

II.5 Canada and USA Regional Report

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Abstract

Canada and the United States of America (USA) have played pivotal roles in the development of the global sustainability in higher education movement. Many North American universities are modelling sustainability on their campuses, rethinking policies that are counterproductive to sustainability, and redeveloping curriculum to be more consistent with the tenets of sustainability. Universities and colleges have also begun to work beyond the borders of their campuses, to form regional, national and Canada–USA collaborations and partnerships. The number of academics working in the field of sustainability in higher education is increasing rapidly in both Canada and the USA, and their scholarly outputs are well represented in English-language journals, grey literature and books. While it is apparent that Canada and the USA have made significant steps towards sustainability in higher education, finances, leadership, communication, geography, a lack of understanding and awareness of sustainability issues among the university population, and a resistance to change remain as challenges to the movement and burgeoning field of sustainability in higher education.

INTRODUCTION

Canada and the United States of America (USA) both have a rich history and have played pivotal roles in the development of the global movement to inspire higher education institutions (HEIs) to take a lead role in creating a sustainable future. However, a North American overview is somewhat daunting, as there are many differences in the HE systems found in each country.

While geographically large, Canada has a relatively small population of approximately 34 million (0.5% of the world's population), 93 degree granting universities and a university student enrolment hovering around 1 million. Canada is dominated by a public university system under the responsibility of each province, but funded through fiscal transfers from the Government of Canada. According to the Government of Canada, the average tuition for a Canadian student enrolled in an undergraduate programme in a Canadian university was \$4917 in 2009.

In contrast, the USA has a population of 309 million (4.5% of the world's population) with approximately 4300 colleges, universities and junior colleges and over

18 million students. The USA has a significant percentage of private institutions, including approximately 600 for-profit HEIs and almost 6000 corporate universities and degree-granting educational facilities run directly by companies. In 2009, the average annual tuition for a student enrolled in a public university in their own state was \$7020. Tuition for students from outside the state is generally double. The tuition for private universities ranges from \$15,000 to \$68,000 annually.

While each country has specific laws governing HE, only the USA has legislation that deals specifically with sustainability in higher education (SHE). In August 2008, President Bush signed into law the Higher Education Sustainability Act (HESA), which was part of the new Higher Education Opportunity Act (<http://www2.ed.gov/policy/highered/leg/hea08/index.html>). The major impact of the legislation is in that it provides for the 'University Sustainability Grants Program' administered through the Secretary of Education, in consultation with the Environmental Protection Agency, which allows colleges and universities to establish sustainability research programmes and implement sustainable measures on campuses.

The budget for 2010 was \$50 million. The Council of Ministers of Education, Canada (CMEC) released Learn Canada 2020 (www.cmec.ca/Publications/.../CMEC-2020-DECLARATION.en.pdf) in April 2008 is a framework document that serves as a collective statement of the Ministers' responsibilities in education and their goals for the coming decade. In the document, the Ministers identified education for sustainable development (ESD) as a key activity area on which to focus collaboratively through intergovernmental organization; however, no formal legislation exists.

BOX II.5.1: CANADIAN POLITICAL FRAMEWORK

Canada's government was originally established in the British North American Act in 1867 by the British parliament, but was unable to make constitutional changes without British parliament approval until 1982. The Canadian Constitution provides for a parliamentary system of government, consisting of the monarchy and two legislative chambers: the House of Commons, and the Senate. The Constitution provides for two key levels of government: federal and provincial (there are 10 provinces in Canada and 3 territories). The federal government is led by the prime minister and cabinet and provincial governments by a premier and cabinet. While there are over 16 registered federal political parties, the main five parties are the Liberal Party (generally thought of as in the centre of the political spectrum), the Conservative Party (right of centre, and currently in power), the New Democratic Party of Canada (left of centre), Le Bloc Québécois (a Quebec separatist party), and the Green Party (espousing green values and sustainability as its core mission). The constitutional responsibility for education (other than the education of aboriginal people) rests with the provinces of Canada. As a result, a distinctive system of education has evolved in each region. In 2008, the Council of Ministers of Education (made up of ministers from each province) released a collective statement about ESD in Learn Canada 2020 (www.cmec.ca/Publications/.../CMEC-2020-DECLARATION.en.pdf), but to date no formal legislation exists at the federal or provincial levels.

BOX II.5.2: USA POLITICAL FRAMEWORK

The government of the United States is a federal constitutional republic based on the Declaration of Independence of 1776 and the Constitution of 1789. Power is divided between the federal government and the 50 member states. The Constitution created three separate branches of government, each with their own powers and areas of influence: the Legislative Branch (consisting of Congress which is responsible for making federal laws); the Executive Branch (made up of the president, cabinet and the bureaucracy, with power lying with the president); and the Judicial Branch (the Supreme Court and other federal courts). The modern political party system is dominated by the Democratic Party (generally positioned as left-of-centre and supporting an American liberalism platform) and the Republican Party (generally positioned as right-of-centre and supporting an American conservatism platform) which between them have won all presidential elections in the US since the mid-1850s. As of November 2010, 36.0% of American adults identified themselves as Republicans; 34.7% Democrats, and 29.3% were not affiliated with either major party (Rasmusen, 2010). Higher education in the USA is generally the responsibility of individual states with the exception of the Tenth Amendment, which has the federal government guarding the right of its citizens to equal access to public institutions and equal opportunity within them. The Higher Education Sustainability Act (<http://thomas.loc.gov/cgi-bin/query/z?c110:H.R.3637>;) is the only legislation related to ESD in the USA. It provides for a grant programme that allows colleges and universities to establish sustainability research programmes and implement sustainable measures on campuses.

