in any of the environmental policies.

The University of Toronto

The University of Toronto also frames its commitment to sustainability through improving its physical operations. The preamble to the university environmental policy maintains a moral responsibility to society to become more sustainable, and implies a need for sustainability education by proposing the need to protect the environment through teaching, research and administrative operations. The specific objectives of the policy, however, focus on exceeding environmental standards, regulations and guidelines. The major objectives concentrate on physical operations and include the minimization of energy use, water use, waste generation, and pollution.

The George Washington University

The George Washington University is a unique case in that it has signed the *Talloires Declaration*, has a working institutional environmental policy, and has a letter of understanding and agreement with the United States Environmental Protection Agency (EPA) which states that the university will work with the EPA to develop models and knowledge related to environmental management and sustainability.

The university offers seven principles in the policy, which encompasses ecosystem protection, environmental justice, pollution prevention, strong science and data to ensure well informed decisions are made, partnerships, reinventing the university's environmental management and operations, and accountability. Additionally, the policy recognizes the need for evaluating and measuring the success of the plan and indicates intent to develop specific objective performance standards and indicators. A closer examination of the environmental policy also indicates that the university takes a moral stance towards sustainability.

It is impossible to generalize about all institution-specific environmental policies examined for this paper; however, some noted differences between national and international declarations and institutional environmental policies can be found in terms of primary foci. The majority of national and international declarations give token mention to the development of sustainable physical operations within the university. They tend to focus more on the moral responsibilities of universities to facilitate change and the need for environmental literacy. The majority of institutional environmental policies examined in this paper concentrate on a combination of environmental education and sustainable physical operations (Table II). Numerous declarations also call for the development of sustainable practices and programs within universities, yet few offer practical concrete action plans to achieve their goals (the Halifax and Kyoto Declarations being exceptions to this). Most institutional environmental policies reviewed for this paper outline specific actions to be taken within the university in order to realize the sustainability goals and objectives for the institution and often have specific deadlines attached to them.

Does an institution need to sign an international declaration to move along the continuum of sustainability? The individual universities discussed previously are just a small sample of institutions around the world that have taken the idea of sustainability seriously and have created policies that reflect their commitment. Analysis of these policies suggests that being a signatory to a national or international agreement is not a valid indicator of an institution's dedication to sustainability. However, national and international declarations are just as important as institutional policies. Declarations are significant because they symbolize the prominence of the sustainability movement, aid in the communication of major ideas to universities around the world, and implore those who have not committed to any sustainability initiatives to "get on board". Implementation plans and university sustainability policies are also

Policy focus on greening physical operations	Policy focus on sustainability education and greening physical operations
Queens University	California State University
University of Buffalo	Carnegie Mellon University
University of Colorado	Dalhousie University
University of Toronto	Durham University
	Oxford Brooks University
	George Washington University
	Lincoln University
	Lund University
	Massey University
	Open Polytechnic of New Zealand
	Tufts University
	Universidad National Autonoma de Mexico
	Université Laval
	University of Edinburgh
	University of Hertfordshire
	University of Manchester
	University of South California
	University of Sunderland
	University of Sussex
	University of Utrecht
	University of Wales Swansea
	University of Waterloo

Table II.
The focus of various institution-specific sustainability policies

important because they seem to determine the degree to which a university will attempt institutional environmental change and engage in sustainability initiatives. Further research of declarations and institutional policies is necessary in order for the higher education sustainability movement to progress.

Identifying emerging themes in declarations and policies

The question of how various institutions are framing the central task of becoming sustainable universities is not easy to answer. The cases examined in this paper support Leal Filho (1999) and Clugston's (1999) assertions that approaches to sustainability differ from campus to campus, country to country, policy to policy, and declaration to declaration. Yet there are common principles and themes among the majority of institutional policies, national, and international declarations (Table III). These themes are sustainable physical operations, sustainable academic research, environmental literacy, ethical and moral responsibility, cooperation amongst universities and countries, the development of interdisciplinary curriculum, partnerships with government, non-governmental organizations and industry, and public outreach.

Sustainable physical operations

The theme of sustainable physical operations is expressed generally, but is not of primary importance in the national and international declarations. The

Table III.
Common principles of sustainability in policies and declarations

Policy/declaration	Moral obligation	Sustainable physical operations	Encourage sustainable research	Public outreach	Inter-university cooperation	Partnerships with government, NGOs and industry	Develop inter-disciplinary curriculum	Ecological literacy
Stockholm Declaration	×			×				×
Tbilisi Declaration	×		×	×		×		×
The Talloires Declaration	×	×	×	×	×	×	×	×
The Halifax Declaration	×			×	×	×		×
The Kyoto Declaration	×	×	×	×	×	×		×
Swansea Declaration	×	×	×	×	×			×
CRE Copernicus Charter	×		×	×		×		×
Thessaloniki Declaration	×			×		×	×	×
Dalhousie Draft Environmental Policy	×	×		×		×	×	×
George Washington University	×	×	×	×		×	×	×
Macalester College Implementation Plan	×	×	×	×	×	×	×	×
McGill Draft Environmental Policy	×	×	×					×
Queens University	×	×						
Tufts University	×	×	×	×	×	×		×
U of Buffalo Environmental Policies	×	×		×				
U of British Columbia Policy	×	×	×	×	×	×	×	×
University of Hertfordshire	×	×	×	×			×	×
University of Southern Carolina	×	×		×			×	×
University of Toronto	×	×		×				
University of Wales Swansea	×	×	×					×
University of Waterloo Policy	×	×	×	×			×	

Kyoto Declaration, for example, encourages universities to review their physical operations to reflect best sustainable development practices. The *Talloires Declaration* also calls for more sustainable physical operations, and for higher education to set an example of environmental responsibility by "establishing institutional ecology policies and practices of resource conservation, recycling, waste reduction, and environmentally sound operations" (University Leaders for a Sustainable Future, 1990). However, no declaration offers practical actions to take in order to ensure more sustainable physical operations.

For institution-specific policies, sustainable physical operations are paramount with the majority of policies listing precise tasks for the university to undertake. Sustainable physical operations are mentioned in every institutional policy examined for this paper and are often the main thrust of sustainability initiatives on campus. At the extreme is the University of Buffalo with 15 different policies focused specifically on physical operations. The University of Swansea, Wales, also focuses on physical operations, informed by both health and safety, and environmental concerns.

Sustainable research

Another motif that appears in many of the declarations and policies is the encouragement of academic research related to sustainability. For example, Principle 4 of the *Kyoto Declaration* implores universities to undertake research and action in sustainable development. On an institutional level, the University of British Columbia states that environmentally responsible research that is geared towards sustainability is desirable because it has economic and social advantages and ensures the long-term viability of the institution. The University of Waterloo takes a student-centred approach by encouraging student action projects and research on campus and by providing support for student-based sustainability initiatives.

Public outreach

All of the declarations and most of the policies discuss the need for universities to situate themselves within the larger community in which they reside. Universities are intended for students and faculty to seek knowledge, but also to apply this knowledge to solve the complex problems of society. The argument for public outreach through environmental sustainability initiatives stems from the belief that for environmental change to occur, all facets of society must be involved. The *Talloires Declaration* makes this explicit when calling for an increased awareness of sustainable development. This declaration encouraged universities to "Use every opportunity to raise public, government, industry, foundation, and university awareness by openly addressing the urgent need to move toward an environmentally sustainable future" (University Leaders For A Sustainable Future, 1990).

Inter-university cooperation

Intra- and inter-university cooperation is also a common proposition, but is more prevalent in the national and international declarations than in

institutional policies. For example, the *Swansea Declaration* states that signatory universities must "co-operate with one another and with all segments of society in the pursuit of practical and policy measures to achieve sustainable development and thereby safeguard the interests of future generations" (UNESCO, 1993). The *CRE-Copernicus Charter* also endeavors to encourage cooperation in its call for sustainability networks. Additionally, the Action Plan in the *Halifax Declaration* calls for "establishing a network among universities in order to share information about the greening of the universities" (Lester Pearson Institute for International Development, 1992).

Partnerships with government, NGOs and industry

Partnerships with government, non-governmental organizations and industry are also mentioned in most of the national and international declarations, but are discussed less in institutional policies. The *Halifax Declaration*, for example, calls for increased interaction between the university community and those organizations concerned with sustainable development. As previously mentioned, George Washington University illustrates the development of partnerships with government, as it works closely with the EPA to develop models and knowledge related to environmental management and sustainability.

Ecological literacy

Encouraging ecological literacy is a frequent theme in many of the declarations and institutional policies. The *Talloires Declaration* states that universities must "create programs to develop the capability of university faculty to teach environmental literacy to all undergraduate, graduate, and professional school students" (University Leaders For A Sustainable Future, 1990). Numerous declarations and policies expand the scope of ecological literacy beyond students and recognize the need for environmentally literate faculty, staff, as well as an environmentally literate community. Principle 4 of the *Halifax Declaration* states that universities must "enhance the capacity of the university to teach and practice sustainable development principles, to increase environmental literacy, and to enhance the understanding of environmental ethics among faculty, students, and the public at large" (Lester Pearson Institute for International Development, 1992). The *CRE-Copernicus Charter* also alludes to ecological literacy stating that universities must incorporate "an environmental perspective in all their work and set up environmental education programmes involving both teachers and researchers as well as students – all of whom should be exposed to the global challenges of environment and development, irrespective of their field of study" (CRE-Copernicus, 1994). On an institutional level, the University of South Carolina environmental policy outlines how the university will facilitate ecological literacy amongst faculty, students and the community through training workshops, professional meetings, speakers, seminars, symposia, faculty knowledge exchanges and indicators of success.

Developing interdisciplinary curriculum

Related to the theme of environmental literacy is the notion of developing interdisciplinary curriculum. Principle 7 of the *Talloires Declaration* directs deans and environmental practitioners to develop curricula for an environmentally sustainable future. Dalhousie University's Draft Environmental Policy encourages the inclusion of environmental concepts and principles into all curricula.

Moral obligation

Perhaps the unifying theme among all declarations and policies is the ethical and moral responsibility of universities to be leaders in promoting sustainability. One of the best examples can be found in the *CRE-Copernicus Charter* which incorporates the general tone of all of the documents examined thus far:

> Universities and equivalent institutions of higher education train the coming generations of citizens and have expertise in all fields of research, both in technology as well as in the natural, human and social sciences. It is consequently their duty to propagate environmental literacy and to promote the practice of environmental ethics in society, in accordance with the principles set out in the Magna Chart of European Universities and subsequent university declarations, and along the lines of the UNCED recommendations for environment and development education (CRE-Copernicus, 1994).

The emergence of themes that span the declarations and institutional policies suggest that there are certain priorities for sustainability in higher education. By identifying the themes we gain a better understanding of how institutions frame their commitment to sustainability. These themes and priorities will change and grow as institutions and organizations re-frame their understanding of sustainability.

Conclusion

Throughout the world there are numerous examples of institutions of higher education pursuing environmental sustainability. Some institutions believe that they have met the challenge of sustainability through the signing of national or international declarations while others create individual institutional policies. Regardless of how a university approaches its commitment to sustainability, there are foundational themes that exist in both macro and micro approaches to sustainability. These themes include sustainable physical operations, sustainable academic research, environmental literacy, ethical and moral responsibility, cooperation amongst universities and countries, the development of interdisciplinary curriculum, and partnerships with government, non-governmental organizations and industry.

By gaining an understanding of these themes, we are able to identify how sustainability is conceived of in higher education. This paper has only explored institutions that are attempting to affect change. To develop a richer understanding of how sustainability is conceived in higher education, an examination of institutions that have not signed declarations, have not created

institutional policies and have not engaged in sustainability initiatives would be required.

In addition to identifying themes, this paper also highlighted other issues that should be explored for a better understanding of the influence declarations and institutional sustainability policies have on higher education. There is a current gap in knowledge and information regarding the degree of implementation of national and international declarations within specific institutions, as well as an understanding of what challenges and opportunities universities have faced during attempts at implementation. A critical step to promoting sustainability in higher education involves developing a clearer understanding of how declarations can be implemented effectively at institutions, rather than solely reporting on "best practice" cases. It is also imperative to acknowledge failures and build on lessons learned. In addition, further exploration is necessary as to whether the creation of declarations is primarily a public relations exercise or if such documents can truly affect change. Finally, if a university creates an institution-specific environmental policy, what measures are in place to ensure that it is implemented? Issues of accountability and efficacy of the various declarations are beyond the scope of this paper, but have largely been ignored in the literature and warrant further attention.

The number of institutions that are signing national and international sustainability declarations and creating their own policies and implementation plans is growing. This suggests that to some extent sustainability declarations and policies are useful to many institutions and capable of facilitating change. This paper helps illuminate the state of sustainability in higher education regarding national and international declarations and institution-specific policies, clarifies key priorities, and recommends areas for future research.

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"Sustainability" in higher education

From doublethink and newspeak to critical thinking and meaningful learning

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Keywords *Sustainable development, Higher education, Learning*

Abstract *It is higher education's responsibility to continuously challenge and critique value and knowledge claims that have prescriptive tendencies. Part of this responsibility lies in engaging students in socio-scientific disputes. The ill-defined nature of sustainability manifests itself in such disputes when conflicting values, norms, interests, and reality constructions meet. This makes sustainability – its need for contextualization and the debate surrounding it – pivotal for higher education. It offers an opportunity for reflection on the mission of our universities and colleges, but also a chance to enhance the quality of the learning process. This paper explores both the overarching goals and process of higher education from an emancipatory view and with regard to sustainability.*

Sustainability = growth: Orwell's cautionary tale

Over the past decade there has been much talk, and some lively debate, over the terms "sustainable development" and "sustainability". This includes a Canada-hosted on-line colloquium on the future of environmental education with a selection of papers published in Volume 4 of the *Canadian Journal of Environmental Education* (1999) and in the monograph that resulted from the colloquium (Jarnet *et al.*, 2000). More recently, another Internet debate on education for sustainable development was initiated by the Dutch Inter Departmental Steering Group on Environmental Education (Hesselink *et al.*, 2000). Beginning with the report of the World Commission on Environment and Development (1987) and followed by *Agenda 21* (United Nations Conference on Environment and Development, 1992), signed by 179 nations in Rio, adherents of sustainable development and sustainability have had some momentum in their efforts to establish guidelines and goal statements.

Not surprisingly, the education community is divided on how to respond to the emergence of "education for sustainability". Some appear quite comfortable with the term and seek to infuse this term with meaning, or use it to address issues under-represented by traditional environmental education (Huckle, 1999; González-Gaudiano, 1999; Gough and Scott, 1999). Others, who clearly are uncomfortable with the continued sustainability focus (Sauvé, 1996, 1999; Berryman, 1999), express concerns about the "globalizing" nature of the "education for sustainability" agenda and stress the need to nurture alternative

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perspectives. A third group, while recognizing limitations to this terminology, seek means to accommodate the global political agenda (i.e. Smyth, 1999). As a tentative step in this direction, Smyth speaks about "education consistent with *Agenda 21*". As these examples illustrate, there are multiple perspectives on sustainability, education for sustainable development, and education for sustainability and multiple perspectives on the way educators should interpret these ideas.

Of course sustainability is, in many ways, an important term. Many ecological processes are not sustained. Species are becoming extinct at an alarming rate and whole ecosystems are at risk. However, the degree to which it remains helpful from an education perspective depends on how well we recognize its shortcomings as an organizing concept. At least two potential pitfalls of a sustainability-focussed agenda can be put forward (Jickling, 1999). First, the idea of sustainability is conceptually flawed. Literally it means to keep going continuously. Yet, it provides no inherent clues about how one should mediate between contesting claims between advocates of incompatible value systems. At the level of common understanding, it masks a whole epistemological layer. While sustainability has clear meaning in particular contexts, as an aim it is dubious. Second, education for sustainability runs counter to prevailing conceptions of education: it breathes a kind of intellectual exclusivity and determinism that conflicts with ideas of emancipation, local knowledge, democracy and self-determination. The prepositional use of "for" prescribes that education must be in favor of some specific and undisputed product, in this case sustainability. At the same time, an emphasis on sustainability, or sustainable development, might hinder the inclusion of other emerging environmental thought such as deep ecology and ecofeminism. If environmental thought and ethics are evolving processes, then one task of higher education is to engage students in this process (see Weston, 1992, 1996a, b). Moreover, if environmental thinking is to continue evolving, and if students are to be participants in an environmental discourse unimagined today, then we must resist temptations to exclude a wide suit of emerging ideas in favor of a sustainability or sustainable development agenda. We also want them to be exposed to a diversity of ideas.

It is not uncommon to find that scientific, political and symbolic meanings of sustainability are used interchangeably by one and the same person or group. Both the knowledge base and the value base of sustainability are variable, unstable and questionable. Although these characteristics of sustainability can render the concept useless or reduce it to a rhetorical instrument, they can also add to its strength when handled with care. Sustainability talk potentially brings together different groups in society searching for a common language to discuss environmental issues. Where different ways of looking at the world meet, dissonance is created and learning is likely to take place – so called: "learning on the edge". This dialogue also allows the socio-scientific dispute character of emerging knowledge and values to surface. Participation in such a dispute is an excellent opportunity to learn about a highly relevant,

controversial, emotionally charged and debatable topic at the crossroads of science, technology and society (see also Dreyfus *et al.*, 1999).

At the same time, sustainability talk can, when used by advocates with radically different ideas about what should be sustained, mask central issues under the false pretense of a shared understanding, set of values and common vision of the future. However, critical thought depends on transcendent elements in ordinary language, the words and ideas that reveal assumptions and worldviews, and the tools to mediate differences between contesting value systems. And worse still, sustainability talk can lead us in the direction of Orwell's (1989) famously satirical notion of "doublethink" whereby ordinary citizens can increasingly hold in their minds contradictory meanings for the same term and accept them both (Orwell, 1989, p. 223). The power of universal discourse in reducing meaning to a minimum is such that, as in *1984*, antagonistic concepts can be conjoined in a single phrase ("war is peace", "peace is war") or concept (i.e. "sustainable growth") (Jickling, 2001). Big Brother's "Newspeak" was designated not to extend but to diminish the range of thought, and this purpose was indirectly assisted by cutting the choice of words down to a minimum (Orwell, 1989, p. 313). In Newspeak, concepts capable of opposing, contradicting or transcending the status quo were liquidated. As a result of this devaluation of language, the people in *1984* found themselves in a state of linguistic dysfunction, which was exactly what Big Brother wanted (Jickling, 2001). Seen this way sustainability tends to blur the very distinctions required to thoughtfully evaluate an issue. When comparing the sustaining of ecological processes with the sustaining of consumerism we immediately see inconsistencies and incompatibilities of values, yet many people, conditioned to think that sustainability is inherently good, will promote both at the same time.

Talking about sustainability is quite different from making it the end, or aim, of education, or using it as the preeminent organizing concept. Unfortunately, the mantra of sustainability has conditioned many to believe that this term carries unconditional or positive values. Yet environmental issues are not fundamentally or exclusively about sustainability. Rather, they are issues about cultural identities, social and environmental equity, respect, society-nature relationships and tensions between intrinsic and instrumental values. Ameliorating issues of sustainability involves addressing ethical questions, for instance, regarding the injustice in sharing the use of the world's resources. We do not know the answers to these questions and should not pretend that we do, but we do know that they can not be found without also looking at issues of development, justice, peace and conflict, human rights and dignity, and intrinsic value of other species, and indeed, whole ecosystems. Students must be in the position to examine critiques of scientism and technical rationality, and related life styles. If our universities and colleges do not facilitate this then they basically fail to involve them in one of the biggest political challenges of our time. Nobody has a single right vision of what a "good" lifestyle entails. Nobody yet knows how to best sustain the earth's

ecosystems for the benefit of ourselves, our children, and also for other forms of life – the more-than-human-world. It is a myth to think that there is a single right vision or a best way to sustain the earth or what kind of earth should be sustained. Underlying the shallow consensus that appears to be triggered by the introduction of sustainability, there are still norms, values and interests that are in conflict. At the same time, this shallow consensus itself can also serve specific prevailing norms, values and interests.

