

Investigating Sustainability Professors' Conceptualizations of Sustainability and Sustainable Universities at Dalhousie University

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Section 1: Introduction

The consumption of renewable and non-renewable resources has increased across the globe since the industrial revolution, largely due to a growing human population. This rapid expenditure of resources has several negative effects, one of the most apparent of which is the unnecessary strain on the environment through increased emissions and wastes produced by the harvesting and consumption of natural resources. This accelerating rate of resource use has urged many around the world to begin a movement toward more environmentally friendly practices. One of the basic principles of this movement is the concept of sustainability; a significant part of this notion is the understanding that we should use resources in a way which meets the needs of our own generation without detracting from the abilities of future generations to do so as well (WCED, 1987).

In working towards a more sustainable society, several key institutions have been presented as vital in dealing with matters on sustainability, including current political affairs, the opinion of the public (Orr, 1992), scientific and educational research centres and higher education institutions (UNESCO-UNEP, 1977). Higher education institutions (HEI) have the unique ability to endow an environmental education on those within the institution, helping to “provide the necessary knowledge, understanding, values and skills needed by the general public and many occupational groups for their participation in devising solutions to environmental questions,” while at the same time encouraging “an awareness of economic, political and ecological interdependence of the modern world so as to enhance a spirit of responsibility and solidarity among nations,” (*ibid.* p. 12). These factors are a necessary step in moving toward a more sustainable society, placing HEIs at the forefront of the sustainability movement.

This study uses research and interviews to examine perceived issues of sustainability and barriers toward sustainability among a cohort of professors within Dalhousie University. The first section of this paper will introduce the research question and provide background to the foundations of

sustainability, as well as its relevance to HEIs. This will be followed by a discussion of the relevance of the research project as a contribution to the subject of environmental science, along with a literature review and the findings of the study .

Research Questions

The question that guides this research is: How do university professors teaching courses in the College of Sustainability at Dalhousie conceptualize sustainable development and sustainable universities; what are the perceived barriers towards making the university more sustainable; and how can a more sustainable university contribute to moving toward a sustainable society?

1.2 Conceptualizations of Sustainability

The notion of environmental sustainability, as referred to in this study, is commonly thought of as consisting of three distinct, yet overlapping components which all work in unison to support the greater concept of sustainability - social sustainability; economic sustainability; and ecological sustainability. The ideal of social sustainability is concerned mainly with the continuance and cohesion of community, focusing on maintaining a strong tie between societies in order to ensure the prolonged life of a given society. Economic sustainability, closely related to ecological sustainability, deals with the consumption and maintenance of capital goods, concerning the monetary side of capital, as opposed to the resource side. Ecological, or environmental, sustainability refers to the finite limits of resources as well as their eventual resting places, or sinks, in the environment, and the need to live within established biophysical limitations (Goodland, 1995). Environmental sustainability seeks to identify methods which can minimize the amount of stress imposed on the stock of natural capital due to human consumption, allowing for prolonged use of this capital (Pearce et al., 1989).

The 1960's and 70's brought about an increased awareness of the need for environmental sustainability, with Earth Day of 1970 being suggested as one of the key events which caused

widespread drive towards environmental awareness and sustainability (Talbot, 2008). Soon after, additional events brought the concept of environmental sustainability closer to the public eye. Some of these include the Earth Summit of 1992 held in Rio de Janeiro, as well as the release of the report titled *Our Common Future*, published by the United Nations World Commission on Environment and Development (WCED). The WCED became widely known for succinctly defining sustainable development as development which aims to meet “the needs of the present without compromising the ability of the future to meet their own needs,” in what has commonly become referred to as the ‘Brundtland Definition’ (WCED, 1987, pg. 87). Over time, sustainability and sustainable development have occasionally come to be used interchangeably (Sutton, 2004). Throughout this paper, the author will use a definition of sustainability related to the WCED definition, as well as a definition which succinctly combines Robert Goodland’s three tenets, characterizing sustainability as “economic growth based on social justices and efficiency in the use of natural resources,” (Alshuwaikhat and Abubakar, 2008).