HIGHER EDUCATION FOR SUSTAINABILITY MOVEMENT

Higher education for sustainability (HES) is relatively new and emerging movement in both the Canadian and USA educational systems. The roots come from international sustainable development (SD) efforts starting in the 1970s. For example, the Stockholm Conference on the Human Environment in 1972 specifically discussed the role of HE in international sustainable development. Mention of sustainability and HE are

also made in the Belgrade Charter (1975), Tibilisi Declaration (1977) and United Nations Conference on Environment and Development (1992). The movement within HE in North America arguably did not begin to solidify until the 1990. At this time some North American scholars were criticizing HE for its inability to be a model of sustainability in both physical operations and curriculum (Clugston, 1999; Orr, 1995). One reaction to these criticisms was the development of sustainability in higher education policies and declarations (see Wright, 2004).

An historic attempt to define and promote SHE was made in the creation of the Talloires Declaration. While the Talloires is an international declaration that now enjoys over 418 signatories worldwide (USA n=163, Canada n=33), its development was American-led. In October 1990 the President of Tufts University, with the help of the Rockefeller Foundation, the US Environmental Protection Agency, and the John D. and Catherine T. MacArthur Foundation, convened 22 university presidents and chancellors to voice their concerns and create a document that outlined key actions HEIs must take to create a sustainable future.

ORGANIZATIONS

The 1990s also saw the proliferation of not-for-profit organizations and non-governmental organizations (NGOs) focused on SHE in North America. University Leaders for a Sustainable Future (ULSF) was officially established as the Secretariat for signatories of the Talloires Declaration in the early 1990s. Established under another name by Dr Tony Cortese, then Dean of Environmental Programs at Tufts University, the organization changed its name to ULSF in 1995 to reflect an emerging focus on all levels of leadership within HE, including senior administrators, faculty, staff and students, and the introduction of a formal membership structure. ULSF maintained an institutional affiliation with Tufts University until 1997 when it moved to Washington, DC to become the HE programme of the Center for Respect of Life and Environment (CRLE). While continuing to serve as Secretariat for signatories of the Talloires Declaration, ULSF expanded its programmes and services to include sustainability assessment, research on theoretical models and case studies of sustainability initiatives in HE, formative evaluation of sustainability initiatives, and forming new international partnerships to advance SHE globally. ULSF became independent of CRLE in 2007, functioning as a virtual organization and continues to maintain its position as Secretariat for signatories of the Talloires Declaration (www.ulsf.org).

Around the same time, the National Wildlife Federation (NWF) established its Campus Ecology programme (<http://www.nwf.org/Global-Warming/Campus-Solutions.aspx>) which has become a leading conservation programme in HE. Their mission is to assist students, faculty, staff and administrators in transforming colleges and universities in the USA into learning and teaching models of sustainability, by: assisting with the design and implementation of practical conservation projects; providing training and incentives; and, helping to document and share lessons learned nationally and beyond.

In 1991 Learning for a Sustainable Future (LSF) was established in Canada by a diverse group of youth, educators, business leaders, government and community members (www.lsf-1st.ca/). The original purpose of this not-for-profit charitable organization was to integrate sustainability education into Canada's education system at all levels. LSF facilitates the delivery of sustainable development education programmes and resources to teachers and students across Canada. At the end of 2008, LSF achieved the goal of reaching over 200,000 Canadians. LSF, in partnership with Environment Canada and Manitoba Education, Citizenship and Youth, is leading the Canadian response to the UN Decade of Education for Sustainable Development through the implementation of a series of initiatives, some of which are directly targeted at HE.

Second Nature (www.secondnature.org) was founded in Boston in 1993 by a small group of forward-thinking leaders that included Dr Anthony D. Cortese from Tufts University, Senator John F. Kerry (D-MA), Teresa Heinz Kerry, Bruce Droste, and others. This group sought to establish an organization dedicated to bringing about the change in society that is vital to the success and livelihood of every current and future living being: a change for a just and sustainable future. Since its founding, Second Nature has worked with over 4000 faculties and administrators at more than 500 colleges and universities to help make the principles of sustainability fundamental to every aspect of HE. It has helped to advance the higher education for sustainability movement at state, regional, and national levels by serving and supporting HE leaders in making healthy, just, and sustainable living the foundation of all learning and practice in HE.

The Association for the Advancement of Sustainability in Higher Education (www.aashe.org) has arguably become the largest organization for university sustainability in North America. Its roots go back to the Education for Sustainability Western Network (EFS West) established in 2001, which served college

campuses in the Western US and Canada by providing resources and support for sustainability efforts. In 2004, EFS West held the first North American Conference on Sustainability in Higher Education, in Portland, Oregon. The success of this conference and increasing demand for EFS West's resources led it to transition from a regional organization to a North American higher education association – the Association for the Advancement of Sustainability in Higher Education. AASHE was officially launched in January 2006, serving as the first professional HE association for the campus sustainability community. AASHE continues to work to advance sustainability in all sectors of HE and support campuses in meeting their sustainability goals.

PARTNERSHIPS

Many partnerships have been established as a result of the higher education for sustainability movement. For example, the Higher Education Association Sustainability Consortium (HEASC) was formed in December 2005 by leaders of several associations, to support and enhance the capacity of HE to fulfil its critical role in producing an educated and engaged citizenry and the knowledge needed for a thriving and civil society. These organizations recognize that fulfilling their mission requires a broader, systemic, collaborative approach to their own work and that of the constituents they serve. HEASC's purpose is to learn from one another, work together on joint projects, get access to the best expertise and information on sustainability, and to keep a collective, ongoing focus on advancing education for a sustainable future over time (<http://www2.aashe.org/heasc/index.php>).