Utilitarian and emancipatory views of (higher) education

In an essay entitled "The role of higher education in achieving a sustainable society" (President's Council on Sustainable Development, 1995, p. 5), Tony Cortese states that "... [institutions for higher education] have the unique freedom to develop new ideas, comment on society, and engage in bold experiments, as well as to contribute to the creation of new knowledge". Universities in particular have a role in developing in their students so-called dynamic qualities (Posch, 1991) that allow them to critique, construct and act with a high degree of autonomy and self-determination, if not in their personal lives then at least in their professional lives. At the same time, universities should develop in their students the competencies which will enable them to cope with uncertainty, poorly defined situations and conflicting or at least diverging norms, values, interests and reality constructions. Posch writes in an OECD-ENSI publication: "Professional, public and private life have become increasingly complex, with divergent and even contradictory demands on the individual [who lives] within an increasingly pluralistic value system. Above all, it is necessary to look beyond everyday normalities and to search for ethically acceptable options for responsible action" (Posch, 1991, p. 12). This is one of the things that sets higher education apart from training and conditioning and makes the prescription of particular lifestyles or (codes of) behavior problematic as it stifles creativity, homogenizes thinking, narrows choices and limits autonomous thinking and degrees of self-determination.

With the above in mind, an instrumental interpretation of "education for sustainability" or "sustainable development" becomes problematic. In such an interpretation education is to contribute to the creation of a (more?) sustainable world – what ever such a world may look like. Education, higher education included, is one means or instrument that governments can use to create a sustainable world as they (and the interest groups influencing governments) define it. The problem is that we do not really know what the right sustainable way of living is. Even if we would, it would vary greatly from situation to situation and be likely to change over time as circumstances continuously change. To educate for sustainability is not necessarily educational when sustainability is fixed, pre-and expert determined (i.e. academics) and to be reproduced by novices (i.e. students). We could also take on a more emancipatory approach to relationships between education and sustainability. Such a view would hold that education is to contribute to the creation of a (more?) democratic and environmentally just world – whatever such a world

may look like. Education is viewed as a means to become self-actualized members of society, looking for meaning, developing their own potential and jointly creating solutions. In this view a sustainable world cannot be created without the full and democratic involvement of all members of society; a sustainable world without participation and democracy is unthinkable. If we juxtapose more instrumental views of "education for sustainability" with more emancipatory views of "education for sustainability" we can imagine, on the one hand, an "eco-totalitarian" regime that through law and order, rewards and punishment, and conditioning of behavior can create a society that is quite sustainable according to some more ecological criteria. Of course, we can wonder whether the people living within such an "eco-totalitarian" regime are happy or whether their regime is just, but they do live "sustainably" and so will their children. We might also wonder if this is the only, or best, conceptualization of sustainability. On the emancipatory end of the continuum we can imagine a very transparent society, with action competent citizens, who actively and critically participate in problem solving and decision making, and value and respect alternative ways of thinking, valuing and doing. This society may not be so sustainable from a strictly ecological point of view as represented by the eco-totalitarian society, but the people might be happier, and ultimately capable of better responding to emerging environmental issues.

These notions about democracy and participation can also be applied to processes for making decisions about the content and direction of the learning taking place in our colleges and universities. To what extent are learners and facilitators of learning involved in such decisions? To what extent does higher education respond to the challenges identified by the community? To what extent is the learning process and content sensitive to the ideas, values, interests and concepts embodied by the learners themselves? These are some questions that need to be answered when trying to link a concern for the environment to a concern for democracy within an educational framework. Figure 1 represents an attempt to position different conceptualisations of education within the force fields described so far.

If the integration of sustainability in higher education is closely connected to the development of emancipatory qualities it will need to provide students with a way of understanding and transforming the complex world of which they are part. However, it is typically assumed that the state is the key agent of educational regulation, and that regulatory networks should be created to monitor people's behavior. The 1990s still represented an era in which the restructuring of (environmental) education took place in conservative ways. This era largely left socially reproductive processes and exploitative economic practices unquestioned, thereby in essence strengthening them. The development of rather positivistic and deterministic standards and outcomes for education, environmental education and education for sustainability fits well in this tradition.

Despite the cautions we raise with regard to rallying behind "sustainability" as an organizing theme for higher education, we do see tremendous educational

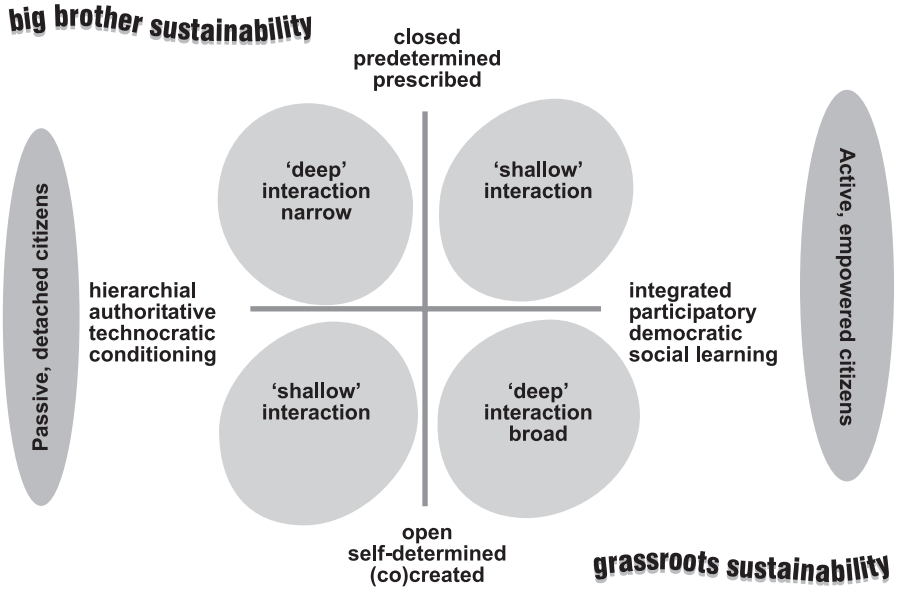

Figure 1.
Positioning sustainability in higher education in two force fields

potential which can and should be tapped by institutes of higher education. In the next two sections we will look at this potential and will look at ways to think about standards for the integration of sustainability in higher education in ways that do not standardize realities.

The educational potential of sustainability in higher education

Now that we have reflected on the ill-defined nature of sustainability and the merits of taking a more participatory, democratic, pluralistic, and emancipatory approach to education and sustainability, we are better able to outline some possible implications of integrating sustainability in higher education. In presenting this outline we will make use of seven lessons learnt from an earlier project focusing on the integration of sustainability into higher education (van den Bor *et al.*, 2000a)[1]:

(1) *Integrating sustainability pre-supposes the re-thinking of institutional missions*. The integration of sustainability will never lead to anything fundamentally new if the institution is not prepared to re-think its academic mission (see also Filho, 1999). This mission debate should involve all actor groups in the university. It should lead to the re-formulation of the aims and objectives of teaching and research programmes and it should result in a commonly accepted strategy at the macro-, meso- and micro-level. Only then can mission statements become more than a public relations tool.

(2) *It is no use crying over vague definitions*. The ambivalent nature of the concept of sustainability can be a major conceptual impediment to those who like to work with crisp and clear, narrowly defined concepts: "Tell

me what it is and I'll teach it!" It should also be realized, however, that this vagueness has an enormous canvassing and heuristic capacity if it is systematically and systemically used as a starting point or operational device to exchange views and ideas. These ongoing discussions may generate fruitful working hypotheses for the concrete formulation of curricula, study-programs, subject matter content and didactical arrangements. Sustainability has many faces and features which greatly enhance its educational potential from a more emancipatory perspective. These faces include:

- sustainability as (socially constructed) reality (and as such a phenomenon to be taken seriously);
- sustainability as ideology and therefore political;
- sustainability as negotiated, the result of (on-going) negotiations;
- sustainability as contextual, its meaning is dependent on the situation in which it is used;
- sustainability as vision to work towards;
- sustainability as dynamic and/or evolving concept;
- sustainability as controversial and the source of conflict (both internal and with others);
- sustainability as normative, ethical and moral;
- sustainability as innovation or a catalyst for change;
- sustainability as a heuristic, a tool to aid thinking;
- sustainability as a (temporary) stepping stone in the evolution of environmental education and of environmental thought.

(3) *Sustainability is as complex as life itself*. The concept of sustainability is related to the social, economic, cultural, ethical and spiritual domain of our existence. It differs over time and space and it can be discussed at different levels of aggregation and viewed through different windows. Hence, a curricular review in terms of sustainability integration is per definition of an interdisciplinary, systemic and holistic nature. It concerns cognition, attitudes, emotions and skills. It does not lend itself to unilateral, linear planning or a reductionist scientific paradigm and thus involves the systemic integration between theory and practice into systemic praxis.

(4) *Teaching about sustainability requires the transformation of mental models*. Teaching about sustainability presupposes that those who teach consider themselves learners as well and that students and other concerned groups of interest are considered as repositories of knowledge and feelings too. Teaching about sustainability includes deep debate about normative, ethical and spiritual convictions and directly relates to questions about the destination of humankind and human

responsibility. In this way it differs from a modernist and positivistic way of thinking. It incorporates notions of the possibility of the finiteness of human existence and trust in human creativity at the same time.

(5) *There is no universal remedy for programmatic reconstruction.* The inclusion of aspects of sustainability in academic programmes is very much culturally defined. Also it is closely tied to the academic history and curricular tradition of the institution concerned. Consequently, there is no panacea for curricular reform. Some institutions will choose to add on to existing programmes, others will opt for a more revolutionary approach. The decision about the most desirable reform approach is time and space specific and can only be taken in an open and communicative process in which all actor groups play their own, respected roles.

(6) *Sustainability in programming demands serious didactical re-orientation*. Based on the 2000 Krakow seminar on the integration of sustainability in higher (agricultural) education (Wagner and Dobrowolski, 2000) the following requirements, all pointing at the need for a didactical re-orientation, can be synthesized:

- sustainability requires a focus on competencies and higher thinking skills;
- sustainability requires a foundational appreciation of holistic principles, critical system understandings, and practical systemic competencies;
- sustainability requires an early start, i.e. well before students enrol in universities (from kindergarten through high school);
- sustainability requires critical reflection on one's own teaching;
- sustainability requires self-commitment and taking responsibility;
- sustainability requires empowerment of learners by enabling them to work on the resolution of real issues that they themselves have identified;
- sustainability requires appreciation and respect for differences;
- sustainability requires courage ("dare to be different");
- sustainability requires creativity as there are no recipes.

Integrating aspects of sustainability cannot be realized without thinking very critically about the re-structuring of didactical arrangements. This re-orientation requires ample opportunity for staff members and students to embark on new ways of teaching and learning. For this to happen they have to be given the opportunity to re-learn their way of teaching and learning and to re-think and to re-shape their mutual relationships. These new didactical arrangements pre-suppose a

problem orientation, experiential learning and lifelong learning. The following shifts in educational orientation appear to make sense in this regard:

- from consumptive learning to discovery learning and creative problem solving;
- from teacher-centered to learner-centered arrangements;
- from individual learning to collaborative learning;
- from theory dominated learning to praxis-oriented learning;
- from sheer knowledge accumulation to problematic issue orientation;
- from content-oriented learning to self-regulative learning;
- from institutional staff-based learning to learning with and from outsiders;
- from low level cognitive learning to higher level cognitive learning;
- from emphasizing only cognitive objectives to also emphasizing affective and skill-related objectives.

(7) *Sustainability is not "holy"*. Sustainability is particularly useful when it is seen as a stepping stone for teaching and learning which over time can become obsolete or replaced by another heuristic. When it becomes an organizing principle or a predetermined end of education it may well stifle creativity or hinder critical thinking or, worse yet, become un-educational.

Focussing on sustainability provides an opportunity for accessing higher learning (epistemic development) and new ways of knowing (the paradigmatic challenge), precisely because the concept is so slippery and open to different interpretations, and so potentially complex (involving ethical, moral, aesthetic and spiritual issues as well as the more conventional technical, economic, social and cultural ones). In other words, serious attempts to integrate sustainability into higher education brings academics into whole new pedagogical worlds – experiential, epistemic, and systemic – which in turn brings them into whole new worlds of learning and, indeed, researching (Bawden and Wals, 2000). Viewed as such, sustainability is an ideal entrée into epistemology, ontology and ethics, and indeed can be quite educational.

Conclusion

As educators with broad concerns about the future of the earth, and concerns about the multiple aspects of human/society/nature relationships we must seek more, not less diversity of thought. And, this will be best achieved when we use less exclusive language to describe ourselves and our educational activities. This observation has far reaching implications for the goals, content and process of higher education in general, and for the position and meaning of

sustainability in higher education, in particular. For instance, for the way we look at setting standards for sustainability in higher education. The process of seeking, rather than setting, standards for education for sustainability, from an emancipatory vantage point, above all means the creation of space. Space for alternative paths of development. Space for new ways of thinking, valuing and doing. Space for participation minimally distorted by power relations. Space for pluralism, diversity and minority perspectives. Space for deep consensus, but also for respectful dissensus. Space for autonomous and deviant thinking. Space for self-determination. And, finally, space for contextual differences and space for allowing the life world of the learner to enter the educational process (see also Wals *et al.*, 1999). If, on the other hand, standards are there to compare, prescribe, assess and judge, then there is a need for a clear definition of things like sustainability, sustainable practice, a sustainable future and the path that takes us there. If standards are there to encourage excellence, diversity, self-determination and openness towards the future, then looking for universal definitions of sustainability, necessary conditions for sustainability, essential knowledge claims about sustainability and prescribing sustainable futures, becomes undesirable and, indeed, un-educational.

As Walker *et al.* (submitted) state, embedding sustainability across all the functions of a university offers the potential for a university to make a significant contribution to environmental improvement. The fact that "sustainability" is a messy, ill-defined concept gives universities the opportunity to grapple with the concept and develop new ways of thinking about the concept. Sustainability provides colleges and universities an opportunity to confront their core values, their practices, their entrenched pedagogies, the way they program for student learning, the way they think about resources and allocate these resources and their relationships with the broader community.

When Rachel Carson wrote *Silent Spring*, no one had heard of deep ecology. When Naess coined the term deep-ecology, nobody had heard of the term sustainable development. When sustainable development became popular (World Commission on Environmental Development, 1987), eco-feminism was virtually unknown and in its infancy. In other words we have no idea where we might go next. Higher education has first and foremost something to do with creating possibilities, not defining or prescribing the future for our students. These possibilities arise when universities promote the exploration, evaluation, and critique of emerging ideas and the creative contribution to their development. Viewed as such, sustainability is best seen as only one of many stepping stones.

Note

1. The authors wish to acknowledge the input of Wout van den Vor and Peter Holen who have been instrumental in distilling the lessons learnt from various AFANet activities that took place within the topic "Integrating sustainability in higher agricultural education". These lessons learnt can also be found in van den Vor *et al.* (2000b).

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Shifting sights
The cultural challenge of sustainability

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Keywords *Sustainable development, National cultures, Universities*

Abstract *This article focuses on the need for universities, as teaching and research organisations, to recognise and act upon a more culturally inclusive interpretation of "sustainable development" and "sustainability". It argues for the valuing of indigenous worldviews as a means of achieving a more holistic and interdisciplinary way of thinking about the Earth as the home of all people and as a complement to the beliefs of Western science and rational objective thinking. At a more personal level, it challenges readers, especially academics, to re-examine their own ways of thinking and knowing for the sake of creating sustainable futures that are inclusive in its processes, contexts and outcomes.*

There are certain assumptions that underlie this article that I wish to make explicit from the outset. The first relates to the value of the Earth Charter in helping people to recognise the need to work towards a shared conservation ethos as an important aim of sustainable development. The second relates to my interpretation of heritage conservation as embracing both cultural and natural heritage, which together, form the core of indigenous knowledge systems, at least among the indigenous people of Oceania. Finally, I wish to endorse the view that people and their life-giving environment should be both the means and end of sustainable development.

In the last five years or so, there has been much talking and writing about issues such as sustainable development, good governance, democracy, accountability, transparency, and human rights, both globally as well as regionally in the Asia/Pacific region. Many of these notions have become particularly fashionable, not only among academics and conference participants, but also among international financial institutions, money-lenders and providers, many of whom are now driving development in so-called developing countries where finance is provided only with the price tag of structural and other reforms and "adjustments". However, for most ordinary people in developing countries, for whom English (or French in some contexts) is a second, third, or sometimes fourth language, such fashionable ideas remain meaningless words that are spoken by often-times corrupt politicians and bureaucrats, especially when officials of and consultants for international and donor agencies arrive to talk about "development" projects. Most of these projects are determined and assessed (by these consultants) to be good for the people of developing countries but often these projects tend to make things worse until the next group of development consultants arrives to try to make them better again:

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your words are empty
sucking dry the brown dust
left by earth and sky
patches politely parched
with no water flowing from
the mountain top
scars burn on my soft skin
you've cut a piece of me away
leaving my bandaged heart
to endure the pain
of your tying me
to yourself

("Your Words", Thaman, 1993)

One reason for the apparent breakdown in much of the development discourse may have something to do with the fact that, at least for those of us who live in Oceania, these very important ideas and themes are linked not only to the English (or French) language, but also to particular cultural histories to which Oceanic people and their cultures are only partly linked through colonialism and its modern manifestation, globalisation. For most of us who grew up and still live in Oceania, such notions need to be translated into our various vernacular languages, and, if possible, equivalent ideas from our home cultures and languages need to be identified, in order for us to make sense of them in our own thinking and embark on more meaningful communication and discussion.

For example, in my language, Tongan, "development" is "*fakalakalaka*", (literally to move or step forward), the assumption being that one is moving towards something better, an assumption that is often proved to be incorrect in the Pacific Islands given their past experiences with many development projects. Then there is "sustainable development", which I would guess would mean moving towards something that is going to be reproducible in the long-term, not just for a few moments. This brings me to the importance of the notion of time in the sustainable development discourse, which assumes a Western, scientific, linear and financially driven notion of time rather than a circular perception, more characteristic of Oceanic cultures. In a linear model, time is broken up into bits and pieces, each with an astronomic and/or monetary value. In a circular configuration, the past, present and future are combined within an all embracing "now" in which the living and the dead (the past) are linked in a presence that is the future. In my view, an awareness of such a difference is a prerequisite to any discourse on sustainable development, and is the first major cultural challenge for research in and education for sustainability, especially in universities in a culturally diverse region such as the Asia/Pacific.

I try to capture such a challenge in verse:

why do you say
that all good things
must come to an end
it cannot be

the wind whirls
making the palm trees sway
sometimes gracefully
sometimes painfully

the earth travels around
the sun
making it rise and fall
and rise again

the moon is the same
moving around
the earth
never stopping

the seasons form a circle
around us
and we always come back
to where we were

good things do not come
to an end
they only wait
for our return

("Why Do You Say", Thaman, 1999a, p. 19)

For development to be sustainable, in my view, it must be rooted in a people's cultural values. This would mean that for Pacific Island nations (PINs) sustainable development must take into consideration Pacific Island cultures, languages, and values as instruments for understanding the way Pacific Island societies have developed over time and the way they might develop in the future. Pacific cultural values such as trust, reciprocity, creativity, restraint, compassion and their interdependence with their island environment are among those that are intrinsic to both culture and sustainable development and are rooted in human relationships as well as relationships between people and their environments. In the Pacific, for example, people know that their culture determines not only their local institutions, but also the political and economic relationships that continue to operate within these institutions despite the introduction of new structures and institutions. In our region, culture permeates all aspects of life. As such, culture *is* life itself. In most of our (Pacific) languages the words used to describe culture, life, and environment are often the same, indicating the connectedness of these ideas in the indigenous mind. For example, *Faa Samoa* is Samoan culture or the Samoan way of life; *Faka Tonga* is Tongan culture or the Tongan way of life. Within each notion, "environment" (often inadequately translated as land) is *fonua* (Tongan) or *vanua* (Fijian); it is what surrounds, embraces, and permeates all that we do, know and are, which, collectively, amounts to our heritage, our culture. In the World Commission on Culture and Development Report, *Our Creative Diversity*, UNESCO defines culture as "the whole complex of

distinctive spiritual, material, intellectual and emotional features that characterise a society", which partly captures the Oceanic notion.