1.3 The Necessity of Sustainability

A move towards an increased level of sustainability in society is necessary because the remaining level of resources available has been decreasing while population has been rapidly increasing. As Thomas Malthus described it, resources are often produced at a linear rate, while population growth increases at an exponential rate until the number of inhabitants rises faster than resources can be produced. This can result in a rapid deterioration in the population (Malthus, 1798. Chapter 7). The rapid growth of human population we are presently experiencing has only occurred within approximately the last 100 years. It is estimated that, 2000 years ago, the population of the world was ~300 million. After approximately 1600 years, this population had doubled to 600 million. By the year 1900, the world population had grown to 1.7 billion, and reached 2.5 billion by the middle of the century, for a population increase of approximately 50% over 50 years. Advancements in medicine and technology reduced the rates of mortality mid-century, and the population skyrocketed to over 6 billion by the year

2000, marking a population increase of nearly 250% in 50 years (United Nations, 1999). However, although population increased in this time-span, resource distribution and consumption took a turn for the worse. In 2007, the poorest 2.3 billion people in the world accounted for approximately 3% of both private and public consumption, while the approximately 1 billion citizens in the most affluent countries consumed over 80% of the world's resources (WRI, 2007).

This situation of overconsumption in our current way of life can be demonstrated by a well known quote; “[...] while the population is increasing, the world's resource base is decreasing at an alarming rate and *if everyone adopted the western lifestyle we would need four earths to support us,*” (Bruges, 2004. P. 21 – emphasis added).

1.4 Scope and Objectives

This project was done with the objective of investigating and determining the depth and level of knowledge of a cohort of faculty members teaching courses in the College of Sustainability at Dalhousie University. In addition to contributing to environmental science theory through broadening the understanding of what the concept of sustainability means to a cohort of experts, this study will directly contribute to practice in this field. Determining key issues, conceptualizations and barriers in environmental sustainability on campuses can allow for modified or more precise steps toward a more sustainable university, and subsequently, a more sustainable society. Because universities and colleges are at the forefront of education on matters of sustainability, and as well are the producers of the next generation of scholars and intellectuals, knowing precisely what issues will most affect change on campus is vital to the development of a sustainable future, both on and off campus.

[...] anyone involved in higher education would have to admit that most student behaviour with regard to sustainability is unchanged, most faculty are not engaged, most trustees do not see sustainability as a high priority, and—to choose only one indicator—most campuses remain massive greenhouse gas generators. (Barlett, 2008. P. 1078)

Section 2: Literature Review

This literature review was undertaken to place this study within the context of published literature and media. It was accomplished using available resources within the Dalhousie Library system, utilizing both physical and electronic media, as well as information readily available on the internet (UNESCO documents, declarations, etc.). Search terms within the Dalhousie library system to locate the majority of cited resources included “sustainability”, “environmental sustainability”, “sustainable development”, “sustainable university”, “sustainability in higher education” and “sustainable resource use”. Further, an in-depth search through the *International Journal for Sustainability in Higher Education* warranted many valuable resources. Limitations were set with internet searches to the first 50 results that occurred under each search term to conserve time and keep the scope of the search sufficiently narrowed.

The following section is divided into three separate parts. The first will examine literature relevant to the advent of sustainability in higher education. Following this brief introduction to SHE will be an examination of what various universities have done to incorporate sustainability into their campuses. The second portion will introduce the relevance of SHE to society as a whole, noting whether declarations promote inclusion of sustainability-based initiatives on campus, and how SHE can lead to sustainability in greater society. The final section will examine the role of leadership in successfully incorporating sustainability into HEIs.

2.1 Sustainability in Higher Education (SHE)

Although a genuinely sustainable system may seem a difficult thing to achieve, it is entirely possible to move towards sustainability through small but significant actions. Several types of institutions have presented themselves as vital in moving towards a more sustainable society. Higher education in particular has been identified as one of the key institutions necessary to work towards a

sustainable future. It has been noted by UNESCO to be of significant importance for three main reasons: higher education provides for a suitable background into fields of work which deal with sustainability; HEIs provide research on the topic to further our collective understanding of sustainability and sustainable development; and HEIs maintain direct links with communities and businesses where change can be brought about, research disseminated and connections made with community members (UNESCO, 2009).