Established in 2006, ESD Canada (formally the National Education for Sustainable Development Expert Council) brings together a broad range of stakeholders from across the country to support systemic change towards ESD within the formal, non-formal and informal education systems. Made up of representatives from provincial and territorial Education for Sustainable Development Working Groups, Ministry of Education representatives for jurisdictions that do not yet have Working Groups, as well as national and international organizations, the council addresses cross-cutting issues of ESD and promotes research, communication and the sharing of best practices (www.esdcanada.ca).

The United States Partnership for Education for Sustainable Development (USPESD) was first conceived at a November 2003 gathering held in Washington, DC that included almost 100 participants from a diverse range of sectors including K-12 (all primary and secondary education) and higher education, science and research organizations, conservation

and environmental NGOs, faith communities, living institutions, youth advocacy organizations, government agencies and others (www.uspartnership.org). Convened by the National Council on Science and the Environment and University Leaders for a Sustainable Future, the group met to respond to the call by the UN General Assembly for a Decade of Education for Sustainable Development (2005–2014). Participants decided that the Partnership would not design or implement programmes of its own. Rather, it would serve as a clearing house and as a catalyst to convene groups and build community to support existing and emerging initiatives. The Decade and the US Partnership provide international and national context for such efforts, helping to promote and strengthen education for sustainable development in the United States.

MAJOR CONFERENCES AND INITIATIVES

The Greening the Campus Conference (known to many as colloquially as 'Ball State') is perhaps the longest running conference focused on SHE in North America. The first conference was held in April 1996 at Ball State University in Indiana. The biannual conference has grown from a participant base of 200 to over 2000 at the 2009 event.

While a relative newcomer, the biannual AASHE conference has become one of the most popular SHE events in North America. The first conference was held in 2006 in Tempe Arizona with over 650 attendees. By its next conference, in Raleigh, NC, in 2008, attendance had almost tripled to over 1700 participants, with even greater numbers attending the 2010 conference in Denver.

A well-established initiative by the Society for College and University Planning (SCUP) is the Campus Sustainability Day (<http://www.scup.org/page/csd/mission>). Campus Sustainability Day is a satellite broadcast where leaders in HE exchange ideas and challenge colleges and universities to integrate sustainability practices into all areas of campus. Universities across North America choose to celebrate Campus Sustainability Day in different ways – some devoting a whole month to highlighting campus sustainability efforts, some by encouraging sustainability conversations over a week.

An initiative that is gaining great momentum is the American College and University Presidents Climate Change Commitment (ACUPCC) which has now been signed by over 550 HE presidents. By signing the commitment, these presidents are pledging to work towards clean energy, carbon-neutral campuses, and professional development initiatives on sustainability so HE will both model and teach sustainability principles (www.presidentsclimatecommitment.org).

CURRICULUM AND LEARNING PROCESSES

A sustainable society is 'one that can persist over generations, one that is far-seeing enough, flexible enough, and wise enough not to undermine either its physical or social systems of support' (Meadows et al., 1992). While a sustainable future cannot be achieved through changes and actions in one sector alone, education is a key component in working towards this goal. Yet universities have been criticized for their unsustainable behaviour. David Orr (1995) argues that environmental problems are not the work of ignorant people, but 'largely the result of work by people with BA's, B.Sc.'s, LLB's, MBA's and PhD's'. Ecological footprint models show us that it is the well-educated people of industrialized countries who use the majority of the earth's natural resources and who contribute the most to the world's sustainability problems. In fact, many scholars criticize HE for producing disciplinary leaders incapable of addressing critical sustainability problems, because they are blindly contributing to them. Why is this? It seems that the academy is very good at fragmenting and sectoralizing information so that one discipline has no understanding of its impact on the others. For example, a student graduating from a business degree might understand the financial benefits of oil extraction, but not the full environmental, political and social ramifications and costs (and vice versa for a student in political science or biology).

Einstein once observed that 'the significant problems we face cannot be solved at the same level of thinking we were at when we created them'. North American HEIs have been responding to the challenge of educating for sustainability by developing new and interdisciplinary environment and/or sustainability programmes, and/or attempting to infuse sustainability concepts into traditional disciplines.

STAND-ALONE PROGRAMMES

According to the Association of University and Colleges of Canada, there are over 200 degree, diploma and certificate programmes offered in French and English related to the environment across the country. However, there are very few programmes that contain the term sustainability in the title.

Dalhousie University was the first HEI in Canada to launch a College of Sustainability in 2009 (http://sustainability.dal.ca/College_of_Sustainab.php). The College offers a unique interdisciplinary undergraduate programme in environment, sustainability and society and enjoyed a cohort of 325 students in its first year of operation. The University of Alberta has a post-baccalaureate diploma programme in environmental

and sustainability education. In fall of 2011, the University of Winnipeg, Manitoba will offer a new graduate degree programme in Development Practice focusing on indigenous development and sustainability, in partnership with the MacArthur Foundation.

In the USA, there are over 20 universities and colleges with undergraduate programmes related to sustainability. One of the best known is the School of Sustainability at Arizona State University (www.schoolofsustainability.asu.edu). The school offers flexible, interdisciplinary, and problem-oriented BAs and BScs in Sustainability. There are also over a dozen universities offering master's degrees, and five universities offering doctoral degrees related to sustainability. For example, Harvard University offers a Master's Degree in Sustainability and Environmental Management, designed to educate working professionals on the two core environmental issues facing the global community: ecological management, and sustainability. Prescott College, an independent liberal arts school dedicated to environment and social justice offers a Doctor of Philosophy (PhD) in Education with a concentration in Sustainability Education (<http://www.prescott.edu/academics/phd/index.html>).