Sadly for most PINs today, consideration of Pacific cultures has not been central to most development projects, including educational projects. The reason, in my view, is the existence of a gap between the aims and underlying values of the modern development process and those of the majority of indigenous peoples and communities being "developed". If the values and goals of development were closer to those of the community in which development is to take place, the chance for success and sustainability would seem to be greater.

This cultural gap in sustainable development debate is all too evident when we examine the various development models and paradigms currently followed by most PINs – models that are imported from or imposed by different countries with different cultural contexts and different assumptions, goals and values. The existence of this gap often makes much "development" in our region unethical, since ethics, in my view, has to be associated with what is right (or wrong) in the context of a particular society and culture. It is no wonder then, that despite nearly 30 years of educational reforms in our region, the Asia Development Bank (1996) judged the quality of both primary and secondary education in most Pacific Island nations to be poor, prompting the international community to call for a sizable investment by all governments in what has come to be popularly known as "basic education". Within this new educational agenda, the cultural challenge for everyone, including the international community, will be the recognition that for over 100 years, formal education (including higher education) in the Pacific region has not fully recognised the cultures of Pacific Island peoples, including the ways in which they communicate, think and learn. Indeed, the very ideologies that were introduced under colonialism, and more recently through post-colonial globalisation, are to a large extent destroying the very values and belief systems that underpinned indigenous Oceanic education systems in which the majority of our peoples continue to be socialised. These education systems are closely linked to the values that have ensured the continuity and survival of Pacific Island communities and environments for millennia. For the academy and those associated with it, the cultural challenge must be to identify and reclaim Pacific indigenous worldviews, perspectives, knowledges, and wisdom because these are rooted in the very environments and cultures of the people for whom development needs to be sustainable.

The question that needs to be asked here is "Why have universities and most academics, researchers, environmentalists and conservationists been slow to take on such a challenge?" My answer is because university education continues to assume the universal significance of science and the scientific method in its approach to most issues, including the environment and sustainable development. The result is that for the majority of Pacific people, development projects and paradigms have not made much sense. As Max Weber said, while science makes the world orderly it does not make it

necessarily meaningful. Beare and Slaughter (1993) echo the same sentiment and call for the critical examination of the scientific method, asking schools and universities to go beyond scientific rationalism in their teaching and research curricula. Roberts (2000), a New Zealander, called for the de-colonising of science in her country, and urged universities to consciously make room for indigenous knowledge systems, adding that this would not only enhance the curriculum, but was an obligation under the Treaty of Waitangi.

Unfortunately, Western science and Western economic rationalism continue to dominate the global approach to development, which now pervades the lives of most people everywhere. After years of indoctrination, many of us now believe that education, especially university education, has become a commodity to be sold rather than something provided by governments for the common good. In our own region, for example, countries like Australia and New Zealand do not hide the fact that their higher education institutions must be proactive in marketing their educational services. This raises the question of "what and whose knowledge is considered worthwhile to teach and/or learn" anyway?

These global emphases on market-driven economies and development in our world are making issues such as cross-cultural transfer, globalized curricula and appropriate teaching strategies extremely critical for all of us as globalisation threatens to blur the cultural and linguistic diversity for which the Asia/Pacific region is well known. In most PINs today, apart from threats such as climate change, rising sea levels, deforestation and the loss of biodiversity, globalisation may be the biggest threat to sustainable development. This is because from the cultural perspectives of most PINs, globalisation (however it is defined) is really about globalising Western, mainly Anglo-American, culture and its associated knowledges, skills, and values. Like colonialism, globalised culture is seen not as empowering but as dis-empowering most Pacific peoples, especially those in rural areas, the poor, the elders, and those who have not been fully exposed to Western values and epistemologies. These are the very people who have traditionally been the custodians of our traditional cultural values and knowledge. Such a scenario must have prompted UNESCO to warn nations about the mass export of the cultural practices and values of the industrialised world, including their languages, communication and entertainment networks and, most particularly, non-sustainable consumerism, which, UNESCO suggested, might contribute to a sense of dispossession and loss of identity among those that are exposed to it (Teasdale, 1997).

The principle of universality that underpins both science and the university may, therefore, need to be questioned in relation to discussions about sustainable development in non-Western contexts because, when we take a closer look at science and liberal education, we find that they are not culture-free nor do they occupy an ideologically neutral high ground because academic, scientific and liberal beliefs and values, like all beliefs and values, are embedded in a particular cultural curriculum and agenda (Vine, 1992).

In my island part of the earth and ocean, the globalisation of Western, scientific and industrial culture to which universities have made a huge contribution may be similar to the spread of monocultures in agriculture where imported hybridised, fertiliser and pesticide-dependent seeds produced at a profit for multinational corporations crowd out the indigenous local varieties and the knowledge and management systems associated with them. In my own work in the area of education and culture, for example, as well those of other Pacific Island academics (such as Michael Mel of Papua New Guinea; Unaisi Nabobo of Fiji; Teawariki Teaero of Kiribati, Kabini Saga of Solomon Islands and Ana Taufe'ulungaki of Tonga) there seems to be increasing tension between indigenous and modern education systems which often leads to students' underachievement in school and university. Many Pacific students as well as teachers are increasingly showing signs of cultural resistance (Thaman, 2000).

At the University of the South Pacific (USP), where I work, concern about the environment and sustainable development has been ongoing, dating back to the mid-1970s and the work of people such as Graham Baines in biology, Bill Clarke and Randy Thaman in geography. In November 2001, our Deputy Vice Chancellor, Professor Rajesh Chandra (previously Professor of Geography at our university), launched our university's Centre for Environment and Sustainable Development, and tasked it with coordinating the regional university's efforts in these areas, such as undergraduate and post-graduate programs and activities in environmental science/studies; a diploma in environmental education; a postgraduate certificate in climate change, vulnerability adaptation and assessment; a postgraduate training course in Pacific community based conservation and management of protected landscapes; and many other programs and activities that relate to environment and sustainable development. It setting up the centre, it was recognised that a number of sustainable development-related research and consultancy activities have also been carried out over a period spanning 30 years or so by both staff and students of the university.

But even at USP, with very few exceptions, there has been little effort to research and/or incorporate traditional indigenous and local knowledge and perspectives in courses and programs. Since being awarded the UNESCO Chair in Teacher Education and Culture in 1996, I have been involved in efforts to incorporate indigenous and local knowledge in the curricula of schools and teacher education institutions in our region as teacher education and Pacific studies are among five key areas for development in USP's strategic plan. There are also ongoing research projects, which explore Pacific biodiversity, including indigenous and local knowledge of both marine and terrestrial environments (Thaman, 1999b, 2001). More action is needed, however, to encourage the documentation and valuing of ways of knowing and knowledge associated with Pacific Island cultures and environments as well as the acceptance by the academy of alternative methods of research, including oracy, as legitimate areas of academic study. This is a major challenge for our university, especially at a time when priority is focussed in areas such as accounting, economics, management and information technology.

The university as an organisation will probably be the last to value worldviews that are not normally regarded as liberal and scientific. The inclusion of indigenous peoples, their knowledge systems and ways of learning in the agenda of most conferences about our region has only become common in the past decade. Before this they were usually included as part of multicultural education or traditional knowledge of hard-to-reach clients of educational and other organisations. Even at the 1990 World Conference on Education for All, in Jomtien (Thailand), indigenous people were seen as clients who needed to become literate in order to boost the statistics of educational achievement in countries with high illiteracy rates and to contribute to increases in their GNPs. In Sydney, four years ago, the newly formed World Commission on Indigenous Education reaffirmed the voices of indigenous peoples in all spheres of intellectual life and noted that many of them do not share dominant and globalised educational and economic agendas. Before that, in 1992 under the sponsorship of UNESCO, indigenous educators from the Pacific region agreed that indigenous perspectives must take an important place in any discussion about Pacific Island education and environments. Up until then, indigenous perspectives have been "silenced, misrepresented, ridiculed and even condemned in academic as well as the popular discourses" (Smith, 1999).

In my view, a move to reclaim indigenous knowledge systems is integral to sustainable development efforts, especially in our region. It is particularly urgent because communal self-sufficiency and sustainability is rapidly giving way to economies that depend on expanding markets, modern communication and transportation, and overseas trade, all of which require new forms of regulation, coordination, and control. Many Pacific Islanders are losing far more than their ancestral lands and their biodiversity, as privatisation of land and the increasing commercialisation of their forests, agricultural products and marine resources has changed the entire structure of life, and with it the spiritual as well as the economic security that for thousands of years provided Oceanic peoples with a sense of place and purpose. Exposed and directionless, many are at the mercy of wealthy capitalists, moneylenders and corrupt bureaucrats and autocrats of the nation state.

Another example of how economic colonisation has negatively impacted on our communities and contributed to unsustainable futures may be found in the way that land has been cut up into bits and pieces, privatised and reduced to a commodity that is negotiable in the open and global marketplace. The current land problems in Fiji are an example of how many indigenous landowners have not fully benefited from the commercial use of their land for sugar-cane farming (by mainly Indo-Fijians) and are demanding their land back. Ongoing negotiations among stakeholders would indicate that economic considerations seem to be prioritised over more important (to many indigenous Fijians) social and cultural considerations.

If universities were to contribute positively to sustainable futures, at least in our region, the biggest challenge would involve the acceptance of indigenous and alternative ways of seeing the earth in its totality. For academics, it would mean a paradigm shift and the acceptance of different ways of knowing and

different kinds of wisdom. It means lending support to efforts to reclaim local and indigenous knowledge and philosophies that are culturally inclusive and sustainable. It means incorporating local and indigenous knowledge and processes in the university research and teaching agenda. This, in my view, is an educational imperative for the twenty-first century in our region. We must do this for several reasons:

- in the Asia/Pacific region, we have vibrant indigenous cultures that have their own views of the world that need to be recognised and acknowledged;
- our universities need to incorporate such knowledge in order to validate and legitimise our work, particularly in the eyes of the communities that send us students;
- indigenous knowledge can contribute to and enrich the general pool of scientific and social scientific knowledge that is the focus of higher education;
- universities need to recognise the need for ownership and control of indigenous knowledge by indigenous peoples and not the academy;
- incorporating indigenous knowledge into the higher education curricula would help make university study more meaningful and accessible for many students;
- valuing indigenous perspectives could lead to mutually beneficial collaboration between indigenous and non-indigenous peoples and their treatment of each other as equals; and
- the university curriculum will be enriched by consideration of other perspectives of knowledge and wisdom.

This challenge of inclusion is a major one because it requires the academy to recognise that culture is the foundation of sustainable development, at least in Oceania. As such, the university will need people who value different perspectives from their own, and who, through example and advocacy, help others, especially students, to do the same. The university must encourage the multiple voices of people of diverse cultures in order to facilitate the creation of futures that are not only comfortable, but also culturally and environmentally sustainable. People of the Asia/Pacific region have cultural histories that are not only time-tested, but also authentic and material to their well-being and the well-being of the region. To see development in our region only through the eyes of Western rationalism and corporate culture is to do a grave injustice to our ancestors and our cultures, not to mention that it is anti-educational and misses the whole point of development altogether.

Furthermore, the indigenous worldview is an inclusive, holistic, and inter-disciplinary way of thinking that champions stewarding nature, participating in community and valuing inter-personal relationships. It complements beliefs in Western science and rational objective thinking, material productivity and personal autonomy. And most importantly, it is not a new perspective. Every

civilisation used to view the Earth as alive, an organism with a set of living relationships that work together. Too many of us are becoming detached from the Earth and from people. Indigenous wisdom is about the connectedness and interrelatedness of all things and all people.

For those of us who work in the academy, we may need to go beyond the politics of society into the politics of individual consciousness if we are to play a part in the development of sustainable futures, because worldviews are not only cultural and social abstractions; they are embodiments of our sense of self in the world. It is the way we think and our capacity for wisdom that will ultimately produce the world we live in now and shape the world of the future (Teasdale and Rhea, 2001, p. 1). The journey towards a sustainable future for our children and grandchildren will require transforming the personal politics of all of us who are involved in the process of globalisation. Our newly acquired worldviews represent our flight from our cultural roots, from nature and from one another. We must attempt to moderate this process, to examine our own ways of thinking and knowing and explore what might be changed in order to create for us a future that is not only sustainable, but also inclusive in its processes, contexts and outcomes. This is, for me, the greatest cultural challenge of all. I invite you to take the risk – and start a new "tradition" in your institution/university:

every day
do something that scares you
he said
take risks
but don't forget
to wear your sunscreen

so I took my laptop
and deleted my past
saving only the part
that threatened to digest
the dreams that dared
to frighten a frail
and divided heart

and in my attempt
to re-create the moment
I found several scars
left by unknown people
I have loved in my mind
and wondered

what judgements
or inconvenience
I would cause if caught
trying to escape
from the fear
of getting burnt
basking in a slice of sun

("Sun Screen", Thamana, 1999, p. 43).

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Advancing sustainability in higher education

Issues and opportunities for research

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Keywords *Sustainable development, Higher education, Research*

Abstract *This paper explores issues related to the choice of goals and approaches for advancing sustainability in higher education through research. The paper argues that the diverse nature of the questions, issues and problems facing advocates of sustainability in higher education requires a willingness to adopt an eclectic approach to the choice of research methodologies or paradigms. The views of reality and knowledge embedded in alternative research paradigms – empirical analytical, interpretive, critical, and poststructural paradigms – are summarised briefly. The relevance of the four paradigms is illustrated by taking two issues of sustainability in higher education and exploring how they would be addressed by each one. The two issues are: campus catering services and integrating the principles of the Earth Charter into an engineering degree program. The paper concludes by reviewing the debate over whether this eclectic position is consistent with the goals of advancing sustainability in higher education.*

> What is a more appropriate form of environmental education research? . . . [I]t is one which includes consideration of both human consciousness and political action and thus can answer moral and social questions about educational programs which the dominant form [of research paradigm] cannot. It is one which is more consistent with the ecophilosophical view – which encourages individuals to be autonomous, independent critical and creative thinkers, taking responsibility for their own actions and participating in the social and political reconstructions required to deal intelligently with social/environmental issues within mutually interdependent and evolving social situations (Robottom and Hart, 1993, pp. 51-2).

A diverse range of publications, including conference proceedings, edited collections and the specialist *International Journal of Sustainability in Higher Education*, as well as other journals, now contain many reports on studies that have sought to advance sustainable development in the curriculum and operations of higher education systems and institutions. These studies generally focus on one or more of the ecological, economic, equity or political pillars of sustainable development (Yencken and Wilkinson, 2000). Examples include studies of: the results of campus audits for assessing and monitoring the ecological footprint of a campus; strategies for advancing economic sustainability through the financial savings possible with energy conservation and "green purchasing" policies; the results of race, gender and disability programs in promoting social sustainability; and the negative impacts of neo-liberalist forms of governmentality on the political sustainability of higher education. Issues such as these are addressed in the case studies in this special issue also.

The researchers who conduct studies such as these, especially those involved in the last two types of examples, may not necessarily identify their

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research with the goals of sustainable development. This may be because many scholars outside the mainstream environmental field do not yet recognise the significance of sustainable development to their research. The higher education sustainability movement is relatively new and has not yet been able to reach out to all scholars and university managers. It may also be that many, if not most, advocates of sustainability in higher education have tended to come from the fields of environmental studies, education, and facilities management and, thus, have tended to concentrate on the economic and ecological pillars of sustainability, and have not often seen the relevance of sociological, political science and cultural studies research to their goals.

Consequently, much research on sustainability in higher education does not address the four pillars of sustainability in a holistic, interdependent and systemic way. This is a key problem that attention to alternative paradigms of research may help to redress. It may also help redress several related problems that characterise much current research in this area. One of these is the predominantly descriptive orientation of research in this field. For example, most research reports[1] could be seen to fall into one of four categories:

(1) arguments about the need for reform of curriculum and environmental management practices in higher education (or what Lidstone (1988) called research of the "good advice type");

(2) surveys, summaries and descriptions of sustainability initiatives in one or more institutions;

(3) narrative accounts of the experience of institutional change; or

(4) audit reports of the economic and ecological benefits of successful projects and programmes.

Important and interesting as this work is, it remains predominantly atheoretical in that few studies have sought to go beyond description to include a critical and theoretical analysis of findings or to ground explanations in social or organisational theory. Comparative research that draws on corporate sustainability initiatives (or other forms of organisational change) in other public or private sector organisations is similarly missing. Another problem with the majority of studies is a lack of rigorous research designs. For example, few reports contain a comprehensive account of how data were collected and analysed, or of how issues of validity, reliability and ethics were managed. Such problems are indicators of the advocacy and early "honeymoon" phases of the innovation process and, given the relative newness of the sustainability in higher education movement, an understandable aspect of its research culture.

Research on sustainability in higher education is a subset of educational research and much can be gained from considering contemporary debates in this field. Thus, this paper has not been written as a guide to what sustainability issues in higher education need to be researched and how. Rather, the paper has been written as an introduction to current thinking in educational research for academics and university managers who are

interested in the potential of research to guide and enhance sustainability projects but who may not have a background in educational research. In particular, the paper outlines four broad approaches – or paradigms – that may be used to research issues of sustainability in higher education. These are the empirical-analytical, interpretive, critical, and post-structuralist approaches to research.

It is possible to see discussions about paradigms as being too philosophical and to criticise them for diverting efforts away from the "real business" of getting research done, improvements put into place, and papers published. However, such concerns tend to reflect a view of research as a technical activity only. The philosophical emphasis of this paper is not meant to detract from technical proficiency – or productivity – in research. Rather, it is anticipated that the discussion will lead to improvements in the appropriateness and technical proficiency of research. Indeed, experienced researchers who have attended workshops I have facilitated on such issues in research have often expressed surprise that they had not considered such issues before. The surprise often comes when the analysis of paradigmatic questions leads to discussions about ethical issues in the research enterprise. Key ethical questions about the practice of research that have arisen in these workshops include: what criteria can be used to judge whether a research topic is worthwhile? What criteria inform judgements about the appropriateness of particular data collecting and analysis techniques? What views about the nature of reality, epistemology, and human behaviour are subsumed in such criteria? Who owns the data we collect? Who has the right to use the findings of our research? And is the research really "ours" anyway? Is the presumed linear relationship between research, dissemination and adoption appropriate, particularly when a problem is acute and managers cannot afford to wait until all data have been analysed and the findings validated? And how ought the uncertainty of any scientific conclusion be factored into policy and decision making?

Such questions highlight a very important aspect of research – that research is a personal, ethical and political enterprise as well as a technical one. Research is personal because individual and institutional values guide decisions on topics to be researched and the methods to be used. Research, especially on sustainability issues, is ethical because it invariably involves our interaction with other humans and/or some parts of non-human nature – and how are we to relate to and respect the rights and dignity of "them"?

"Them" was placed in quotation marks to draw attention to this ethical point. According to the syntax of the last sentence, "them" refers to other people and to parts of the natural environment. It is not common in Western society to refer to aspects of non-human nature as "them"; most often we say "it". Thus, even our choice of words reflects the ethical nature of research. Another example to think about is whether we should call the humans who help provide us with data "objects" or "subjects" in the study? Most people answer this question by saying that they prefer to use "objects" to refer to non-human

nature and "subjects" to refer to people. An important distinction in environmental philosophy and ethics is being made in this view. For example, how would the ethics and the process of research be different if we chose to call non-human "objects" our "partners" in the study or our human "subjects" as "participants" or "co-researchers" in the study? The language we choose to use in research is important as these alternative words point to new configurations of ethics and power in a study. For example, as "participants" not "subjects", the people with whom we conduct research come to have rights, as stakeholders, in the direction, processes and outcomes of a study. As co-researchers, these rights would appear even stronger. The issues of power and rights in research point to the inevitably political nature of research.