GENERAL EDUCATION PROGRAMMES

In the USA, many universities have general education (GE) requirements that students are required to take. The intention is to introduce undergraduates to the richness and diversity of the various academic disciplines and have students graduate with a common collective knowledge about the world that enables them to communicate, make informed decisions and participate fully as informed citizens in local, national and global matters. In some cases, the GE requirements are set by the state, in others, the GE requirements are set by the individual school. According to Rowe (2002), a number of colleges and universities have incorporated an in-depth exposure to environmental literacy in their GE requirements. Some have also included topics of social responsibility and/or civic engagement. Others have combined the two. For example, the University of Northern Iowa has required students to take the course Environment, Technology and Society as a GE requirement since 1988.

Two national surveys in the US provide strength to Rowe's claims. In a 2001 survey of 496 four-year institutions in the USA, Wolfe (2001) found that 11.6% had a required GE course in environmental literacy, and 55% had an option of taking an environmentally related course for their GE requirements. In the same year, the National Wildlife Federation published the *State of the Campus Environment: A National Report Card on Environmental Performance and Sustainability in Higher*

Education (McIntosh et al., 2001). This survey of both two- and four-year colleges in the United States showed that 8% of HEIs had an undergraduate programme requirement related to environmental literacy.

Stanford is aggressively working towards sustainability becoming part of the university's GE requirements. In fall 2006 Stanford introduced the pioneering I-Earth curriculum (<https://pangea.stanford.edu/courses/i-earth/>). This programme helps students to develop an interdisciplinary understanding of the planet and the intersections of its natural and human systems. Proponents of I-Earth becoming a GE requirement argue that an understanding of the planet on which we live is essential for all students and should be considered on par with all students having an understanding of the humanities. Their slogan is 'not yet a requirement for Stanford, but a requirement for life'.

Another interesting example is the Portland State Freshman Inquiry on Sustainability. At this university, students take a year-long sequence of courses that introduce students to Portland State's GE goals. The Sustainability Freshman inquiry explores the interconnectedness of global systems using an interdisciplinary approach to show how sustainability issues can be understood from different perspectives (<http://www.pdx.edu/unst/freshman-inquiry-sustainability>).

CERTIFICATES AND DIPLOMAS IN SUSTAINABILITY

Some universities in both the United States and Canada have seen the benefit in creating concurrent and post-degree certificates and diplomas in sustainability. For example, the MIT Sloan School of Management has developed a sustainability certificate that can be taken by students enrolled in any of the school's programmes (<http://mitsloan.mit.edu/sustainability/>). Ryerson University in Toronto has developed a professional development certificate in sustainability for individuals from any disciplinary background (www.ryerson.ca/ce/sustain).

INTEGRATING SUSTAINABILITY ACROSS THE CURRICULUM

While interdisciplinary programmes related specifically to sustainability are most welcome in North America, many feel that sustainability must be integrated into the traditional academic disciplines if we are to create positive sustainable change. As Tony Cortese (2008), President of Second Nature, says, 'rather than being isolated in its own academic discipline, education about the environment must become an integral part of the normal teaching in all disciplines'. The same is true for sustainability. Therefore, instead of adding sustainability on as an additional degree requirement, many

HEIs are trying to shift the dominant paradigm and infuse environmental literacy, social responsibility and civic engagement into courses in multiple disciplines.

The Disciplinary Associations Network for Sustainability (DANS) has declared its commitment to education for a sustainable future (<http://www2.aashe.org/dans/>). DANS recognizes that the engagement of academic disciplines is critical to advancing the overall goals of sustainability, and aims to help HEIs to lead in making education, research, and practice for a sustainable society a reality. York University in Toronto hosts the United Nations Educational, Scientific and Cultural Organization (UNESCO) Chair on Reorienting Teacher Education to Address Sustainability (<http://www.unesco.org/en/education-for-sustainable-development/networks/working-group-of-unesco-chairs/canada/>).

Well-known models for helping faculty to incorporate environmental sustainability issues into university courses from music to history to mathematics include the Ponderosa Project (Northern Arizona University, 1995–2002), and the Piedmont Project (Emory University, 2001–present). The Association of the Advancement of Sustainability in Higher Education offers the Sustainability across the Curriculum Leadership Workshop for faculty leaders of all disciplines who wish to develop curriculum change programmes around sustainability on their campuses. To date, they have had over 300 faculty members participate in the workshops, who have then returned to their campuses to teach others about infusing sustainability into the curriculum (<http://www.aashe.org/profdev/curriculum.php>).

BOX II.5.3: COLLEGE OF SUSTAINABILITY, DALHOUSIE UNIVERSITY

The College of Sustainability is the first of its kind in Canada. It launched the innovative Environment, Sustainability and Society (ESS) undergraduate degree programme in 2009 with an incoming class of 300 students. The ESS programme brings students from a wide variety of backgrounds together who share a common passion for the planet. Instead of creating a stand-alone programme (which could be interpreted as another silo), the ESS programme requires students to combine their studies with a more traditional discipline. Depending on their specialty, students work towards a Bachelor of Arts, Bachelor of Science, Bachelor of Management, Bachelor of Community Design, Bachelor of Computer Science or Bachelor of Informatics (sustainability.dal.ca).

BOX II.5.4: THE STANFORD CHALLENGE

The Stanford Challenge is a campus-wide effort at Stanford University in California to raise \$4.3 billion over the next five years to advance the goals of educating students for leadership in the 21st century. Central to this endeavour is the Initiative on the Environment and Sustainability that supports interdisciplinary research and teaching in all seven of Stanford's schools as well as centres, institutes and programmes across campus. The university intends to allocate \$250 million of the Stanford Challenge to this effort.

INSTITUTIONAL MANAGEMENT AND OPERATIONS

A large step towards recognizing the importance of sustainability in the HE setting is a formal, public commitment to becoming more sustainable. To date, there have been many national and international declarations signed by various institutions. These include the Talloires Declaration, the Halifax Declaration, the Sapporo Sustainability Declaration, and the Earth Charter Initiative. A major part of these declarations includes institutions becoming more sustainable in their internal practices and operations. Implementing changes in physical operations is often considered easier than other changes (Wright, 2009) as institutions may often see a financial return on these investments.

One way that universities have responded to the sustainability challenge is to establish sustainable practices in campus management and operations, attempting to model sustainable behaviour in the development of buildings, dining services, energy, grounds, transportation, purchasing, waste management, water, financing, investing and policy development. Many universities have found campus greening initiatives to be cost-effective in the long run. In recent years, a number of campuses have established staff positions devoted to advancing sustainability on campus. The University of British Columbia was an early adopter of campus sustainability and created its first Sustainability Office with Director in 1998 (www.sustain.ubc.ca). With humble beginnings of one staff member, the office has now grown to a staff of over a dozen, often handling million-dollar budgets. Harvard University was also an early adopter. In 1999 an interfaculty group of faculty, staff, and

students met on a number of occasions to discuss how to secure a dedicated staff member to the issue of sustainability. One year later enough funding was raised to begin the Harvard Green Campus Initiative (later becoming the Office for Sustainability in 2008). There are now more than 100 Campus Sustainability Officers working in colleges and universities in Canada and the USA.

To date, the majority of sustainable institutional management and operations has focused on environmental, rather than social, sustainability. The Association for the Advancement of Sustainability in Higher Education (AASHE) has online records concerning best practices and institutions that are currently implementing projects in a wide variety of operational and management aspects. It also provides an annual conference, weekly bulletins, online forums, webinars and train-the-trainer sessions.

Green design or LEED (leadership in energy and environmental design) criteria are often included in many buildings currently being built or planned. While this can have a major impact on the emissions, energy and environmental or social sustainability of the building, the majority of campus structures have already been built. Older buildings have larger environmental footprints. For this reason, retrofitting existing buildings with more efficient energy and water technologies is an important step. In addition, many campuses in North America have begun investigating renewable energy production.

To improve social sustainability, efforts are made to improve campus accessibility for those with low mobility. In terms of management, sustainable procurement policies and waste management have been major focuses. All these efforts are often assessed and reported using assessment tools such as the Sierra Youth Coalition's Campus Sustainability Assessment Framework (CSAF), AASHE's Sustainability Tracking, Assessment and Rating System (STARS) programme, the Princeton Review, NWF Sustainable Campus Report Card, or the Sustainable Endowment Institute's Green Report Card.

In North America, there is a growing trend towards using schools as living laboratories, allowing students to gain hands-on experience while improving their campus or community. David Orr began this movement at Oberlin College in the 1980s but it has since spread out onto many different campuses. For example, the Arizona State University has created the Campus Living Laboratory Network (CLLN) to facilitate work on campus sustainability projects between students, staff and

faculty. At the University of British Columbia Farm, students have the opportunity to be involved in various learning and research initiatives (www.landfood.ubc.ca/ubcfarm/). This 24-hectare farm is financially self-sufficient and run by the Centre for Sustainable Food Systems. In 2008, both UBC colleges, 4 of UBC's 11 schools and 8 of UBC's 11 faculties were involved with the farm.

In recent years some companies and organizations have emerged to help facilitate the greening of campus operations. Those to note include: Clean Air Cool Planet (CACP) which partners with campuses to identify and promote solutions to climate change; the College and University Recycling Council (CURC); the Green Power Partnership which is an Environmental Protection Agency programme providing advice and resources to prospective university green power purchasers and publicity to green power leaders; and, the Society for College and University Planning (SCUP) which focuses on the promotion, advancement, and application of effective planning in HE and is a major proponent of universities modelling sustainable behaviour.

As key university stakeholders, students have considerable interest and influence in the management of their institutions. Since students have become more concerned with sustainability, universities have improved their efforts. Most, if not all, HEIs now have student environmental or sustainability groups active on their campus, which may or may not connect to larger national organizations. In Canada, the Sierra Youth Coalition is a branch of the Sierra Club of Canada which focuses on sustainable campuses and high schools (www.syc-cjs.org/sustainable-campuses). It provides a supportive network for students interested in sustainability and offers training related to multi-stakeholder group building and campus assessments with their tool, the Campus Sustainability Assessment Framework. As of 2009, 72 of approximately 277 Canadian campuses were involved (SYC, 2009). Students in the United States organize through SEAC (pronounced 'seek'), a national network of organizations concerned with various aspects of sustainability (www.seac.org/). On the environmental front, they are involved in the Climate Challenge, but they also focus on indigenous rights and social justice (SEAC, 2008). There is also a Sierra Student Coalition, the youth branch of the US Sierra Club which is involved in SHE, particularly the use of coal energy (Sierra Club, 2010).

BOX II.5.5: GREEN BUILDING FOR COMMUNITY

Education through experiential learning helps students become confident in their skills, and applying this in partnership with local not-for-profits is a win-win situation. The University of Virginia's ecoMOD programme is such an example. It provides teams of students the opportunity to perform interdisciplinary research and design ecological, modular and affordable house prototypes for low-income housing organizations. They then build and evaluate these prototypes in order to provide homes and suggestions for design improvements (University of Virginia, 2010).