Research is political in the sense that politics refers to issues of power between people. Power is a key issue in deciding whether we call people who provide us with data "subjects", "participants" or "co-researchers". The politics of research also comes into play in decisions about who is allowed a say in decisions about how data will be collected, how and by whom it will be validated, how policy and planning decision makers will use the findings, and where and by whom any papers will be published. Power is also involved in the allocation of resources to support different types of research projects. What sort of research about sustainability in higher education is needed? Who decides such questions? How do they justify such decisions? By what criteria and authority? Emphasising research as a personal, ethical and political process draws attention to the need to consider the paradigmatic nature of various research undertakings.

Four research paradigms

van Manen (1990, p. 27) describes research paradigms as comprising "the fundamental assumptions" about "the general orientation to life, the view of knowledge, and the sense of what it means to be human" that direct particular modes of enquiry. Thus, paradigms include theories about the nature of reality and knowledge, ways of discovering knowledge, and making judgements about the validity and authenticity of findings. As Denzin and Lincoln (1994, p. 14) note, decisions about research designs reflect the coordinated framework of "skills, assumptions, and practices that researchers employ as they move from their paradigms to the empirical world". In other words, developing a research design involves the practical application of a chosen research paradigm. Thus, research design and methods cannot be separated from the paradigm or underlying assumptions upon which the research is based.

Lather (1992) has identified four paradigms or methodologies of research: the positivist or empirical-analytical, the interpretivist, the critical and the poststructural. Each of these, she argues, has been developed to provide a philosophical framework for addressing particular types of research tasks. Lather describes the central tasks of the four paradigms as follows:

(1) to describe, control and predict – the empirical-analytical paradigm, involving positivist and postpositivist approaches;

(2) to empathise and understand – the interpretive or hermeneutic paradigm;

(3) to change – the critical paradigm; and

(4) to deconstruct – the poststructural paradigm.

Each of these paradigms has an appropriate role to play in educational research, depending on the type of problem being investigated. For example, all four are used in environmental education research although the empirical-analytical paradigm has been the most dominant until recent years (Robottom and Hart, 1993). This dominance is a function of the centrality of psychological concepts in the behaviouristic approaches to personal and institutional change embedded in much thinking and practice in environmental education and management. However, such behaviouristic approaches have come into question in recent years due to their failure to consider the significance of personal experience and social structure on the nature and outcomes of environmental learning (Robottom, 1995).

Robottom and Hart (1993) have examined the ontological, epistemological, and methodological assumptions in environmental education research, teasing apart the experimental and quasi-experimental aspects of the empirical-analytical tradition into positivist and postpositivist paradigms respectively. Table I is based upon their ideas.

These four paradigms can be illustrated by taking two issues of sustainability in higher education and exploring how they would be addressed by each paradigm. The two issues are:

(1) campus catering services; and

(2) integrating the principles of the Earth Charter into an engineering degree program.

Example 1: researching campus catering services

To address the four principles of sustainable development, catering services could include such practices as:

- locally sourced fresh organic foods;
- minimal use of animal protein sources;
- minimal food processing or use of processed foods;
- cultural diversity and religious sensitivity in food choices;
- reusable cutlery and crockery;
- low waste and high composting treatment of unused resources and food;
- non-exploitative employment practices.

Issues associated with the adoption, use and evaluation of principles such as these can be interpreted and researched through each of the four paradigms. Table II provides examples of the types of studies possible in each.

Table I.
Ontological, epistemological and methodological aspects of four research paradigms

Research paradigm	Ontology (what is the nature of reality?)	Epistemology (what is the nature of knowledge?)	Methodology (how is knowledge developed?)	Common research methods
Empirical-analytical 1: positivism	Reality is "out there"; it is an independent material reality waiting to be discovered Generalisations can be made free of context	Knowledge can be objective and "untainted" by values and other factors that may cause bias	Experts formulate research questions and then test them empirically under carefully controlled circumstances	Experiments
Empirical-analytical 2: postpositivism	Reality is "out there" and independent of us, but we can never fully understand it Generalisations can be made free of context	Objectivity is the ideal goal but values and other factors can produce some bias if not regulated or controlled for	Knowledge grows from the gradual accumulation of findings and theories and testing the significance of relationships	Sample survey Quasi-experimental pre- and post-test designs Content analysis Managerialist action research
Interpretivism/ constructivism	Reality is not "out there"; it is conditional upon human experiences and interpretation Reality is not independent but socially constructed and can have varied meanings	Knowledge is not objective but subjective Knowledge is constructed through the interaction of the researcher and the objects of enquiry	Identification of the varied constructions or interpretations of reality that exists and an attempt to recognise patterns in them or bring them into some consensus	Ethnographic case study Focus group Phemomenography Historical research

(continued)

Research paradigm	Ontology (what is the nature of reality?)	Epistemology (what is the nature of knowledge?)	Methodology (how is knowledge developed?)	Common research methods
Critical	Reality is "out there"; it is material and independent of us, but we can never fully understand it	Knowledge is not objective but subjective Values and power play a pivotal role in the construction of knowledge Knowledge and issues of equity and power are closely intertwined	Research seeks to understand the practices and effects of power and inequality, and to empower people to transform environmental and social conditions	Participatory action research Critical ethnography Collaborative enquiry Critical semiotics
Poststructural	There are multiple representations of reality constituted in and through language and discourse in different contexts	Events are understood in terms of powerful and subordinated discourses which constitute social realities	Research seeks to deconstruct or expose how dominant interests constructed through language and discourse preserve social inequalities and ecological harm	Discourse analysis

Table I.

Paradigm	Potential studies
Empirical-analytical	Status assessment of the extent to which sustainable catering services are being provided in one or more universities, higher education systems or regions/countries – seeking to identify the range and frequency of different practices, change strategies used, problems faced, evaluation results and future prospects
	An evaluation of the changes in nutritional knowledge, beliefs and habits of students and staff in a university or college before and after a range of sustainable catering services have been introduced – seeking to identify the nature and extent of any changes for evaluation purposes
	Comparative studies of environmental audits of cafeterias, dining halls, colleges or whole institutions that have sustainable catering services and those that do not – seeking to investigate potential financial, energy and water savings
Interpretive	Case studies of the organisational change processes that led to the introduction of sustainable catering services in an institution – seeking to identify the nature and scope of practices and the impacts of enabling and constraining influences
	Case studies of daily life of cafeteria or kitchen employees – seeking to identify the nature of the work practices in catering services
Critical	Participatory action research by staff-student collectives to analyse the social, economic and ecological impacts of catering services – seeking to identify where collaborative enquiry and action can lead to a visions of alternative systems and practices, the development, review and implementation of strategic action, and evaluation/reflection
Poststructural	An analysis of the discourse of sustainability, education, service, change and power reflected in catering policies and practices – seeking to identify whether the values and principles that underlie these discourses are likely, for example, to lead to innovation without change
	Analysis of the experiences of gender, race and ethnicity of workers and clients in university cafeterias and dining halls – seeking to identify ways in which practices may marginalise and disempower women or people of colour

Table II.
Potential studies of catering services in higher education

Example 2: integrating the principles of the Earth Charter into an engineering degree

The engineering profession has been among the most active in seeking to integrate issues of sustainability into professional education courses. Much research on the resultant innovations has focused on descriptions of course structures, learning experiences and curriculum change processes. A much broader range of research is revealed in the paradigmatic examples in Table III, which illustrates the sample research questions that arise from efforts to integrate the Earth Charter into engineering courses.

Paradigm	Potential studies
Empirical-analytical	Survey of the number of courses that include principles of the Earth Charter in their curriculum
	Survey of the attitudes of engineering education academics to the principles of the Earth Charter and the extent to which they are seen as relevant to the engineering curriculum
	Pre- and post-course surveys of the sustainability knowledge, beliefs and actions of students in courses that integrate the Earth Charter in an intensive way compared with those that do not
Interpretive	Case studies of the curriculum development and change processes that led to the introduction of a holistic environmental engineering course in an institution – seeking to identify the nature, scope and impacts of the enabling and constraining influences that were experienced
	Case studies of the professional socialisation experiences of graduates from a holistic environmental engineering course when they enter the engineering profession – seeking to identify the nature of pressures and encouragement they face and the coping skills they use to adjust their ideas to more traditional engineering cultures
Critical	Participatory action research by staff and students to analyse the social, economic and ecological impact of university waste, energy and water management practices and the design and implementation of more sustainable ones
Poststructural	An analysis of the discourse of sustainability, education, engineering, change and power reflected in course documents and practices – seeking to identify whether the values and principles that underlie these discourses reflect the Earth Charter and are likely, for example, to be empowering for staff and students in a course

Table III.
Potential studies of the integration of the Earth Charter in tertiary engineering degree programmes

Are all paradigms equally worthwhile?

There has been a lot of debate amongst educationalists about this question. On the one hand, scholars such as Robottom and Hart (1993, p. 16) argued that the paradigms are incommensurate and "cannot be accommodated, as pragmatists would like, at any level from methods to metaphysical". They arrive at this position from what they describe as an ecophilosophic worldview that stands in opposition to dominant Western worldview and its environmentally destructive outcomes. They argue that the emerging ecophilosophic worldview (e.g. Roszak, 2002) is more consistent with the aims of sustainable development than the dominant Western one based upon positivism and post-positivism and their focus on individualism and the reification of experts.

Unlike the dominant worldview and its realist ontology and epistemology, they argue, the ecophilosophical worldview sees humans as part of nature

rather than separate from it. On an epistemological level it holds knowledge as subjective and maintains that valid knowledge can be both rational and non-rational. This is a markedly different conception of knowledge to that of the dominant Western worldview, which separates fact from value and has led to a kind of "conceptual alienation". This results, they argue, in impoverished educational outcomes as "the economic/technological engine of Western society is more interested in providing information to produce smooth functioning (efficiency, effectiveness, productivity) than knowledge to promote questioning, critical individuals" (Robottom and Hart, 1993, p. 47). Thus, Robottom and Hart (1993) ask: "So, what is a more appropriate form of environmental education research?" and answer their question by noting that:

> [It] is one which includes consideration of both human consciousness and political action and thus can answer moral and social questions about educational programs which the dominant form [research paradigm] cannot. It is one which is more consistent with the ecophilosophical view – which encourages individuals to be autonomous, independent critical and creative thinkers, taking responsibility for their own actions and participating in the social and political reconstructions required to deal intelligently with social/environmental issues within mutually interdependent and evolving social situations (Robottom and Hart, 1993, pp. 51-2).

These are powerful arguments. However, it is possible to remain committed to the educational orientations of the ecophilosophical view but take a less exclusivist position on the choice of research paradigms. Indeed, Robottom and Hart refer to Skrtic (1990) on this point:

> The task of educational inquiry is not to reconcile these particular paradigms with one another; rather, it is to move beyond them, through dialogical discourse, to reconcile education with the ideals of democracy and social justice (cited in Robottom and Hart, 1993, pp. 16-17).

Conclusion

Skrtic's position is a significant one for research on sustainability in higher education. It points to the two themes of this paper – that higher education has an essential role in advancing the pillars of sustainability such as democracy and social justice and that all research paradigms can support institutions in fulfilling this role. The value of this eclectic position is that it allows all research paradigms to be seen as valuable depending upon the particular questions, issues and problems at hand. However, a key issue in this regard is the choice of criteria for determining what research needs to be done and is likely to be of most benefit to human and non-human nature. What criteria are most apt for deciding the sustainability questions, issues and problems to research?

Unfortunately, no single set of criteria can be provided. As Walker and Corcoran (2001, p. 1) note, "no two institutions are alike, and within institutions, no two schools alike". This distinction applies even more strongly across cultural and national borders. Higher educational strategies for advancing sustainability need to be developed by individual systems and institutions so that they remain locally relevant and culturally appropriate. The criteria for

deciding research issues also need to be locally relevant and culturally appropriate. Sample guidance for developing such criteria are provided in the principles of documents such as the Earth Charter which call on us to act (and conduct our research) in ways that: respect Earth and life in all its diversity; care for the community of life with understanding, compassion and love; build democratic societies that are just, sustainable, participatory and peaceful; and secure Earth's bounty and beauty for present and future generations. Such principles can encourage research that begins to answer Orr's (1992, p. 163) rhetorical question: "what good is a rigorous research agenda if you don't have a decent planet to put it on?"

Note

1. This paragraph is based on an analysis of papers published to date in *International Journal of Sustainability in Higher Education*; Leal Filho (1999), Eagen and Orr (1992) and Collett and Karakashian (1996).

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Institutional assessment tools for sustainability in higher education

Strengths, weaknesses, and implications for practice and theory

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Keywords *Environmental management strategy, Sustainable development, Ecology*

Abstract *This paper analyzes recent efforts to measure sustainability in higher education across institutions. The benefits of cross-institutional assessments include: identifying and benchmarking leaders and best practices; communicating common goals, experiences, and methods; and providing a directional tool to measure progress toward the concept of a "sustainable campus". Ideal assessment tools identify the most important attributes of a sustainable campus, are calculable and comparable, measure more than eco-efficiency, assess processes and motivations and are comprehensible to multiple stakeholders. The 11 cross-institutional assessment tools reviewed in this paper vary in terms of stage of development and closeness to the "ideal tool". These tools reveal (through their structure and content) the following critical parameters to achieving sustainability in higher education: decreasing throughput; pursuing incremental and systemic change simultaneously; including sustainability education as a central part of curricula; and engaging in cross-functional and cross-institutional efforts.*

Introduction and rationale

The age-old adage of "What gets measured, gets done" is beginning to be applied to sustainability efforts in higher education. The inherent ambiguities involved in defining sustainability and the complexities of applying the concept to diverse institutional settings have thwarted comprehensive measurement efforts until quite recently. However, cross-institutional sustainability assessment is needed to advance strong initiatives and assist lagging colleges and universities. Simply put, campuses require methods of comparison to each other as well as to a vision of a "sustainable college or university" to ensure that they are moving in the right direction. The concept that Onisto (1999, p. 37) outlines for the economy as a whole applies to institutions of higher education:

> Without a measure and value attached for the rates at which an economy consumes nature, there is no possibility for the market to act in any other interest than economic.

In other words, to get to the "bottom line" of sustainability, institutions require a natural, social and economic capital balance sheet. Although circumstances vary considerably on each campus, cross-institutional assessment tools minimize the effort involved in developing these balance sheets by sharing common experiences and goals.

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Cross-institutional assessment tools identify sources of support and resistance for sustainability initiatives, which helps lead to effective sustainability policies, objectives, and programs. In a theme echoed in campuses across the world, Monteith and Sabbatini (1997, pp. 56-7) found that "people were supportive of the sustainability mantra, but when the implications became more clearly defined, disparities in approach and implementation became apparent". Thus, assessment tools are important in operationalizing charters and policy statements about sustainability in higher education such as the 1990 *Talloires Declaration* (UNESCO, 1990), 1991 *Halifax Declaration* (see Lester Pearson Institute for International Development, 1992), The 1993 *Kyoto Declaration* (International Association of Universities, 1993) and the 1993 *Copernicus Charter* (CRE-Copernicus, 1994). "Although these documents contain important guidelines for education, none of them offers concrete prescriptions on an operational level for what higher education should do exactly in order to contribute maximally to sustainable development", claims Roorda (2000). Assessment tools can help 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 key to mutual success in moving toward the ambitious and amorphous target of sustainability in higher education.

To achieve these far-reaching benefits, cross-institutional assessment tools must be constructed and implemented wisely. The purpose of this article is to assist colleges, universities, non-profit organizations and others meet this goal by identifying attributes of ideal assessment tools and evaluating current efforts. The focus is on what current tools reveal (through their structure and content) about essential organizational attributes in moving toward sustainability. This focus reflects a bias toward process, which is necessary at this stage because most important tools have not been extensively used and thus cannot be evaluated in terms of effect. Nevertheless, attempts to assess sustainability reveal current knowledge and theories about defining and operationalizing the concept of a sustainable campus.

Attributes of ideal assessment tools

To measure sustainability in higher education, analysts must first develop criteria for cross-institutional assessment. David Orr, as quoted by the Penn State Green Destiny Council (2000, p. 4), begins this process by proposing five criteria to rank campus sustainability:

(1) What quantity of material goods does the college/university consume on a per capita basis?

(2) What are the university/college management policies for materials, waste, recycling, purchasing, landscaping, energy use and building?

(3) Does the curriculum engender ecological literacy?

(4) Do university/college finances help build sustainable regional economies?

(5) What do the graduates do in the world?

These questions, although difficult to answer, do not "tinker around the edges", as is the tendency of many environmental assessments; they deal with core issues of ecologically, socially and fiscally sustaining a society and campus. In general, ideal cross-institutional sustainability assessments:

- *Identify important issues*. Sustainability assessment tools must address contextually appropriate issues of major importance to campus environmental, social and economic efforts and effects. Since many facets of colleges and universities potentially fall under the rubric of sustainability, the problem here is of parsimony. The task of the creator and user of assessment tools is to identify issues with broad effects and influence, yet specific measurement possibilities. Moreover, the tools must provide mechanisms to prioritize sustainability-related issues.
- *Are calculable and comparable*. The ability to calculate progress toward sustainability is often a limiting factor in assessment. Campuses need quick, yet penetrating ways to measure status, progress, priorities and direction. These criteria do not imply that assessment tools must be exclusively quantitative. In fact, quantitative tools in isolation have little chance of expressing progress toward sustainability in all facets of a college or university since there is no well-defined "sustainable campus" upon which to base measures. On the other hand, qualitative data must be collected and analyzed in a manner that allows for cross-campus comparisons. The key is to find measurement methods that are flexible enough to capture organizational complexities and differences, yet specific enough to be calculable and comparable.
- *Move beyond eco-efficiency*. The most common pitfall of assessment tools is that they measure eco-efficiency (Fussler, 1996) instead of true sustainability. This distinction is crucial as eco-efficiency indicators stress material utilization, environmental performance and regulatory compliance, while sustainability indicators stress issues at the nexus of the environment, society and economy with the goal of no negative impacts (O'Connor, 1995). For example, an eco-efficiency energy indicator would measure energy conservation, while a sustainability indicator would measure total greenhouse gas emissions against a goal of zero. The difference is of mindset in promoting incremental (i.e. eco-efficient) or systemic (i.e. sustainable) change; eco-efficiency ends with the incremental while sustainability incorporates both approaches. As Onisto (1999, p. 41) points out, the danger of relying solely on eco-efficiency indicators "comes from the appearance that something substantive is being done. It lulls people into feeling that the environment has been, and is adequately, considered".
- *Measure processes and motivations*. Since "sustainability is a process, not a destination" (Bandy II, 1998, p. 1), the tools to measure sustainability must delve deep into decision making by asking about mission, rewards, incentives and other process-oriented outcomes. In

this way, analysts capture dynamic processes and motivations – including direction, strategy, intent and comprehensiveness – as well as present impacts. To identify levers for organizational change, assessment tools must ask "why" and "how" campuses pursue sustainability in addition to "what" they are currently doing.

- *Stress comprehensibility*. Sustainability assessment tools must be comprehensible to a broad range of stakeholders. Thus, analysts must develop mechanisms for reporting that are verifiable and lucid. Given their potential importance as cross-campus communication tools in both process and outcome, comprehensibility should not be sacrificed for precision. However, this criterion does not preclude complicated methodology, as long as translation into understandable outcomes is possible (US Interagency Working Group on Sustainable Development Indicators, 1998). The ecological footprint (Wackernagel and Rees, 1996) is an example of this principle, as complex calculations translate into an understandable and demonstrable geographic area.