BOX II.5.6: INVESTING IN CAMPUS SUSTAINABILITY

The creation of the Green Campus Loan Fund (GCLF) at Harvard has thus far provided funding for 153 greening the campus initiatives (www.green.harvard.edu/loan-fund). The \$12 million revolving loan fund provides university groups with capital for projects that will repay the loan amount within five years through reductions in operating costs, waste removal or utility consumption related to the project. By taking a holistic approach to the economics involved, instead of considering the capital and maintenance separately, the GCLF has led to overall savings of \$4 million already (Harvard College, 2009).

RESEARCH

Research is a critical tool in developing a sustainable future, and universities have a responsibility to contribute through their scholarly activities. What constitutes 'sustainability' research is still a much-debated topic. A recent attempt by Waas et al. (2010) defines it as 'all research conducted within the institutional context of a university that contributes to sustainable development'. They adopt a comprehensive view, including foundational and applied research in both disciplinary and interdisciplinary contexts. Glasser et al. (2005) distinguish between research that contributes to the sustainable development of society in general, and sustainability in

higher education which is an emerging field of inquiry that focuses on incorporating 'sustainability concepts and insights into higher education and its major areas of activity ... It also refers to research that treats higher education institutions as complex systems and focuses on the integration of sustainability across all of its activities, responsibilities, and mission'. While both types of research occur in Canada and the USA, for the purposes of this paper, we focus our efforts mostly on the latter.

RESEARCH MEETINGS

A critical step to promoting sustainability in higher education is to develop new modes of collaboration and information sharing. Information sharing, collaboration, and the development of a research agenda were difficult until recently in the United States and Canada. Because of the interdisciplinary nature of sustainability research, scholars come from a variety of backgrounds, which made it difficult for researchers to meet and discuss their work at traditional disciplinary conferences, or to plan for future research priorities. The past decade has seen a change in this with the development of organizations dedicated to sustainability in higher education (see section on Organizations above) and, following from there, some gatherings of scholars in the field.

One of the first gatherings of researchers was in October 2005 in Halifax, Canada. Thirty-five HES experts representing 17 different countries gathered to further intellectual understanding of HES research and to explore the development of research priorities for the future (for full report see Wright 2007). Further, the Association for the Advancement of Sustainability in Higher Education (AASHE) has a sub-group dedicated to sustainability in higher education research who converse online and meet regularly at the AASHE conferences.

RESEARCH CENTRES

Canada and the United States host a multitude of centres dedicated to sustainability research in general (for example the International Institute for Sustainable Development, the Canadian Consortium for Sustainable Development Research at the University of British Columbia, the Earth Institute Colombia University, the Institute for Sustainable Solutions at Portland State University, and the Global Institute of Sustainability at Arizona State University). There are many research centres dedicated to environmental education within HEIs, but few research centres dedicated to SHE. Exceptions are the Centre for Environmental and Sustainability Education at Florida Gulf Coast University, the Robert A. Macoskey Center for Sustainable Systems Educa-

tion and Research at Slippery Rock University, and the Center for Environmental Sustainability Education at the University of Wisconsin-Milwaukee.

PUBLICATIONS

In North America, the majority of the research dedication to SHE is disseminated through traditional academic means such as journal articles, books, and newsletters.

In a bibliometric study of English-language journal articles related to education for sustainable development (ESD) from 1990 to 2005, Wright and Pullen (2007) found that approximately 70% of the manuscripts published resulted from individuals working at a Canadian or US university. Given this apparent dominance in research output, it is surprising that the two countries do not play host to more journals dedicated to the subject. Wright and Pullen (2007) found that the majority of North American authors published in the *International Journal of Sustainability in Higher Education*, which is supported in part by the University Leaders for a Sustainable Future in the USA, but produced and published in Europe. The only North American journal that focuses almost exclusively on SHE is *Sustainability: The Journal of Record* which launched in March 2008.

Grey materials in the field include: the *AASHE Bulletin* which offers a weekly compilation of news, opportunities, new resources, and events related to sustainability in higher education; *AASHE Digest*, an annual review of campus sustainability efforts; and the *Campus Ecology Yearbook* which provides case studies about campus environmental projects.

Seminal books that have been produced by North American authors include (but are not limited to) the following:

- *Ecodemia: Campus Environmental Stewardship at the Turn of the 21st Century* by Julian Keniry, National Wildlife Federation, 1995.
- *The Campus and Environmental Responsibility* by David Eagan and David Orr (eds), Jossey Bass Publishers, 1992.
- *Greening the Ivory Tower: Improving the Environmental Track Record of Universities, Colleges, and Other Institutions* by Sarah Hammond Creighton, MIT Press, 1998.
- *Educating Citizens: Preparing America's Undergraduates for Lives of Moral and Civic Responsibility* by Anne Colby, Thomas Ehrlich, Elizabeth Beaumont, and Jason Stephens, Jossey-Bass, 2003.
- *Sustainability on Campus: Stories and Strategies for Change* by Peggy F. Barlett and Geoffrey W. Chase, MIT Press, 2004.

- *Higher Education and the Challenge of Sustainability: Problematics, Promise, and Practice* by Peter Blaze Corcoran and Arjen E.J. Wals (eds), Springer, 2004.
- *Planet U: Sustaining the World, Reinventing the University* by Michael M’Gonigle and Justin Starke, New Society Press, 2005.
- *The Green Campus: Meeting the Challenge of Environmental Sustainability* by Walter Simson (ed.), APPA, 2008.
- *Teaching Environmental Literacy: Across Campus and Across the Curriculum* by Heather L. Reynolds, Eduardo S. Brondizio, and Jennifer Meta Robinson (eds), Indiana University Press, 2009.