The creators and users of cross-institutional sustainability assessment tools have a difficult task in measuring up to this lofty "ideal tool". They must not only portray the status of the colleges or universities (as measured against the ever-evolving baseline of sustainability), but also integrate motivations, processes and outcomes into a comparable, understandable and calculable framework that moves far beyond eco-efficiency. These tools need to decipher directions and processes while stressing prioritized opportunities for change. Although no tool – and certainly no individual indicator – will capture all these attributes, the next section reviews efforts that excel at different facets of these lofty goals (Table I).

Review of existing assessment tools

Perhaps because of the difficulties in developing and implementing cross-institutional assessment tools, the relatively new field of management for sustainability in higher education suffers from a lack of empirical data and assessment initiatives, as pointed out by Filho (2000) and others. Herremans and Allwright (2000, p. 169) wrote:

> Even though the literature provides some excellent case studies of environmental initiatives that have been implemented throughout the world, most of the information available is in the form of examples of "this is what we did on our campus".

The major works in the field adhere to the trend of providing case studies and practical advice – mixed with some theory – but with little empirical crosscutting data (e.g. Eagan and Orr, 1992; Eagen and Keniry, 1998; Creighton, 1998; Keniry, 1995; Smith and The Student Environmental Action Coalition, 1993; Filho, 1999; Cortese, 1992, 1999a, b). However, 11 recent efforts – which vary greatly in scope, scale and stage – have emerged to alleviate this problem[1].

Table I.
Summary of major strengths and weakness of cross-institutional sustainability assessment tools

Assessment tool	Major strengths	Major weaknesses
National Wildlife Federation's *State of the Campus Environment*	Comprehensive Combines eco-efficiency and sustainability Identifies barriers, drivers, incentives and motivations Identifies processes and current status	Little use of the term "sustainability" Small sample within each college/university
Sustainability Assessment Questionnaire	Emphasizes (cross-functional) sustainability as a process Useful as a conversational and teaching tool Probing questions that identify weaknesses and set goals	No mechanisms for comparisons or benchmarking Difficult for large universities to complete
Auditing instrument for sustainability in higher education	Flexible framework for institutional comparisons Process-orientation which helps prioritize and set goals through developmental stages Created through international consensus	Difficult to comprehend Motivations are potentially excluded
Higher Education 21's *Sustainability Indicators*	Process-orientation that moves beyond eco-efficiency with a relatively small set of indicators Recognizes sustainability explicitly and strategically	Difficult to measure and compare Indicators may not represent most important issues
Environmental Workbook and Report	Useful in strategic planning and prioritizing Collects baseline data and best practices	Operational eco-efficiency and compliance focus Difficult to aggregate and compare data Motivations are largely ignored

(continued)

Assessment tool	Major strengths	Major weaknesses
Greening Campuses	Comprehensive, action orientation incorporating processes Explicitly and deeply addresses sustainability User-friendly manual with case studies, recommendations	Calculations and comparisons difficult Focus on Canadian community colleges Resources out-of-date
Campus Ecology	Cross-functional, practical "guide" and framework Baseline for current tools	Environmentally focused (i.e. not sustainability) No longer "state-of-the-art"
Environmental performance survey	Process-oriented Compatible with environmental management systems	Operational eco-efficiency focus Neglect of sustainability and cross-functional initiatives
Indicators Snapshot/Guide	Quick, prioritized environmental "snapshot" Opportunity for more depth on issues of concern	Operational, eco-efficiency focus, with little reference to processes, motivations, benchmarking and sustainability
Grey Pinstripes with Green Ties	Model for data collection and reporting Links programs and reputations	Not sustainability-specific Neglects decision-making processes and operations
EMS Self-assessment	Rapid self-assessment focused on processes	Operational eco-efficiency focus

Table I.

The National Wildlife Federation's State of the Campus Environment *(USA)*
The most comprehensive and ambitious assessment tool to date is the National Wildlife Federation's (NWF) Campus Ecology Program's *State of the Campus Environment* project (McIntosh *et al.*, 2001). NWF's far-reaching goal is to provide a "national profile of environmental performance on America's colleges and universities" (National Wildlife Federation, 2001). To this end (and after an extensive review process), NWF developed the "first-ever large-scale (campus) environmental performance survey" – funded in part by the Educational Foundation of America, co-sponsored by 14 organizations, and administered by Princeton Survey Research Associates. The survey – which is Web-based in order to reduce waste without sacrificing features such as the ability to pause and save data – was sent (in December 2000) to presidents, provosts and chief facilities officers at all 4,100 accredited two- and four-year colleges and universities in the USA. The long-term goal is to conduct the survey every two to three years to assess national trends over time (Cacciola, 2001).

The NWF survey effectively combines measures of incremental eco-efficiency (e.g. water conservation and recycling) with more long-term, sustainable processes (e.g. faculty training in sustainability, land stewardship practices, and use of life-cycle assessment) (McIntosh *et al.,* 2001). Moreover, the survey combines accountability for environmental performance and history of environmental initiatives with detailed issue-based questions. The survey also takes the unique step of explicitly identifying barriers, drivers, incentives and motivations for pursuing campus environmental change from a leadership perspective. The mixture of qualitative and quantitative measures ensures comparability, contextual richness and a comprehensible set of best practices. However, NWF emphasizes that the survey is not designed to rank individual campuses on sustainability, but rather to provide nationwide trends on managerial practices.

A weakness of NWF's assessment tool is the lack of explicit reference to sustainability, as the term only appears in the context of curriculum. NWF opted to use the term "management" or "environmental" instead of "sustainability" to ensure comprehension by administrators. However, since sustainability is qualitatively different from "environmental responsibility", campus leaders might attach different meanings to survey questions based on their interpretations, none of which might approach theorists' and practitioners' meaning of "sustainability". Without explicit reference to sustainability, social issues – and their interaction with environmental issues – tend to be neglected. An unavoidable weakness (given the broad scope of the survey) is that characterizing an entire campus with input from a maximum of the top three decision-makers (and, possibly, their staffs) is difficult and potentially misleading.

NWF received responses from 1,116 out of 12,300 individuals (9.1 per cent) and 891 out of 4,100 institutions (21.7 per cent) (McIntosh *et al.*, 2001). While summarizing the results of the survey is beyond the scope of this article, NWF's Campus Environmental Scorecard represents a major step forward in

our knowledge of campus environmental performance and decision-making processes. This process of "grading" US campuses on environmental issues can and should be used as a foundation for future assessments.

University Leaders for a Sustainable Future's Sustainability Assessment Questionnaire

The Association of University Leaders for a Sustainable Future's (ULSF) *Sustainability Assessment Questionnaire (SAQ)* – which is currently being utilized at select campuses across the world – complements NWF's efforts. While NWF focuses on benchmarking, the *SAQ* is a largely qualitative "teaching tool" that stimulates "discussion and further assessment" (ULSF, 1999). ULSF encourages institutions to use the *SAQ* as a group exercise – led by a ULSF staff member – with 10-15 representatives from "critical campus constituencies". The goals of the *SAQ* are to offer its users "a comprehensive definition of sustainability in higher education as well as to provide a snapshot of their institutions on the path to sustainability". The *SAQ* emphasizes decision-making mechanisms and processes, with responses on both a five-point Likert scale and in open-ended paragraphs.

The greatest strength of the *SAQ* is its clear focus on sustainability and sustainable processes. Sustainability is explicitly outlined in the cover letter and through a page of sustainability definitions placed before the survey. These definitions emphasize the social side of sustainability as well as the inherent ambiguities of moving toward and measuring sustainability as a campus. Another major strength of the *SAQ* is that it poses probing questions about sustainability and its integration into the campus in terms of strengths, weaknesses, goals and desires, such as "the institution's contribution to a sustainable economy and sustainable local communities". ULSF stresses sustainability, not eco-efficiency, in institutional operations by inquiring about source reduction, social responsibility in investing, and sustainable landscaping. In addition, the *SAQ* assesses crosscutting organizational structures and processes – such as integration of sustainability into incentives, rewards, staffing, and formal statements.

The major weakness of the *SAQ* is identified by ULSF in its cover letter for the tool (ULSF, 1999):

> Since the questions are primarily qualitative and impressionistic, we cannot use the responses to rate or compare institutions.

However, the results are helping to determine the perception of sustainability in higher education. An additional potential problem is that large institutions may not be able to answer many of the questions comprehensively, such as listing courses and research efforts related to sustainability. Overall, the SAQ has been and will continue to be very successful as a discussion-generating and progress-reporting tool for campus sustainability scholars and practitioners.

Auditing instrument for sustainability in higher education

The major goals of the Dutch working group currently designing the auditing instrument for sustainability in higher education (AISHE) include: providing criteria and a framework for internal and external sustainability audits; measuring the success in campus implementation of sustainability; and creating a mechanism to exchange experiences and motivations (Roorda, 2000, 2002). The goal is for AISHE to expand across Europe and the world, resulting in certificates, awards, and other forms of official recognition for users and the instrument itself (Roorda, 2000). The tool consists of 24 "criteria" evaluated on five developmental "stages" (activity-oriented, process-oriented, system-oriented, chain-oriented, total quality). For example, "staff development" is in the total quality stage (the highest) if "the organisation policy on sustainability is based on societal and technological developments. There is systematic feedback to society" (Roorda, 2002). By evaluating and prioritizing the stage of each item (in groups of 10-15 over a four to six hour span), a college or university forms a matrix (24×5) of status and goals complete with assistance tools for advancement. AISHE focuses on process over content, qualitative over quantitative measures, and descriptive over prescriptive measures. Thus, AISHE is both an auditing method and a policy instrument around which other sustainability tools, such as ISO 14001, can form. AISHE's process-orientation captures dynamic decisions involved in managing for sustainability. Moreover, the developmental stages encourage measurement of progress without forcing quantitative measures. Thus, AISHE provides for potential cross-institutional comparison.

A significant weakness of AISHE is that the criteria are somewhat abstract and difficult to comprehend. However, the creators of AISHE are developing assistance tools, examples, reference lists, and a training program to make the criteria more tangible and comprehensible. Moreover, AISHE does not explicitly include indicators about motivations for pursuing sustainability. In other words, it seems possible to use the tool without explicitly addressing the reasons for moving a campus in a particular direction. Overall, AISHE is an excellent example of a process-oriented approach to sustainability assessment. The consensus-building approach to designing AISHE is creating a flexible platform upon which to stimulate and operationalize sustainability in higher education. Thus, AISHE has the potential for global reach and appeal.

Higher Education 21's sustainability indicators (UK)

The Forum for the Future's Higher Education 21 (HE 21) project helps "higher education institutions recognise the impact they have on the environment" and monitors "their success in moving toward sustainability" (HE 21, 1999). One outcome of this unique project has been a menu of sustainability indicators developed by 25 partner institutions (HE 21 1999; Ali Khan, 1999). HE 21's framework begins with the explicit recognition of sustainability as a social, ecological and economic "process". Moreover, HE 21 adheres to the principle of parsimony, using 12 general "headline indicators" and eight "strategic

management indicators". For example, an economic headline indicator is the "number of major research projects relating to sustainable development". The advantage of this approach is that HE 21 moves beyond eco-efficiency by strategically focusing on essential organizational change parameters and processes.

A major weakness of HE 21's initial efforts is that measurement and comparisons are difficult. For example, while it is useful to know whether a college or university has an "environmental management system covering all sites", these data are difficult to collect and provide little context for other campuses. Moreover, HE 21's indicators may not represent the most important concepts in higher education sustainability. For example, the "percentage of full time student recruits who are permanent local residents" is one of only three social headline indicators. Overall, HE 21's indicators project is an important tool for designing sustainability management systems. The strategic management focus, particularly in Ali Khan (1999), is useful for colleges or universities in creating sustainability policies, positions, audits, training, and goals. The effort is less useful for providing a cross-institutional framework for assessment and comparison.

Higher Education Funding Council for England's environmental report and workbook

To assist "those within universities who are responsible for implementing environmental policy", the Higher Education Funding Council for England (1998a, b) developed an environmental report and workbook. The workbook – which includes over 130 self-assessment questions – guides colleges and universities through a legislative and environmental review. The greatest strengths of this effort are its strategic foci on: baseline data, best practices, policy, management systems (including creating responsibility and information systems), conditions for success, and meeting (English) legal requirements. The self-assessment worksheet included in the workbook can help college or university personnel rate, plan and prioritize environmental management. However, the effort is focused on operations, and sustainability is rarely mentioned and is never used as a goal-setting target. Regulatory compliance – as opposed to moving beyond legal minimums – is stressed, as is eco-efficiency (as opposed to systemic changes). Moreover, the self-assessment format leaves little room for comparisons between institutions or aggregate measures of progress, and motivations are largely ignored.

Greening Campuses

The primary goal of *Greening Campuses* (Chernushenko, 1996) is to be "a comprehensive source of information and strategies designed as much for institutions already grappling with environmental issues as it is for those that have barely begun to do so (vi)". *Greening Campuses* is a practical manual (which comes on a diskette) created through a partnership between the United Nations Environment Programme, the Association of Community Colleges of

Canada and the International Institute for Sustainable Development. The manual begins with a call to action as well as definitions of sustainability. The sustainability orientation continues throughout the manual. A major strength of *Greening Campuses* is its comprehensive, process orientation. Each of the many topics is addressed by clearly identifying: the problem and potential solutions; common obstacles and how to avoid them; costs, benefits and opportunities; priorities for action; and best practices. Thus, *Greening Campuses* creates a systematic, holistic framework for action toward sustainability that incorporates specific, prioritized recommendations as well as examples of institutions further along the path to sustainability. Moreover, *Greening Campuses* raises profound issues about social and ecological sustainability. For example, the "Facilities design and construction" section recommends beginning the design process by asking the question: "Is this facility needed?" However, *Greening Campuses* fails to provide an adequate way to calculate and compare progress toward sustainability. In addition, the manual focuses on Canadian community colleges, not to the exclusion of other institutions, but enough to hamper the usefulness for other types of campuses. Moreover, many of the resources in the manual are out-of-date. Overall, *Greening Campuses* (Chernushenko, 1996) is an excellent resource for campus environmental decision-makers developing action strategies, but falls short as a measurable and comparable assessment tool.

Campus Ecology

Students and others across the USA and the world have used the book *Campus Ecology* (Smith and The Student Environmental Action Coalition, 1993) extensively to conduct environmental audits. The cross-functional and comprehensive focus was unique at the time. Although these topics are addressed largely through an eco-efficiency lens, the emergence and integration of social and economic topics into the debate can be seen through the inclusion of "environmental justice" and "investment policies". The major strength of *Campus Ecology* is its practicality as a clear, coherent framework for assessment: frame the problem, design assessment questions, gather data, identify best practices, develop recommendations and strategies, and find resources for implementation. Moreover, *Campus Ecology* encouraged the thought about processes, life-cycle analysis, and sense of place that is reflected in the more progressive current tools. Although this tool is no longer "state-of-the art", it far exceeded its goal of being a starting point for student environmental assessments and has become a basis for cross-institutional sustainability assessments.

Herremans and Allwright's environmental performance survey (Canada and the USA)

To assist the University of Calgary and other institutions in implementing environmental management systems, Herremans and Allwright (2000) designed a survey to answer the question: what drives good environmental

performance at North American colleges and universities? This survey was sent (1998-1999) to at least the largest two colleges or universities in each province and state as well as to *Talloires Declaration*[2] signatories. A total of 50 institutions (12 Canadian/38 US) completed the survey, which takes a cost-centered approach to environmental management, focusing not on quantitative data, but on four managerial "elements": focus, commitment, capability and learning. The strengths of Herremans and Allwright's effort come from their process-orientation, simplicity and compatibility with established environmental management systems. Moreover, this effort addresses and categorizes environmental posture and behavior in a holistic manner. However, the results are limited almost solely to operations, largely ignoring the deep cross-functional, cultural changes required for movement toward sustainability.

New Jersey (USA) Higher Education Partnership for Sustainability's Campus Sustainability Selected Indicators Snapshot and Guide

The New Jersey Higher Education Partnership for Sustainability's (2001) far-reaching mission includes "identifying specific indicators and general measures which can be used at each (New Jersey) campus for determining environmental impact and for informing alternative plans of action." To this end, the partnership developed its *Campus Sustainability Selected Indicators Snapshot and Guide*, which is being distributed to all New Jersey campuses with the goal of becoming a "simplified and workable" approach to sustainability assessment. For each of the ten categories of indicators, each campus provides a "snapshot" (rating sustainability on a 1 to 7 scale) as well as a ranking of priorities. Campuses fill out a more detailed indicators guide for the highest priority items. The strength of the partnership's effort is in providing a quick, prioritized overview of environmental facets of campus operations. However, this effort is narrowly focused on eco-efficiency in operations (e.g. lighting retrofits) – devoting little attention to sustainability and cross-functional initiatives – although institutions are asked to rank the "sustainability" of these efforts. There is little reference to processes, motivations or other important decision-making parameters. Moreover, there is no way to benchmark sustainability initiatives across campuses.

World Resources Institute's Grey Pinstripes with Green Ties *business school survey (USA)*

Finlay *et al.* (1998) with the World Resources Institute (WRI) surveyed the top 67 MBA programs in the USA (50 respondents) on environmental courses, institutional support and faculty research. While the results of the survey are not relevant to this article, this survey represents a model for collecting digestible curriculum and research-based campus data. The results are portrayed in "quartiles", which allow stakeholders to assess and benchmark institutions without forcing quantitative comparisons. Moreover, WRI's assessment captures programs and reputations, and includes environmental

courses as well as environmental modules in core courses. However, WRI's survey is not sustainability-specific (i.e. does not distinguish between sustainability and environmental issues), lacks information on decision-making processes, and does not include operations (nor service to a significant degree). WRI conducted a follow-up survey called *Beyond Grey Pinstripes* (Finlay and Samuelson, 1999) and continues to provide updates and surveys that are more detailed.

The Campus Consortium for Environmental Excellence's Environmental Management System Self-Assessment Checklist *(USA)*

The Campus Consortium for Environmental Excellence (2000) – which consists of US environmental safety officers – developed its *Environmental Management Self-Assessment Checklist* to "help campuses identify the strengths and weaknesses of its current EMS (environmental management system)". The 33-part questionnaire is technical, process-oriented, based on ISO 14001, and directed at campus environmental, health and safety professionals. The strength of this tool is as a "rapid self-assessment" which helps campuses visually focus on environmental management processes. The four-part scale for each question follows a "plan, do, check, act" framework in five major areas: policy, planning, implementation and operations, checking and corrective action, and management review. However, the checklist does not reflect sustainability, focusing on eco-efficiency in operational areas such as compliance, documentation, policies and procedures.

Conclusions

The 11 campus sustainability assessment tools reviewed in this article vary greatly in purpose, scope, function and state of development (see Table I). However, these tools share important strengths and weaknesses. Many assessments excel in capturing baseline data on environmental and sustainability performance as well as process-oriented information on how campuses are beginning to manage for sustainability. These tools provide a foundation for strategic planning by identifying important issues as well as methods to set and achieve prioritized sustainability goals. However, most assessment tools do not provide mechanisms for comparing campus efforts against other institutions or national/international averages. While measuring "what" campuses are doing and "how" they are doing it, most assessments neglect "why" initiatives began and are maintained (i.e. motivations). Moreover, many tools focus on operational eco-efficiency, although theory and practice point to the need for sustainability integration across functional areas. Finally, many analysts and assessment tools do not effectively communicate methods and results, although this situation is likely to change as the tools are used more extensively.