FUNDING AGENCIES

The development of the fifty million dollar ‘University Sustainability Grants Program’ allows scholars in US universities to engage in research dedicated to sustainability and to implement sustainable measures on campuses. Further, academics in both Canada and North America can apply to national granting bodies for work related to sustainability in higher education, although none of the granting agencies are focused exclusively on sustainability research. In the USA, the National Science Foundation (NSF) is an independent federal agency with an annual budget of \$7 billion (financial year 2010). The NSF dedicated additional funding from 2006–2011 for research that improves humanity’s ability to live sustainably on the earth. In Canada, researchers can apply to the Canadian Institutes of Health Research, the National Science and Engineering Research Council, or the Social Sciences and Humanities Research Council of Canada (SSHRC) for funds to support sustainability research. In 2008, SSHRC created four funding programmes dedicated to developing and building on capacity for research, talent development and knowledge mobilization on Canadian environment and sustainability issues.

SOCIAL AND COMMUNITY ENGAGEMENT

Higher education plays an important role in educating citizens, but also has a role to play as a key community member, at both local and global levels. Partnerships between community stakeholders, including HEIs, can lead to positive results for all.

Universities can contribute to their communities in a variety of ways, including questioning the role of society and its members. Their campuses have long been thought of as a safe refuge for inquiry and reimagining.

Some campuses are making an active effort to renew this discussion of society’s role, for example Walden University in Minnesota, USA. This advanced degree distance education institution hosts an annual conference on social change issues that people attend in person and virtually. In addition, Walden University promotes volunteerism with its Service Network that links students and alumni with not-for-profits and the Global Day of Service when members of its community, past and present, get involved in the greater world.

It is important to ensure that everyone feels comfortable engaging in dialogue and speaking of their experiences in order to generate the best ideas. Through transcultural dialogue and mutual understanding, people and organizations with differing viewpoints are able to come together and produce fascinating results. In Saskatchewan, Canada, grassroots mobilization of municipalities, HEIs, Aboriginal communities, not-for-profit organizations and businesses led to the formation of a Regional Centre of Expertise (RCE) on Education for Sustainable Development through the United Nations University-Institute for Advanced Studies (UNU-IAS) (Dahms et al., 2008).

Many HEIs understand the benefits of working with their communities and forming links with civil society. This often involves working together on research or community planning. Students at Carleton University in Ontario, Canada, gain considerable experience through the Carleton-Batawa Initiative. The goal is for students to transform the community of Batawa, making it a sustainable city (Boyle, 2009). Students themselves have been forging partnerships with their broader communities through the creation of Public Interest Research Groups (PIRGs) across Canada. While these not-for-profit organizations are student-run and student-funded, the focus is on broader community issues including social and environmental justice, and non-students are invited to participate in the working groups (APIRG, 2005). In the United States, the not-for-profit organization Campus Compact has been working with presidents of HEIs since 1985 to promote civic engagement. More than a quarter of all American HEIs are now involved and, since the beginning, over 20 million students have volunteered and formed partnerships in their local communities, representing more than \$5.7 billion in service (Campus Compact, 2010).

Local circumstances are often influenced by global happenings, making the latter just as important. Various networks of HEIs, professors, not-for-profits and other stakeholders have sprung up to explore global problems and innovate solutions. As mentioned in a previous section, AASHE facilitates bringing together

HEIs from primarily the United States and Canada, though institutions in other countries are beginning to join as well. Its focus is on making campuses more sustainable through management, operations and teaching. In Canada, the World University Service of Canada (WUSC) links post-secondary institutions and individuals together to focus on human development and education through partnered projects overseas. Some of the development projects focus specifically on strengthening civil society and promoting human rights (WUSC, n.d.). The United States Partnership for Education for Sustainable Development (USPESD) is a network to bring together different groups and sectors on various initiatives related to sustainability. The sectors include K-12 education, higher education, faith communities, business and communities (USPESD, n.d.).

Many members of the professoriate are involved with sustainability in their communities, via professional or personal life. AASHE hosts Teach-the-Teacher sessions through which faculty and staff are able to share their experiences and wisdom with members of other universities, so that they might learn and be able to implement change on their own campuses. Ann Dale, recipient of a Canada Research Chair position at Royal Roads University in British Columbia, Canada, is a leader in sustainable community development. Her research has focused on interactions between the environment and society, social capital and sustainable community development. She also chairs the Canadian Consortium for Sustainable Development Research (Royal Roads University, 2010). Harry C. Boyte, co-director of the Augsburg College Center for Democracy and Citizenship in the United States, has published a number of books on citizen engagement and education for democracy and has actively been involved in community groups focused on community renewal (Augsburg College, 2010).

Sometimes the greatest contribution that HE can make is to deliver knowledge back into the hands of society and help create positive social change. The Centre for Research on Work and Society (CRWS) at York University in Canada focuses on labour issues and research partnerships between unions, the university and the community (CRWS, n.d.). In an effort to inspire social change internationally, Brown University has been hosting a social change workshop for graduate students in the summers for 80 students in top graduate programmes from around the world (Institute for Humane Studies at George Mason University, 2009). Students and faculty alike

present research and facilitate dialogue on democracy, society and the economy.

BOX II.5.7: THE GOGGLES PROJECT

The non-profit Goggles Project, an initiative of the fictitious ReThink University, launched its inaugural cross-Canada campus tour in September 2010. A cast of four lively characters engaged university audiences in experiential theatrical performances that asked them to rethink the role that their institution should play in building a more sustainable planet. The energy and ideas generated by the tour are harnessed by the Goggles Project website (www.gogglesproject.org). By using positive and fun messaging, the tour has initiated increased dialogue on campuses about sustainability in higher education.