Regardless of specific strengths and weaknesses, cross-institutional assessment tools provide valuable insight into essential attributes of

sustainability in higher education through their structure and content. The tools reviewed in this article converge on the following parameters:

- *Decreased throughput*. All assessment tools reflect the need for campuses to decrease usage of energy, water, and other materials and inputs. Tools that orient toward sustainability incorporate goals of adjusting throughput to a level equivalent with ecosystem carrying capacities.
- *Incremental and systemic progress*. Recognizing that sustainability is a long-term and difficult goal and process, the tools reflect a two-prong approach. First, campuses should pursue incremental steps to move toward eco-efficiency (e.g. water conservation). The weaker assessment tools stop with incremental steps while the stronger tools incorporate the simultaneous second prong, systemic changes, which include incentive and reward structures, mission and goals statements, procedures, annual reports and other organizational decision-making processes.
- *Sustainability education as a core function*. While elective courses focused specifically on sustainability are necessary and commendable, state-of-the-art assessment tools recognize that sustainability education needs to be incorporated into core curricula and courses in many disciplines. Curricula on sustainability must include active learning about the home institution as well as larger ecological and social issues. Moreover, education must move beyond the classroom to ensure student and faculty support in sustainable operations, research and service.
- *Cross-functional reach*. Strong assessment tools measure progress on issues that incorporate teaching, research, operations and service, such as land stewardship and ecological building design. Incorporating multiple functions ensures attention to the interrelated environmental, economic and social aspects of sustainability initiatives.
- *Cross-institutional action*. Leading institutions in sustainability and leading assessment tools reach across institutional boundaries through initiatives and cross-campus comparisons. For example, assessments of campus investments as well as outreach and employment of graduates address the crucial function that colleges and universities play in social development through promoting or hindering sustainability. Moreover, campuses help each other by sharing successes, constraints and opportunities.

Cross-institutional tools to assess sustainability in higher education are rapidly emerging. The most useful of these initiatives reflect the larger transition in thought from environmental management (eco-efficiency) to management for sustainability. Of course, assessment approaches also inevitably reflect the biases of their creators and users. The benefits (and deficiencies) of these tools

will only be clear after their implementation, which is just beginning for most major efforts.

Issues for the future

The current state of cross-institutional assessment reveals two major issues that scholars and practitioners are beginning to address and will continue to grapple with in the near future. First, should analysts develop a "universal tool" to assess sustainability in higher education? Several assessment tools strive to become an international standard. A "universal tool" has clear benefits in terms of standardization, comparisons and minimization of assessment tool development efforts. However, there is no consensus over whether such an approach is necessary to gather and share knowledge. The current approach – in which countries, regions and individual campuses develop or tailor tools for their own needs – is succeeding in gathering piecemeal data. Moreover, developing a "universal tool" would be a painstaking process, which would take longer than many stakeholders are willing to wait for results. In addition, the desirability of a "universal tool" is debatable as contextually important information is likely to be overlooked. Therefore, scholars and practitioners need to carefully consider the necessity, feasibility and desirability of a "universal assessment tool".

The second and related major issue is: should analysts develop mechanisms to rank colleges and universities on sustainability? Rankings would provide digestible information to students, parents, administrators and other critical stakeholders on the relative position of campuses on sustainability. However, most assessment tools have shied away from rankings due to resistance from administrators and others to ordering campuses on a subjective concept and goal. There is no clear way to arrange campuses on a sustainability scale, yet lack of coherent criteria has not stopped campus rankings on other important issues. Therefore, scholars and practitioners need to either help shape a sustainability ranking system or provide a clear rationale for why ranking is not appropriate. This controversial next step in the development of cross-institutional campus sustainability assessment tools will have far reaching implications in theory and practice since it is important to the major "client" of higher education: students.

Notes

1. The tools chosen for assessment are the most far-reaching and successful identified in the literature by the author and several other experts. However, this list is not comprehensive, as assessment tools have been omitted intentionally and unintentionally, due to lack of space and information.
2. The *Talloires Declaration* – created in 1990 – asks colleges and universities to work individually and collaboratively toward sustainability. An institution is a "signatory" if the president signs this "pledge".

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Sustainability and peace in Costa Rica

The case of the University of Costa Rica

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Keywords *Sustainable development, Universities, Conservation*

Abstract *This article describes initiatives at the University of Costa Rica, which, in combination with national programs, have strengthened the country's commitment to sustainable development over the past 15 years. It discusses the university's role in defining a national perspective on sustainability starting in 1987, as well as the evolution of the university's Programa Institucional de Sostenibilidad y Paz (PRINSOPAZ) from being university focused to joining with the Earth Council to promote the Earth Charter both nationally and internationally.*

Due to its geographical conditions, Costa Rica enjoys a great biodiversity that has undoubtedly influenced its citizens' lifestyles, most of whom share a tendency to support environmental conservation efforts. The rich diversity of flora and fauna has attracted the attention of foreigners interested not only in conducting research, but also in enjoying the tourism possibilities. The socio-political dynamics of the country tend to support its image as one of the most peaceful societies of Latin America. Thus, its stable economy serves to attract foreign investors mostly within the industrial sector.

Paradoxically, the rich biodiversity and the social stability within the last few years have become threats to the physical and environmental well-being of the country and to the quality of life of its citizens. The agrarian and industrial production, the massive immigrations, the pressure exerted on solidarity social systems, the increasing competition in the job market, among other factors, have jeopardized the future of the new generations. *The Proyecto Estado de la Nación en Desarrollo Humano Sostenible* (The State Project on Sustainable Human Development, Projects Estado de la Nación, 2001) states that the country's development within the past few years has led to important historical advances, but at the same time it points out the fundamental challenges that threaten Costa Rica's human sustainable development. For example, poverty has been reduced, but people still live in impoverished conditions. We are a literate country but not an educated one. We have generated economic wealth that has not led to the creation of decent jobs. We have been able to consolidate a national system of protected wilderness areas, but our efforts to control urban sprawl and to protect the quality of the surrounding areas has been lacking. We are a tolerant and peaceful country that faces growing symptoms of violence.

The University of Costa Rica (UCR) is the oldest state-funded university in the country. Founded in 1940, it is now the largest university, with approximately 27,000 students. With its multidisciplinary character, it awards

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bachelors, licenciatura, masters, and doctorate degrees. It is responsible for approximately 65 percent of all the research carried out in the Central American region and it has a great impact on continuing education. Because of its special conditions, it lends the community a series of specialized services such as laboratory services, specialized workshops, technical consulting and assistance, service supervision and task control, and specialized consulting offices (UCR/VAS, 2000).

Concerning sustainable development, there are many projects geared towards teaching and investigation. Especially within the latter area, the institution counts on a great number of centers for research that provide important information on the topic of sustainability. For example, the institutions carry out research related to natural products, environmental pollution, clean technology, the engineering of materials, geophysics, protection of crops, judicial investigations relating to the environment, health, seismology and vulcanology, soil, identity and culture, education, environmental geology, and urban development, among other areas related to sustainability (UCR/VI, 1998).

The purpose of this essay is to discuss some of the University of Costa Rica's initiatives intended to further the sustainable development of Costa Rican society. It is difficult to determine at what point in time a community assumes the ideological positions that will determine a specific historical path. The reason might be that in reality it is a series of spontaneous cultural practices that produce an accumulation of elements, which slowly create the conceptual heritage that sustains a culture. Nevertheless, by studying the passing of public policies or legal norms, it is easier to identify the milestones that indicate the conscientious and formal adoption of ideological positions that coincide with social practices. For this discussion, several programs have been selected based on the fact that they encompass the essential components of sustainable development, which include economic growth, social well-being, cultural diversity, and protection of heritage and natural wealth. (Ferraté, in Ministerio de Planificación Nacional y Política Económica (Ministry of National Planning and Economic Policy), 1998).

Reference will be made to the *Estrategia Nacional de Conservación para el Desarrollo Sostenible (ECODES)* (National Conservation Strategy for Sustainable Development), a state initiative put forth by the political, academic and civilian sectors of the country in 1990, which served as a framework for action. The policies concerning the *Conservación del Medio Ambiente de la Universidad de Costa Rica*, adopted in 1993, will then be discussed, including the creation in 1995 of the *Programa Institucional de Sostenibilidad y Paz* (PRINSOPAZ). Finally, the founding of the *Grupo Promotor Costarricense de la Carta de la Tierra* (initially called the *Grupo Promotor Nacional de la Carta de la Tierra*) in 1998 will be addressed.

A national perspective on sustainability

In 1987, the *Ministerio de Recursos Naturales, Energía y Minas* adopted the decision to create a national strategy on sustainable development. The step was

inspired by the formulation in 1980 of the World Conservation Strategy. An executive secretariat was appointed to be in charge of the organization and direction of the initiative. The University of Costa Rica played an important role since it provided the high level human resources that helped define the theoretical and political strategy. Several other organizations offered their support, such as Conservation International, the Conservation Foundation, the Nature Conservancy and the World Wildlife Fund-US (Quesada, 1990).

The project helped define three basic concerns that needed consideration in order to plan and execute actions in support of sustainable development:

(1) the biophysical environment, meaning the source of natural resources upon which a nation counts;

(2) the political decision making process, since the allocation of human and financial resources depends on the its effectiveness; and

(3) the accessibility of the resources through social participation mechanisms and the effective exercising of power.

The components of the general strategy included:

- strengthening of the existing human resources;
- technological and scientific support in the gathering of information, the evaluation of resources and the prevention of environmental disasters;
- the existence of a legal framework that would permit the effective control of problems dealing with environmental quality;
- the formation of sustainable funds through contributions from the population, a real estimate of the costs of products and services, the inclusion of the costs of protection and rehabilitation of the environment;
- communication and broadcasting of information that would permit the adoption of sustainable environmental practices and the creation of networks of support;
- the effective coordination between different public institutions;
- the organization and planning of the inter-sector work by systematizing the organizations involved or responsible for actions related to the sustainable development.

This framework outlines Costa Rica's political and ideological orientation with relation to the environment. After 1987, with conceptual modifications occurring in accordance with technical advancements, and in accordance with the particularities of each political party, Costa Rica assumed a formal position with respect to sustainable development. This position has evolved since then. An example lies in the creation of the *Sistema Nacional para el Desarrollo Sostenible* (National System for Sustainable Development), an initiative by *Ministerio de Planificación Nacional y Política Económica*, which, beginning in 1996, developed two fundamental processes: training geared towards a change in attitudes and actions for sustainable development, and strengthening of

institutional capacity for sustainable development (Ministerio de Planificación Nacional y Política Económica, 1998).

The political commitment of the University of Costa Rica

In 1992, the Consejo Universitario de la Universidad de Costa Rica agreed to compile all the norms in reference to environmental policies established throughout the years, assuming that with this compilation the institution could ensure academic and administrative procedures committed to the environment. However, after the study had been carried out, the group arrived at the conclusion that although several administrative norms and agreements did indeed exist, these did not have the nature of university policies that could provide clear direction within this field (UCR/CU, 1993).

An analysis of the collected material indicated that a short-term vision of environmental problems and minimal concern for the national community prevailed. For example, there was a reference made to the need for every professor to address environmental issues whenever possible, especially littering on university campuses. There were also references to the prerogative of the security forces to sanction any action committed by a member of the university community against the conservation of nature. The preoccupation at that time centered more on keeping the university environment clean and safe than on adopting more institutional measures, such as modifying the teaching and training of future professionals, the university's administration policies or national policies concerning the environment. Thus the *Consejo Universitario*, the entity in charge of defining the path or orientation of the university, decreed on November 17 1993, the "*Políticas generales sobre la conservación del medio ambiente*" (General policies on the conservation of the environment).

It is important to stress the principal elements contained within these policies, enumerated as follows:

(1) The collective human right to live in a healthy environment is recognized, and the university is assigned the task of guaranteeing this right for the present and future generations.

(2) With the emphasis on the need to form human beings with a different vision regarding the environment comes the realization that nature possesses an intrinsic value that makes societies modify their lifestyles.

(3) It is determined that the future of Costa Rica depends on the ability of human beings to live in peace among themselves and in harmony with nature.

(4) The framework for institutional action, as well as the academic project of the university, must be committed to environmental education and to the preservation of a healthy environment.

(5) The rational use of natural resources by the institution and by the country should be supported by raising a critical awareness among the

students and by encouraging the teaching, investigation and extension within this field.

(6) It is the university's duty to support the creation of projects whose purpose is to diagnose situations and provide education about the conservation of the environment.

(7) Academic, administrative and student initiatives will be supported, as well as the signing of agreements that will promote the conservation of the environment.

These policies show that the University of Costa Rica supported sustainable environmental actions, while explicitly calling for an evaluation of actions taken in previous years and a clear definition of the path to be taken.

A specific program: PRINSOPAZ

Prior to 1995, several university scholars at the University of Costa Rica had investigated a diversity of issues concerning the environment. However, these were isolated efforts, which failed to have significant impact on Costa Rica's environmental problems. In order to resolve this kind of gap between research and effective action, the Vicerrectoría de Acción Social of the institution committed itself to find a way to integrate and strengthen efforts that were generally isolated and in some cases repetitive. In this way, on 22 June 1995, the *Programa Institucional de Sostenibilidad y Paz* (PRINSOPAZ) was presented to the university community. The program was given special recognition when the *Ministerio de Recursos Naturales* awarded the university the Bandera Ecológica for its efforts to save the Quebrada de los Negritos. This creek is a highly contaminated urban stream that travels through several communities before becoming part of the university campus landscape. In relation to this environmental problem, people working at the university had conducted various investigations and community projects whose aim was to save the small river, contributions that deserved the government's recognition.

Sustainability and peace were called upon as the guiding principles for the program, since both represented worldwide demands for stability and harmony. Together they presented the brightest picture for the future. Mediation and reconciliation between conservation and development is necessary as the tool that will make it possible to achieve a sustainable future. Sustainability and peace must be achieved together in order to reach a level of social and environmental quality to which every society on our planet aspires. In order to accomplish its goals, the program based itself on four strategies: environmental education, rehabilitation of wilderness areas, reduction of pollution and the rescue of bodies of water in peril. Strategies were developed within three different settings. The first one was conceived as "home", meaning the territory that belongs to the university. The second one referred to the immediate context, meaning the surrounding areas that the institution treats as neighbors and that are affected by similar environmental processes. The third scenario was defined by the macro-context, which refers to the whole of Costa

Rican society, including communities, institutions, private enterprises and other establishment that generated demands concerning sustainability (Montero Dien, 1996).

Soon after PRINSOPAZ started, it facilitated the formation of multidisciplinary groups to generate project proposals with a holistic perspective. Apart from offering theoretical and methodological alternatives for the development of inter- and multidisciplinary projects, the program took on the task of developing an environmental dimension within university teaching, research and social action, with special attention to teaching strategies and discipline content. These efforts were of great importance to the university's dynamics since they offered a realistic perspective on the level of involvement of the institution in sustainable development. Above all, they offered a clear panorama of deficiencies and needs for improvement in this area.

The worldwide community

In 1997, as a result of changes in administrative policies of the university, PRINSOPAZ was transferred to the Faculty of Education, reinforcing its pedagogical dimension. This change weakened the program's influence over other faculties within the university and compromised its role as coordinator for the university's many efforts in environmental improvement. For this reason, PRINSOPAZ embarked on a new mission and joined with the Earth Council, an international organization in Costa Rica, to promote the Earth Charter, which was initiated at the Earth Summit in Rio in 1992. PRINSOPAZ coordinated the *Grupo Costarricense Promotor de la Carta de la Tierra* (Costa Rican Group for Promoting the Earth Charter), a group that unites diverse universities, governmental and non-governmental organizations and groups from Costa Rican society.

Also in 1997, the first draft of the Earth Charter was finalized by the Earth Charter Commissioners at the Rio +5 Forum in Rio de Janeiro and it was agreed to carry out a worldwide consultation to further develop this international document. The Earth Council organized national Earth Charter committees in different countries. In Costa Rica, this process was delegated to the Faculty of Education of the University of Costa Rica, and PRINSOPAZ assumed the responsibility of coordinating the national consultation on the Earth Charter. To do so, it called upon diverse organizations, such as the state-funded universities, civilian organizations and governmental institutions. In this way, the *Grupo Promotor Nacional de la Carta de la Tierra* (National Earth Charter Committee) was created, with its executive secretariat located at PRINSOPAZ. This group carried out the national survey in which elementary, high school and university students participated, as well as organized groups formed of older participants, indigenous people, and educators, among others. Finally the Costa Rican proposal was taken to Matto Grosso, Brazil, in November 1999 for the Continental Conference of the Americas on the Earth Charter.

After November 1999, the *Grupo Promotor Nacional* was given autonomy, yet it continued to be constituted of representatives from the different institutions that gave it life at the beginning. At the present time, its main task is to promote the principles of the Earth Charter and to encourage different institutions to form their own *Carta de la Tierra*. In 2001, it changed its name to the *Grupo Promotor Costarricense de la Carta de la Tierra*. This group has brought about, among other things, the signing by the Ministers of Education and the Environment of a specific agreement that proclaims the Earth Charter of national interest.

Its mission is defined in the following manner:

> The *Grupo Promotor Costarricense de la Carta de la Tierra* is an open and voluntary alliance of organizations and individuals, whose purpose is to promote reflection, awareness, commitment and participation, basing itself on the ethical values and principles of the *Carta de la Tierra*.
>
> The purpose of the group is to encourage an awareness regarding the crisis in which the earth and humanity find themselves, as well as the challenges and opportunities that this implies. In this manner, it encourage the citizens of the republic of Costa Rica to get to know, value and accept the urgent need to live, personally and collectively, according to the ethical principles of the *Carta de la Tierra*, within an awareness of universal responsibility. Likewise, it facilities opportunities for reflection and orientation helpful for the exercising of these principles (GPCCT, 2001).

In summary, this group works for the construction of a common future, inspired by the potential of individuals, human rights, and respect towards nature, through formal and non-formal educational actions in nontraditional areas, such as private enterprises, the public sector, educational institutions, the organizations of local governments and cultural institutions, among others.

Conclusion

The University of Costa Rica's initiatives within the field of sustainability are consistent with the intentions of the state policies in this area, notwithstanding the difference in the fields of actions of both entities. The specific support for the University of Costa Rica clearly belongs to the fields of research, formal and non-formal education. This support has been permanent and significant with regard to both the practical and theoretical conceptions of sustainability for the country. This is due to the participation of its scholars as collaborators in external initiatives and in the development of their own initiatives.

The university's perspective explicitly and implicitly integrates peace as a substantial component of sustainability. This particular element has its roots within the historical evolution of the country, its geographical conditions, and its biodiversity wealth. This is a natural heritage that provides recreational opportunities that enrich the identity of Costa Rican society, an identity that is committed to the respect of human rights and the alternative resolution of conflicts. This identity that has been reinforced by university scholars given the gradual deterioration in the quality of Costa Rica's natural and social environments, which has made the institution assume a more belligerent position within this field.

The university's policies and concrete actions aimed at reinforcing the practice of sustainability and peace have education as a central axis. This is consistent with the identity of the University of Costa Rica as an institution that provides at least two important perspectives: a long-term vision and an evaluation of social and environmental impact on the national community. Though a complete evaluation of impact will have to wait a few years, it is evident that a committed social discourse has been started. Such discourse has been used on multiple occasions where risky situations were confronted, and it has become manifest in the daily practices of the professionals at the university.

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Sustainable development in higher education in Russia

The case of St Petersburg State University

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Keywords *Sustainable development, Higher education, Russia*

Abstract *This article focuses on attempts to introduce elements of sustainable development education into the curriculum of one of the largest Russian universities. At St Petersburg State University, compulsory courses relevant to sustainable development have been introduced or modified in 14 faculties out of 20 during the last decade. Examples of environmentally oriented projects within and outside the university are given. The authors touch upon the state of affairs in higher education in Russia, and write about sustainable development in a wider sense, beyond the environmental context. Sustainable development in education for Russia is one of the most important prerequisites for sustainable development in society. A model for reforming the system of national higher education is given to illustrate possible ways of achieving sustainability in education.*

There are many ways in which universities can be involved in sustainable development. Approaches can vary from functioning simply in an environmentally friendly way to signing declarations and focusing the mission and management on the quest for sustainability. There is no doubt, however, that the challenge of sustainable development for universities goes beyond just economizing energy and changing operations. It is recognized that both the content and form of education must change so that sustainable development becomes the only alternative for future generations.

Our students will live and work in a world where information from several disciplines must be integrated. Cross-disciplinary education enlarges students' awareness of issues and methods beyond their own disciplinary inquiry, enabling them to explore the interrelations of these issues and methods, and encouraging them to regard their own studies in a broader social and ecological perspective (Flint *et al.*, 2000). Many universities are going beyond operations and environmental management systems and attempting to incorporate sustainability in the disciplines. This article presents efforts to introduce sustainable development into higher education in Russia, using St Petersburg State University as the primary example. It also offers a model for reforming Russian higher education in order to meet the requirements of the twenty-first century.

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Sustainability in science and higher education in Russia

Russia has a strong tradition of training specialists in environmental issues. It is also infamous for its ecological disasters and environmentally harmful activities. The heritage from the Soviet era includes:

- high energy and resource consuming industry;
- obsolete industrial structure and technology;
- heavy pollution;
- limited information to the general public about the state of the environment;
- symbolic environmental legislation (Eckerberg, 1997).

The importance of sustainable development is very well understood by the population, though it has not become a real political priority given other burning issues on the Russian agenda. Still, a national strategy on environmental protection and sustainable development was worked out in 1996, a number of decrees were signed, and a State Duma Committee on sustainable development was created in 1998. Since the early 1990s, the quality of environmental information has considerably improved, a large number of new environmental regulations were passed and many old industries that caused pollution were closed down.

Many regions in Russia have developed their own programmes in environmental education. Ecological organizations are active in all 89 regions of Russia, and their activities are aimed both at solutions to environmental problems and at environmental education. New standards for education in ecological disciplines and land management have recently been adopted by the Federal Government. The new standards require the presence of environmental courses in several disciplines; thus, in the humanities and social economic disciplines environmental law is included; 150 state and 750 private higher educational institutions have introduced courses on ecology and environmental law; 15 universities are engaged in doing research in the field of environmental education (Lindroos, 2001).

"Energy conservation in the institutions of the Russian science academy" is one example of an environmentally oriented project. The project is aimed at providing a plan of energy saving activities for academic institutions. Preliminary evaluation shows that energy expenses in academic institutions approach 15 per cent of the budget for institutes in humanities and up to 50 per cent of budget for scientific institutions that have experimental equipment and plants. The use of energy saving techniques and equipment in response to project results has already started at a number of academic institutes, including the Lebedev Physical Institute, the Baikov Metallurgy Institute, the National Botanical gardens and others. Energy saving technologies have been analyzed and evaluated, a database on energy saving measures has been created, and a book published.

When talking of Russian universities, one should keep in mind that they have been struggling for survival for over a decade now, and the bulk of organizational efforts are aimed at keeping the educational process from falling apart, earning money to support professors and maintaining buildings. Important as they are, questions about using recycled or non-recycled paper or letting the grass grow on university lawns do not get a response if raised at an administrative meeting. (Using backs of old documents for current work is common practice, and where a university has a lawn, it is most often "preserved" as too few educational enterprises could afford cultivating lawns.) Thus Russian universities would rather concentrate on introducing ideas of sustainable development into educational programs.

The Baltic University programme in Russia

A total of 17 Russian universities participate in the Baltic University Programme (BUP). Over 700 Russian students had participated in the BUP by 2001. There are two coordination centres of the BUP in Russia: Kaliningrad State University (since 1997) and St Petersburg State University (since 1991). These two institutions are also members of the Baltic University Geographical Information network. Kaliningrad University coordinates BUP activities in Kaliningrad where four higher education institutions are members of the programme. At present, four of the five BUP courses are run at Kaliningrad. In the Faculty of Geography of Kaliningrad University, for example, two BUP courses are a compulsory part of the curriculum ("Peoples of the Baltics" and "A Sustainable Baltic Region"). Over 150 students in Kaliningrad received diplomas from the BUP. Areas of special interest for the BUP centre in Kaliningrad include ecological education, ecological tourism, ecological planning and waste management.

St Petersburg State University is the regional centre of BUP in North-West Russia. It coordinates activities of the BUP in 12 higher education institutions of St Petersburg, Novgorod, Petrozavodsk and Pskov. The five courses of the BUP run by St Petersburg University are open not only to its students, but to the general public. The BUP master programme on sustainable water management opened in 2001. The department of international Baltic and Arctic projects at St Petersburg University organizes national and international conferences for the BUP, including videoconferences. Thus, St Petersburg State University's active participation in and coordination of the programmes of the BUP are contributing significantly to its activities in support of sustainable development.

St Petersburg State University

St Petersburg State University, which is one of the largest (25,000 students) and oldest universities in the country, is a traditional sciences and humanities university, with ecology represented in the faculties of geography, geology and biology. During recent years, with increasing interest in sustainable development, there have been a number of structural and curricular changes.

Thus, in 1997 a new department of ecological safety and sustainable development was established within the faculty of geography. This new department is a truly interdisciplinary subdivision, as professors from other departments (ecologists, geologists, lawyers, economists) take an active part in training students. In 2001 the department had its first graduates, who are specialists in ecological management. In 1998 the department of ecological geology was created within the faculty of geology. A number of departments have changed their profile, introduced sustainability related courses into their programs and created new titles. Among these renewed departments are:

- the department of soil science and soil ecology;
- the department of climatology and ecological monitoring;
- the department of bio-geography and nature preservation.

All together, 61 out of 261 departments at St Petersburg State University offer courses relevant to sustainable development (over 23 per cent). The total number of such courses at St Petersburg exceeds 280, and these are delivered by almost 200 lecturers. A course on nature preservation is compulsory for all students with the faculty of geography. Programs in ecology are offered by the faculties of geography, geology, physics and chemistry. These include a course in ecological law. Law courses with a component of ecological law are compulsory in the humanities faculties: philosophy, sociology, psychology, international relations, management, and economics. The faculty of law offers optional courses in forestry law, water resources law, and natural resources law. A course on natural science offered by other humanities faculties (e.g. history, philology) includes a component on sustainable development. Some faculties have also introduced courses aimed at stopping drug addiction as part of their sustainable development curriculum.

Given the perceived importance of sustainable development as a component of all future education, St Petersburg State University has developed courses aimed at improving the qualifications of university teachers through two specialized subdivisions:

(1) The Interdisciplinary Centre for Further Professional Education has a department of ecology and nature management, which offers five programmes relevant to sustainable development, covering areas of global ecological problems, information technology use in ecology, bio-diversity, nature preservation, and methodology of ecological research.

(2) The Faculty of Upgrading Qualification for University Teachers has a department of ecology and geology and offers lecture courses in regional ecology, ecological management, natural resources management, global and social ecology, global ecological problems, ecological risks, and concept of sustainable development.

It is only natural that the faculty of geography is the most active agent within the university and in the city of St Petersburg in propagating the ideas of

sustainable development and organizing relevant activities. Students of the faculty of geography have been engaged in compiling a database on organizations dealing with natural preservation in St Petersburg and the region. After processing the results of interviews and questionnaires, they have come up with an impressive file concerning problems, activities, financing etc. of such organizations. Another project taken up by the same faculty, together with the Forestry Academy of St Petersburg, is commissioned research of the state of resort parks around St Petersburg. This project is mutually beneficial, as it gives students an opportunity to use vast parks as their practice base, while the authorities of resort areas get qualified expertise and advice.

In 1995, St Petersburg university undertook an inter-disciplinary research project entitled "Noosphere and sustainable development". The term "noosphere" refers to the new state of the biosphere in which man's activity becomes a decisive influence. The main aims of the project were as follows:

- to design a system of philosophic assessment of man's role and place in the biosphere;
- to systematize scientific concepts of sustainability in the "man-nature" relationship;
- to give scientific criteria for evaluating the state of the environment to find ways of forecasting transformations of the environment and preventing ecological disasters;
- to propose a system for introducing sustainable development elements into secondary and higher education.

A total of 14 subdivisions of the university took part in the project, and though only part of the project was financed, the results of the research made a good theoretical case for further practical activities. It was this research project that made it possible to update a number of courses in the sciences and create new courses relevant to sustainable development. A large conference on sustainable development was held in September 1996, with participation of scientists from all over Russia, CIS countries, Baltic states, Europe, the USA and New Zealand. The materials of the conference were published in a book entitled Проблемы ноосферы и устойчивого развития (*Problems Concerning the Noosphere and Sustainable Development*) (St Petersburg University, 1996).

Research, publications and discussions within the framework of the project did not give prescriptions as to how to achieve sustainable development, but provided a wide philosophical and theoretical basis for further, more pragmatically oriented research. Among the main theoretical results of the project were:

- new evolutionary paradigms of man and nous;
- a new interdisciplinary approach to the role of conflicts in evolution;
- an interdisciplinary approach to investigation of the relationship between migration processes and sustainable development of societies;

- a concept of substantional time that deepens understanding of evolution in nature and human society;
- generalization and systematization of data on geo-cosmic and helio-cosmic factors and their influence on the stability of the biosphere;
- directions for the investigation of man's influence on the climate of the earth;
- a concept of elimination of social disparity as a prerequisite for sustainable development;
- a concept of rational nature management as the basis for sustainable development;
- social-economic and social-ecologic aspects of sustainable development of regions;
- a geo-political assessment of Russia's chances of achieving sustainable development;

Sustainable development of higher education

When we talk of sustainable development, we do not only mean issues connected with ecology and environment. The societal aspects of sustainable development are equally important, especially for countries shattered by political and economic crises like Russia and East Europe. The role of education, and particularly higher education, in promoting sustainable development cannot be overestimated. Russian universities today face the task of improving and perfecting the educational system in a way that will stimulate a new mentality in people of the twenty-first century.

Generally speaking, we consider sustainable development in higher education to include changing management and operations, revising and "greening" the curricula, etc., and sustainable development of higher education to include organizing it in such a way that it is stable, effective, broad, fundamental, flexible and responsive to the demands of society. In Russia, achievement of sustainable development of education is a necessary condition for achieving sustainable development in the wider sense.

The Russian system of higher education provides a high level of training for students in many fields. Students get a fair number of general courses and substantial training in special subjects. The last decade saw an impressive expansion of curricula in Russian institutes and universities. A university course can last for four years (resulting in a bachelor degree), five years (specialist degree) or six years (master degree). The quality of training, on the whole, is quite satisfactory, but still there is a definite need of reform. It is admitted by university leaders and the national educational authorities that the traditional organization of higher education in Russia is too rigid, which neither allows for the introduction of interdisciplinary models of education nor gives students a wide choice of courses in different disciplines.

In Russia, young people enter universities at the age of 16-17, and at this moment they must choose a field of study, which determines their future. If, after a year or two, a young person understands that he or she would rather take up a different specialization, there is not much that can be changed. Liberal principles of education are not yet common in Russian universities. A student has little choice of courses and there is usually a strict programme for four or five years that each student must follow. (There is relatively more freedom with master and PhD programmes). Another specific problem to be solved is bridging the gap between secondary and higher education in Russia. This problem is aggravated by major discrepancies between standards of secondary education in urban and rural areas. Rural areas account for about 70 per cent of all Russian schools, and the quality of education in them is quite poor (Smolentseva, 2000). As the entrance requirements at universities are rather high, school graduates from rural areas have low chances of continuing their education.

Meanwhile, the demographic situation in Russia today is such that after 2004 the number of school leavers will begin to decrease, and universities will have to lower the standard of their entrance requirements and introduce programmes of preparatory or remedial training for new students. It is quite possible that in a few years in Russia the number of places at universities will exceed the number of potential students, and universities will have to fight for students in order not to be closed down. In this situation the university authorities have to think of the sustainable development of their institution: in order to survive, a university must answer the requirements of the time: it must guarantee high quality of education; it must be flexible and able to respond to changing needs; it must have programmes for students with different educational background; and, of course, the curriculum must be organized in accordance with the concept of sustainable development of environment and society. It is also essential for a higher learning institution to be able to support itself financially, as governmental financing of universities is very low. For this, universities must be able to offer programmes and services for which there is consumer and social demand.

A new model

It is obvious that the current model of higher education in Russia does not meet the requirements of the twenty-first century. Education defines the future of any society, and education is equally important for an individual and for the community. By providing broad general education in the sciences and humanities to a maximum number of the young, we could bring up a generation of knowledgeable and conscientious people who would take better care of this planet than their predecessors in the twentieth century. Reform and improvement of the educational system in Russia has been discussed for quite a few years now. Efforts made in this direction on the national scale are not always coherent or particularly effective. However, academic freedom granted

to higher educational institutions today makes it possible for universities to take care of their own sustainable development.

Traditional Russian universities initiate a re-organization of the learning process without entailing gross expenses. One of the new models of higher education that has been discussed at St Petersburg University suggests organizing a standard university course in three steps, each two years in duration.

The first two years seem to be the most important period for formation of a new mentality in Russian students and for introducing concepts of sustainable development as life principles for future generations. The first step would be essentially the same for all faculties, with a curriculum containing the basic sciences and humanities, logic, languages, including a substantial course of the Russian language, and ecologically oriented courses. The courses in the sciences and humanities would be very general but highly professional, so that students would get enough information to help them in making their choice for the second step. On the basis of the knowledge gained during the first two years, a student would be able to decide whether he or she is going to continue education at the university, and in what area his/her interests lie. Those who wished to change the faculty could do so after finishing the first step; those who found university education too difficult or preferred to take up vocational training could choose a more specialized educational institution. This first step would require the most organizational efforts from the administration and teaching staff of the university. It would also entail certain financial expenses, as new courses would have to be created, and the number of lecturers giving introductory courses would increase.

The second step would include more specialized training. General instruction would be excluded, starting in the third year. Students would receive extensive training in the special area of knowledge they had chosen, and gain skills in research work. At the end of second step students would write and defend a thesis that would bring them a bachelor degree in arts or sciences.

The third step is seen as more or less corresponding to a standard master programme. The third step could be taken in an area different from the second step, on the condition that the student wishing to do so passed a certain number of exams in disciplines that are compulsory for continuing education in the new field. The third step, or master degree, would be a condition of taking up postgraduate studies and PhD programmes. It is mainly at this step that the newest developments of science would be presented to students. Students would get a chance to deepen their knowledge in the chosen area and undertake independent research.

This model of university education better corresponds to the new realities of life and new societal demands. It may become the basis of general education for the majority of young people, who will be able to choose their professions and receive relevant training during the second and third steps. While allowing for more freedom of choice, the suggested model does not lose the advantages of

profound specialized training, which is characteristic of the traditional Russian higher education system.

Two Russian universities (in Omsk, Siberia, and Petrozavodsk, Karelia) have expressed willingness to test the new model on a portion of their students. It is too early to speak of results, but it is hoped that this experiment will help to design a truly sustainable model of higher education for Russia.

Conclusion

The Russian educational system is facing unprecedented challenges today connected with the processes of globalization; the political, ideological and economic changes in the country; the demographic situation, with cuts in financial support of education; and a number of other factors. Russian universities are finding their way in the new environment and trying to establish an adequate position corresponding to their scientific and human potential in the world educational community. Leading Russian universities have succeeded in introducing elements of sustainable development into their curricula, but they have also understood the importance of enssuring the sustainability of the educational system itself. This article describes one model for reforming higher education. The process is still at a very early stage, however, and the combined efforts of educators, policy makers and governmental structures will be needed to create a modern, sustainable and efficient national educational system.

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Sustainable development in higher education in the Philippines

The case of Miriam College

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Keywords *Sustainable development, Higher education, The Philippines*

Abstract *The Philippines is one of the signatories to the historic* Agenda 21 *and was noted to be among the first countries to establish a National Council for Sustainable Development. Ten years after Rio, global society is again confronted with the question of whether sustainable development as a concept, philosophy and practice has improved the lives of peoples in different countries and cultures. This article attempts to discuss initiatives through which tertiary education has helped bring about sustainable development in the Philippines. It posits that for sustainable development to happen it must take root in the consciousness and cultures of society, a task in which education plays a very important part. The article discusses the efforts of two national networks for environmental education, the Environmental Education Network of the Philippines, Inc. (EENP) and the Philippine Association of Tertiary Level Educational Institutions in Environmental Protection and Management (PATLEPAM), which advocate for the integration of sustainable development in school curricula as well as in campus administration and organizational culture. It also includes the pioneering efforts of one institution, Miriam College, to integrate environmental education in its programs as part of its mission and commitment to become a genuine "steward of creation".*

The late 1980s brought into the forefront of development theory the concept of sustainable development. Sustainable development means many things to many people. To some it is a contradiction impossible to achieve; to others it is a new and holistic vision of the future. To the World Commission on Environment and Development who defined the term as "development that meets the needs of the present generation without compromising the needs of the future generations", the concept was both a possibility and an absolute necessity for the survival of our planet (White and Whitney, 1990).

Ten years after Rio, global society is again confronted with the question on whether the concept of sustainable development has taken root in the consciousness and cultures of various nations; a process in which education plays an important role. This paper discusses initiatives by which tertiary education in the Philippines helps bring about a sustainable development paradigm in the consciousness of the Filipino people.

Background: a national framework for sustainable development.

The Philippines is one of the signatories to the historic *Agenda 21* – the global blueprint for sustainable development forged during the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro

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in 1992. In order to operationalize this commitment, the country formulated *Philippine Agenda 21* or *PA 21*, also known as the *National Agenda for Sustainable Development*. *PA 21* declares its vision as "a better quality of life for all and the development of a just, moral, creative, spiritual, economically-vibrant, caring, diverse yet cohesive society characterized by appropriate productivity, participatory and democratic processes, and living in harmony within the limits of the carrying capacity of nature and the integrity of creation" (Phillipine Council for Sustainable Development, 1997, Section 1.4). Furthermore, then President Fidel V. Ramos created the Philippine Council for Sustainable Development (PCSD) through Executive Order No. 15, dated 15 September, 1992. It is worth noting that the Philippines was the first country to establish its national council for sustainable development right after UNCED. Its mandate was to expand, concretize and operationalize sustainable development at the national level. PCSD is composed of representation from government, business/labor and civil society.

However, even before UNCED, the Philippine Strategy for Sustainable Development (PSSD) was already adopted by the government in 1989. It was developed to serve as a framework for environment and development issues, and designed to achieve sustained economic growth without further depleting natural resources and sacrificing the quality of the environment. One of the policy thrusts of PSSD is the promotion of environmental education (EE). EE hopes to develop responsible environmental behavior in citizens, individuals and as social groups. PSSD recognizes that the imperatives of sustainable development necessitate a reorientation in the fundamental values of society. Thus, the creation of a well-informed and motivated mass base is seen as the key strategy to the long-term conservation of natural resources and the protection of the Philippine ecosystems. Hence, the formulation and implementation of a comprehensive information, education and communication advocacy plan is part of the efforts to mainstream the principles of *PA 21* in the various efforts of all stakeholders (Phillipine Council for Sustainable Development, 1997). How did tertiary education in the Philippines fit into this framework?

Environmental education and sustainable development

The National Environmental Education Action Plan (NEEAP) of 1992 was spearheaded by the Environmental Management Bureau (EMB) of the Department of Environment and Natural Resources (DENR) in cooperation with the Department of Education, Culture and Sports (DECS – now, Department of Education-DepEd). It defined the goal of environmental education in the country and identified key strategies and programs for both the formal and non-formal sectors in EE. It is directed toward the resolution of the most pressing and urgent environmental problems of the country, and seeks to provide a comprehensive education response and direction to the plight of the Philippine environment. Due to scarce resources and manpower

availability, however, the NEEAP committee on education decided that priority should be the elementary and secondary levels.

For NEEAP, environmental education is the process by which the people develop awareness, knowledge and concern of the environment and its diverse values and processes, and learn to use this understanding to preserve, conserve and utilize the environment in a sustainable manner for the benefit of present and future generations. It involves the acquisition of skills, motivations and commitments to work individually and collectively toward the solution of current environmental problems and prevention of new ones.