ANALYSING THE PRESENT AND LOOKING TO THE FUTURE

While it is apparent that Canada and the US have made significant steps toward sustainability in higher education, the challenges and barriers to advancing individual universities toward sustainability (for example financial, leadership, communications) as identified by Leal Filho and Wright (2002) are still very real in Canada. A recent study of 23 Canadian university presidents revealed that the most significant constraints to moving toward SHE were seen as financial, lack of understanding and awareness of sustainability issues among the university population, and a resistance to change (Wright, 2010). These challenges are ubiquitous for the movement in both Canada and the USA. The problems are further exacerbated by the large geography of the two countries, and the relatively recent development of the scholarly field. Finally, many of the metrics needed to determine the advance of the SHE movement are unavailable. Currently, though anecdotal information is rich, there are no agencies that officially collect information on the quantity or quality of sustainability curriculum in these countries, the numbers of and initiatives of sustainability officers and offices on university campuses, the progress of campuses in developing green buildings and modelling sustainability through operations, and the amount of research funding dedicated to sustainability in higher education research.

BOX II.5.8: LEADERSHIP IN SUSTAINABILITY IN HIGHER EDUCATION

There are countless individuals from janitorial staff, to students, to university presidents in Canada and the United States working as leaders to advance sustainability in higher education within their colleges and universities. There are also commendable institutions working tirelessly to become models of sustainability. However, it is the national and international organizations that are the most powerful in pushing the agenda of the movement as a whole. Exemplary leaders in the two countries include the Association for the Advancement of Sustainability in Higher Education (www.aashe.org), Learning for a Sustainable Future (www.lsf-1st.ca/), the Sierra Youth Coalition (syc-cjs.org/sustainable-campus), and NWF-Campus Ecology (<http://www.nwf.org/Global-Warming/Campus-Solutions.aspx>) who focus solely on advancing education for sustainable development.

The following strategies and actions are suggested to advance sustainability in higher education in Canada and the USA:

- **Develop indicators to assess the progression of sustainability in higher education at national and international levels.** It is not enough to have a collection of case studies and anecdotes about SHE initiatives. In order to understand the advancement of the movement, a set of basic indicators that can be easily collected and understood is essential.
- **Develop innovative and creative initiatives to engage the university community in discussions about the role the university can play in creating a sustainable future.** Sustainability in higher education over the long term requires the integration of community involvement, stakeholder identification, institutional collaboration, and communication. Although several advances have been made, some of the major stakeholders (administrators, faculty, staff and students) have remained largely absent in discussions regarding the role universities can play in creating a sustainable future. Public outreach, through environmental communication, is an effective vector in social change and should be used to help make sustainability a cultural norm on campuses.
- **Promote a deeper understanding of sustainability among societal leaders.** While most educated people in Canada and the United States have heard of the term sustainability or sustainable development, for the majority, their understanding is vague. If we are to advance sustainability in higher education, the public's understanding must go beyond the Venn diagram conceptualization of sustainability to a deeper and more meaningful comprehension. Scholars should focus their efforts on societal leaders including politicians, spiritual leaders, and teachers.
- **Promote the development of university-wide undergraduate academic programmes that allow students to learn for a sustainable future.** While classes focused on sustainability are a wonderful addition to the curriculum choices for undergraduate students, sustainability concepts must be infused into all disciplines or else the notion that environment and sustainability are special interests rather than something for all to consider will be reinforced.
- **Promote the development of an active and empowering curriculum focused on creating change for a sustainable future.** Studies show that the didactic delivery of information about sustainability may teach students about the issues, but lecture rarely leads students to action. Universities need to accept and adopt new ways of teaching that incorporate experiential and transformative learning techniques which often leads to students translating knowledge into positive action.
- **Support the development of tenure criteria that acknowledge and honour cross-disciplinary work in sustainability.** The current tenure and promotion system in Canada and the United States tends to favour scholars who engage in research and teaching in a single aspect of a single discipline. Sustainability in higher education moves beyond disciplinary boundaries and requires academics to engage in the scholarship of integration. Academics must work with faculty associations, university presidents and provosts to promote a new understanding that values interdisciplinary, cross-disciplinary and transdisciplinary work.
- **Create campus sustainability officer positions at each university in Canada and the USA.** The number of campus sustainability officers in Canada and the United States has skyrocketed since the 1990s, but the number of staff dedicated to sustainable campus operations is still minimal compared to the number of universities. Just as a Health and Safety Officer is now standard at every university and College, a Sustainability Officer should be as well.
- **Develop regional, national, and international networks of scholars engaging in research in the field of sustainability in higher education.** Sustainability in higher education is a relatively new and emergent area of inquiry, yet not without strong foundations in education, policy analysis, manage-

ment theory, environmental studies, sociology ecology, psychology and philosophy. Despite the initial success of SHE scholarship, to date there is a lack of cohesion among researchers. A critical step in making SHE research effective is the encouragement of collaborative partnerships and intellectual exchange among researchers. SHE research is naturally interdisciplinary, and researchers are housed in a variety of disciplines. This often makes it difficult for researchers to meet and discuss their research at traditional conferences, or to plan for future research priorities. A critical step in promoting SHE research is to develop new modes of collaboration and information sharing at regional, national and international levels.

- **Further develop the list of research priorities for the field.** Due to the emerging nature of the field, SHE scholars must continue to develop an understanding of the critical questions necessary to advance sustainability in higher education. Scholars must define priorities for SHE research and develop comprehensive research strategies for the future.

If you are thinking ten years ahead, plant a tree. If you are thinking one hundred years ahead, educate the people. – Kuan Tzu, c.500 BCE

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