NEEAP has pointed out that while EE in the elementary and secondary education levels is expected to orient and develop students' perception and values as well as encourage their active participation toward environmental protection and conservation, EE in higher education should contribute to the deepening of knowledge and developing the necessary skill for the management and improvement of environmental quality conducive to the well-being of the Filipino people. EE should help develop at this level a critical mass of specialists for the management and sustainability of environmental resources. For non-specialists, EE should incorporate important environmental perspectives in the general education curriculum as well as the specialization subjects of all professional disciplines (Padolina, 1996).

In October 1996, the Environmental Education Network of the Philippines, Inc. (EENP) organized the 1st Philippine Congress on Tertiary Environmental Education[1] to bring educators and practitioners together to discuss the role in environmental protection of the following professions: medicine, law, business, engineering, architecture and planning. This effort to green the professions began with the formation of green values and holistic value systems that prepare young professionals to think in the broad terms required in environmental decision making.

While this article addresses the subject of sustainability in higher education, it might seem that the focus is still on the environment since the discussions appear focused on "environmental education". Perhaps this would be the position of those who believe that UNCED was too strongly biased for the environment when sustainable development should give equal attention to the economic and social dimensions. While the authors agree on the need to integrate these three main concerns, still the impact of environmental destruction on the economy and the social dimensions of development remain a most vital issue. It might be interesting to note that the history of environmental education has coincided with the evolving concepts of sustainability and development.

The role of academic networks in sustainability in higher education

A brief look at the two biggest networks on environmental education illustrates what academic groups in the Philippines are doing to promote sustainable development.

The EENP is a national network of 68 academic and research institutions throughout the country and one national federation of NGOs. It was formed in 1987 with funding first from Ford Foundation and later from the Canadian International Development Agency. Since 1994, the network has subsisted mainly on membership fees with assistance from other groups for specific projects. Its board of directors come from member institutions and it runs the operations of the network.

Its vision is that of a "rehabilitated, secure and healthy environment for present and future generations". Its mission is "the promotion of sustainable development through a strong and independent network of Philippine institutions able to provide national and local governments, private firms, non-government organizations, people's organizations and local communities advice and expertise on environmental education, policies and programs appropriate to local, regional and national conditions". The objectives of EENP are:

- to create a network of regional colleges, universities, research centers and NGOs which cooperatively promotes the advancement of environmental education in all levels and sectors;
- to develop collaborative activities leading towards the sustainable management of the country's natural resources;
- to coordinate instruction, research and extension initiatives among environmental and educational institutions in the country as well as provide mechanisms for linking up these initiatives with global and regional (especially in Southeast Asia) environmental programs.

The strategies which the network employs involve teacher training, curriculum development, research and outreach programs and other aspects of environmental education based on the sustainable development paradigm. Development of EE programs has relied on resources within the network for information sharing, training, curriculum development and program assessment. For example, it has developed an EE assessment program for "Dark Green Schools" for use of its members and hopefully, by others. A team of trainers has gone around the country giving EE training.

The EENP traditionally holds two congresses a year focused on the "hot issues" that affect society. One congress is held in any of the provinces of the islands, which is usually focused on regional issues, while the other, that is held in Metro Manila, is usually focused on national issues. Among critical issues in the country tackled by the EENP congresses are: clean air, alternative sources of energy, genetically modified organisms, and others.

The Philippine Association of Tertiary Level Educational Institutions in Environmental Protection and Management (PATLEPAM) is a network of 380 colleges and universities also from all over the country which started in 1995. It is government-supported with its secretariat functions provided by the Environmental Management Bureau (EMB) of the Department of Environment

and Natural Resources (DENR). The association's board of directors consists of regional representatives who serve as the bridge between the national board and the schools in their regions.

The strong desire to coalesce and establish linkages from the academic community in the tertiary level gave rise to the establishment of PATLEPAM. This was formally established within the Senior Educators' Assembly in Environmental Planning and Management on 29-30 April 1996 with about 500 presidents and other senior officials of higher education institutions nationwide in attendance. PATLEPAM aims to optimize tertiary level educational institutions' potential for the systematic delivery of environmental education, training and research for sustainable development at the local levels. It envisions higher education institutions equipped with knowledge and skills for the management of resources for sustaining productivity and ecological integrity.

More than networking higher education institutions, part of PATLEPAM's strategic advantage is its formal networking with the Commission on Higher Education (CHED), the Environmental Management Bureau (EMB) and the President of the EENP. The heads of these institutions are ex-officio members of the board of PATLEPAM. The four vice-presidents represent Metro Manila and the three big island groups in the country, namely: Luzon, Visayas and Mindanao.

Among its accomplishments are the:

- organization of three educators' training on environmental impact assessment;
- a National Trainers Training on Environmental Education at the tertiary level, with regional trainings already done for regions six and eight; and
- the mobilization of higher education institutions for seminar-workshops, regional assemblies and community undertakings like adopt a street, park, mountain and community.

PATLEPAM spearheaded the drawing up of a National Environment Research Framework, which is designed to guide the research directions of the various member institutions and CHED in the pursuit of sustainable development.

Under the aegis of PATLEPAM, a book on environment and sustainable development was released in 2000, to provide reference material that can support the infrastructure in the association's proposal to CHED to institute a three-unit course, "Environment and sustainable development" for inclusion in the general curriculum of higher education.

Over and beyond integration of EE in the curriculum for general and professional education, the field of environmental studies/science has come into its own. Many members of the EENP and PATLEPAM now offer environmental programs in bachelors, masters and doctoral levels.

However, while there is universal agreement on the need to care for the environment, most graduates find that there is no ready niche for them in the job market. Environmental jobs are not yet part of the mainstream, where accountants, resources managers, and secretaries are abundant. This is true in spite of the fact that industries are required to have in-house environmental/pollution control officers. Often the job is an adjunct of an existing office and the person in charge often has a traditional degree like engineering and some training on the environment. The usual employers are government agencies like the Department of Environment and Natural Resources, but these are limited. Non-traditional absorbers of these graduates are environmental non-governmental organizations, which have mushroomed over the past decade. It seems that environmental specialists must develop their own market to convince society and specific sectors of their relevance as specialists, not readily substituted for by traditional professions with an environmental perspective.

The Environmental Studies Institute: a model program at Miriam College

Any discussion on environmental education must include the pioneering efforts of Miriam College Foundation with regard to environment and sustainable development. Founded as an exclusive convent school for girls in 1926, the school envisioned its graduates to combine sound academic preparation with a strong commitment to community service. Its three core values have been declared as:

(1) peace (*kalayaan*);

(2) justice (*katarungan*); and

(3) integrity of creation.

The Environmental Studies Institute (ESI) is founded on the third core value, which states: "We are committed to the stewardship of creation. Miriam College draws on its capabilities and charisma to help sustain the health of our planet on which all life depends".

Miriam College started its environmental thrust in 1973 through a module on pollution in the seniors' curriculum. Since then, various innovations have led to the integration of environmental education in all levels in the school, in and out of the classroom. In 1978, Miriam College started to offer Bachelor of Science in Environmental Planning, meant to produce graduates with skills of planning for people, with the environmental perspective.

The curriculum of BS Environmental Planning and Management of Miriam College adheres closely to its title. It has always aimed at planning for human societies with the environmental perspective. Thus it offers, besides the general science subjects required of all students, the courses: ecology, geography and earth sciences, environmental impact assessment, ecological monitoring, pollution science and technology, environmental planning and management

research, regional planning and natural resources management, corporate environmental management, environmental law and seminar on environmental planning and management. Other courses continue the delivery of needed planning knowledge and skills: cartography and analytical techniques, patterns of development, land use planning, community communications, qualitative methods and techniques, planning for economic sectors, urban planning, project implementation and management. The degree program could well be titled BS sustainable development.

In 1993, masters programs were started: first Master of Science in Environmental Studies. Then to meet the needs of teachers, it offered Master of Arts in Environmental Education, coupled with Master of Arts in Environmental Management geared specifically to government career officials and to address the lack of professionals in the environmental field. Miriam College organized distance education graduate programs in the regions: Cebu, Leyte and Camarines Sur. The PhD program in environmental studies and PhD in environmental education were launched in 1999, in partnership with other universities, for faculty and student exchange, as well as sharing of laboratory and library resources.

Miriam – PEACE (public education and awareness campaign for the environment), an outreach program, which aimed at promoting in society what it had been teaching, was born in 1996. It is composed of volunteers from the faculty, staff, alumni, students, parents, and friends, as well as from internal and external community. Through fund raising activities of volunteers and students, the Environmental Education Center was inaugurated in 1998 to become the physical structure that would house the environmental programs of Miriam College.

The conversion of the Environmental Education Center to the Environmental Studies Institute is a significant development in Miriam's environmental history. Today the institute consolidates the academic, outreach, and research programs of the school.

Challenges for academia and sustainable development

Academic institutions and environmental education networks such as EENP and PATLEPAM, as well as individual entities like Miriam College – ESI, have shown what academic institutions could accomplish in efforts at a paradigm shift toward sustainable development. This it can do in partnership with church groups and other civil society organizations.

In the Philippines where varied voices are heard, and various interests come to the fore, leadership and credibility are important concerns in sustainable development advocacy. The college or university has become one of the strategic places to challenge existing approaches and develop alternatives for government and other practitioners in sustainable development. It has the talents and expertise of distinguished professors and other experts. It has the information on existing research, and it has access to information on a wide range of experiences, both locally and internationally. Moreover, the university

provides an environment that nurtures critical and independent critique of what government or business does. Academia has also the advantage of the social acceptability, technical credibility and the moral ascendancy to broker and realize SD linkaging at various levels.

However, the university has inherent limitations in implementing SD projects. Its main mandate is still teaching, research and some extension. The pressure of time between teaching and extension work could be strenuous. There could be gaps between theory and practice when professors find it difficult to translate their knowledge into practical solutions or when they find it difficult to communicate effectively with their audience. The experience of Miriam College is that successful community training could be achieved by adopting more participatory and adult learning approaches in course design and delivery as well as minimizing the content-focused didactic classroom format commonly used in the academy.

In the implementation of sustainable development projects in the communities, higher education can be more effective if it adopts a strategy of partnership. The key strategy is to have partners who not only have the mandate, but the continuing local presence, full commitment and community acceptance to localize SD. The university or college's role would be to help define, evaluate, document, pilot, refine and promote the determinants for making such a model successfully operate and achieve results.

In the Philippines, it would help if the Commission on Higher Education (CHED) would really push for education for sustainability. This it could do if it takes concrete steps to show its commitment and put budget and a functioning department to monitor that all universities and colleges are integrating sustainable development concepts in their curriculum and campus culture. One way is to incorporate indicators of sustainability in its standard assessment programs. Another important step is to support centers of learning for sustainable development where faculty development, research and further training could be given full attention.

Conclusion

Sustainable development cannot work properly in a milieu of poverty and deprivation. Poverty is not only the cause of much of the environmental degradation found in many southern countries, but is also a root cause of ill-health, lower life expectancies and incapability to acquire proper education.

That the Philippines needs to develop economically is unquestionable. That its environment needs salvation is likewise unchallengeable. One cannot be sacrificed for the other. There is general awareness of this need among decision makers. There is also a significant sector in our society that defends the slow process of looking for "win-win" solutions to problems as opposed to the conventional approach where the primary indicator is economics, but which is unsustainable because of the long-term erosion of the natural resource base. Much of the tension in our society is due to the clash of these two paradigms and their respective proponents.

Understanding the sustainable development paradigm requires broad and holistic thinking. Education must train students to look at current realities and be able to respond to the multi-faceted aspects of these realities in order that future citizens of the global community can respond more effectively to the challenges of the changing planet. Colleges must investigate their own modes of delivery of education to see to it that all their graduates will be able to participate in the pursuit of sustainable development in whatever field of specialization they choose. In the Philippines, where literacy is 99 per cent and about 26 per cent of the population reach the collegiate level, we must fast-track the integration of sustainable development in our curriculum so that we may have greater reason to hope that a significant portion of the citizenry can internalize this vision.

Note

1. Many of the discussions and observations in this section made use of secondary data from the documents of this congress (see EENP, 1996).

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News

Earth Summit 2002 Sustainable Development Awards

Keywords *Earth Summit 2002, Rio Earth Summit 1992*

"The Earth Summit 2002 Awards aim to encourage further implementation of sustainable development through recognising, rewarding and publicising ten years of global stakeholder best practice, which have inspired and will continue to inspire others to work towards the ideals of *Agenda 21*, as set out at the Rio Earth Summit in 1992" The Earth Summit 2002 to be held this September in Johannesburg marks a decade since the first summit in 1992 at Rio. The Royal Society of Arts (RSA) in partnership with the Stakeholder Forum for Our Common Future (formerly UNED Forum) hope to mark the event by recognising those individuals or groups of individuals who have made a significant contribution to the implementation of sustainable development by their work during this time.

The aim will be to publicise their efforts on the SAGE Web site at regular intervals between now and the summit in September to act as an inspiration to others to work towards the ideals of *Agenda 21*, as set out at the Rio Earth Summit in 1992. Anyone can make a nomination by e-mailing anita.beardsley@rsa.org.uk. For details see: http://www.environmentawards.net/sage/

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Books and resources

Ozone Connections: Expert Networks in Global Environmental Governance

Penelope Canan and Nancy Reichman
228 pp.
ISBN 1 874719 40 3
£40.00/US$75.00
Keywords 1987 Montreal Protocol, Ozone depletion

It is difficult to think of a more significant example of international co-operation to address a problem that threatened the health and well-being of the entire planet than the 1987 Montreal Protocol for the Elimination of Ozone-Depleting Substances. This breakthrough in international environmental governance has proved to be an extraordinary success beyond rhetoric or promises. In a dozen years, this international agreement went from an understanding of the need to act in a precautionary manner for mutual benefit to a successful worldwide effort to eliminate chemical substances harmful to our protective ozone layer. The production and consumption of most ozone-depleting substances has now been phased out in developed countries, with developing countries not far behind.

What happened and why is of tremendous importance for those looking for guidance in the future, particularly those now involved in hugely complicated negotiations on climate change. The success of the Montreal Protocol has been linked to many factors such as political will, treaty flexibility and the recognition of equity issues raised by developing countries. While comprehensively analysing all of these success factors, *Ozone Connections* goes on to suggest that a social organisation of global governance as typified by the Protocol's Technology and Economic Assessment Panel (TEAP) was a unique – but replicable – decisive factor.

The book argues that we need to understand how the implementation of complex global environmental agreements depends on the construction and exploitation of social connections among experts who act collectively to define solutions to environmental problems. To place an order for this title online, please visit the Greenleaf Web site at: http://www.greenleaf-publishing.com/catalogue/ozone.htm

Rethinking Sustainability: Power, Knowledge and Institutions

University of Michigan Press
2000
US$24.95
Keywords Knowledge, Institutions, Sustainability

Richard Norgaard (UC Berkeley) comments that "Rethinking sustainability moves the debate from efficiency toward the distribution of power, from free

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markets toward sharing common assets, from global generalities towards local specifics, and from expert knowledge toward shared learning. This rebalancing is sorely needed".

With contributions by Faye Duchin and Baylor Johnson, Jules Pretty and Robert Chambers, Robert Paarlberg, David Barkin, Dianne Rocheleau, Gar Alperovitz, Allan Hoben, Neva Goodwin, and others, this book provides a wide overview of political and institutional issues in sustainable development. To order your copy from University of Michigan go to: http://www.press.umich.edu/special/11142.html

Voluntary Environmental Agreements: Process, Practice and Future Use

Contributing Editor: Patrick ten Brink
Institute for European Environmental Policy (IEEP)
Belgium
563pp.
ISBN 1 874719 41 1
£40.00/US$75.00
Keywords VEAs, Stakeholder groups, Climate change

Voluntary environmental agreements (VEAs) – generally agreements between government and business – have been regarded by many as a key new instrument for meeting environmental objectives in a flexible manner. Their performance to date has, however, also led to considerable criticism, with several parties arguing that they are methods for avoiding real action that go beyond "business-as-usual". Is either of these positions justified?

The aim of this book is to highlight and learn the lessons from existing experience, looking not just at results, but also at specific elements of agreements and also at the process of the agreement itself. Lessons are drawn from experience from across the world, covering the full range of environmental challenges, and from the perspective of key stakeholder groups. Importantly, the book also presents tools for assessing and improving existing agreements and includes recommendations and guidelines for future agreements in key areas such as climate change. It also deals at length with the problem of how such agreements might be used in developing and transitional economies.

To place an order for this title or to view the Prologue online, please visit the Greenleaf Web site at: http://www.greenleaf-publishing.com/catalogue/volun.htm

Diary

EMSU 2002 in Africa, Environmental Management for Sustainable Universities. The Role of Higher Education in Sustainable Development

Rhodes University, Grahamstown, South Africa
11-13 September 2002

The World Summit on Sustainable Development (WSSD) will be held in Johannesburg in September 2002. South Africa has been selected to host the Environmental Management for Sustainable Universities 2002 Conference, with Rhodes University as the host institution. This international event will follow on from the WSSD and will create a forum for international academics, students and administrators to deliberate the role of tertiary institutions in contributing to sustainable development.

Further information from: Karin Prigge, Big Tree Project Support. Tel/Fax: +27-46-622-6242; E-mail: BigTree@intekom.co.za

Euro Environment 2002 Conference "Business and Sustainable Performance"

Aalborg, Denmark
21-23 October 2002

Leading decision makers from business, government and influential environmental organisations will be gathering in Aalborg for the 3rd biennial international Euro Environment conference to discuss the visions, strategies and concrete actions necessary for a sustainable development.The overall theme of the conference is "Business, the Agent of Global Sustainability!" The Euro Environment 2002 conference will explore how business can be a driving agent in a situation of weak global governance and how the sustainable market and value-chains must be enhanced. Business can hold the challenging keys to global sustainability goals on environmental and social responsibility, ethical values, stakeholder relations etc. The conference will be an important forum for business statements to the EU and the international community, and it will be the first forum for business comments to the outcome of the WSSD summit in South Africa.

The challenge of the conference is to have a business response to the result of the summit. We intend to concretise how business can be, will be and is expected to fulfil the demands put on it in general and by the WSSD. Further information at: http://www.euro-environment.dk

Engineering Education in Sustainable Development

Delft, The Netherlands
24-25 October 2002

Delft University of Technology is hosting this conference, which will focus on engineering education for sustainability. Problem based learning and

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trans-disciplinary projects will be considered as ways to introduce sustainable development to future engineers. For more information please contact Dr. Karel Mulder, Delft University of Technology, Faculty of Technology Policy & Management, Jaffalaan 5, NL 2628 BX Delft, The Netherlands. Tel: +31-15-2781043, or visit: http://www.odo.tudelft.nl/conference.html

International Congress on Environment and Sustainable Development 2002

Vina del MAr Chile

28-31 October 2002

The International Organisation of Universities for Environment and Development will be hosting its 4th Meeting in 28-31 October 2002 in Vina del Mar, Chile. The event is organised by the University of Valparaiso in Chile. Further information from: Prof. Andres Gaete and Ms Patricia Diaz. E-mail: CMA2002@uv.cl; Web site: http://www.uv.cl

International Conference – Regional Cycles: Regional Economy Towards Sustainability

Leipzig, Germany

31 October-2 November 2002

The role of regional economies as a concept for sustainable development has raised a lot of interest among researchers and policy makers in the last years. But how can economic concepts at the regional level actually be implemented? Where do regional cycles make sense? How can European regions learn from each other? The International Conference: "Regional Cycles – regional economy towards sustainability" aims to find answers to these questions, and to enliven the interdisciplinary debate on sustainable regional economic activities in Europe. The theme "Regional Cycles" should hereby be understood in a wide sense, including financial, substance and material cycles and their regionalisation.

Further details are available at: http://www.iclei.org/economy/call