The field of Sustainability in Higher Education (SHE) has developed from viewpoints such as this, by those who realized how important HEIs are in working toward a common goal of a more sustainable society. The importance of SHE lies in the understanding that HEIs work to educate the next generation of researchers, workers and intellectuals in the field of sustainability. As UNESCO has put it, “although the higher education sector might have a relatively small proportion of society’s ecological footprint, it has 100% of the students, and the opportunities and responsibilities that follow from this need to be taken seriously,” (UNESCO, 2009. p. 91). The students who attend these HEIs are taught early on to critically analyze any information given to them in an effort to seek the best possible outcome of a given situation. Further, HEIs are in a unique position in society to accomplish several goals concurrently. An HEI, as defined by Holmberg et al., is in a position to provide an education in sustainable development to all members of society through dissemination of knowledge; embrace equity, both in terms of gender and marginalized groups; develop research and increase our knowledge base of the subject, while researching methods to better convey this information; network within the greater community, both public and professional, on the topic of sustainable development; and integrate sustainability knowledge into the curriculum, transferring acquired knowledge to the next generation of students (Holmberg et al., 2008). It is arguable that no other institution has the capacity to embrace all these factors to work toward sustainability, giving HEIs an advantage in aiding in the movement toward sustainability.

An attempt was made to incorporate sustainability and the concept of a “sustainable university” more fully into the workings of the university institution with the Talloires Declaration, created in 1990. This declaration was created as a means of introducing a level of commitment to sustainability on the parts of the leaders of the signatory institutions. By the year 2010, this declaration had over 400 signatory universities and colleges from 52 countries (ULSF, 2010). Although many universities have become signatory to this declaration, signed by presidents and vice-presidents of the respective institutions, involvement of people in all levels of the university is necessary before significant movement towards more sustainable practices can be made. Further, these declarations have no implementation plan or follow-up to signing, and therefore have the potential to be used for the purposes of green-washing institutions (Wright, 2002).

Promoting sustainability in higher education depends significantly on the active engagement of disciplinary leaders in promoting ecologically sensitive theory and sustainable practices as central to the scope and mission of their fields. (Clugston and Calder, 1999. P. 4)

With the realization that actions within a university or other HEI can have significant effects and benefits on the environment, many HEIs have turned their gaze towards sustainability-related initiatives, and begun working to reduce their overall impact on the environment (Herremans and Allwright, 2000). As enthusiasm has mounted within universities on the subject of sustainability, increasing numbers of HEIs have committed themselves to sustainability and a favourable change in a direction toward a more sustainable society (Ubuntu Declaration, 2002)

Numerous small scale initiatives have been undertaken within HEIs as those concerned about the welfare of the future act in accordance with their beliefs. At Illinois Wesleyan University, Illinois, a Green Task Force (GTF) struck up enthusiasm towards sustainability across campus by increasing environmental awareness, completing a campus wide energy audit and demonstrating the amount of waste on campus through guerrilla actions such as leaving what amounted to a full day's waste on the

university commons (Jahiel and Harper, 2004). Students at University of Victoria, BC, staged a string of protests to prevent destruction of the last remaining grove of trees on campus (M'Gonigle and Starke, 2006). A class involved with environmental studies at Penn State University conducted an intensive campus wide sustainability survey, breaking down the measurement of sustainability on campus into 10 categories including such areas as waste disposal, energy usage, water usage and transportation. Upon identification of these categories, indicators were used to identify areas which needed significant improvement, areas in which only some improvement was needed, and areas in which no improvement was necessary (Penn State, 2000). Initiatives such as these display an enthusiasm for environmental and sustainability-related improvements, and show how they can have significant impacts on society, and encourage prompt movements toward a more sustainable society.

With the implementation of SHE in colleges and universities, a need has arisen to determine the conceptualizations of key stakeholders across campuses on the topic of sustainability in order to ensure consistency and understanding across levels of the institution. To date, few attempts have been made to determine the level of understanding of those involved across campuses on the topic of what can be done to make a university “sustainable,” and what defines a “sustainable university”. It has been recognized that, although several definitions of these terms have been published, it is unlikely that any mass consensus will be formed on their meaning. This is said to be because a variety of factors can influence one’s opinion on the matter, including training, economic or political setting, and work experience (Filho, 2000). As a result, it is necessary to open a dialogue with stakeholders to work towards establishing a common conceptualization of the term. This matter was previously investigated in a cohort of university presidents across Canada, which examined the conceptualizations of sustainability, sustainable universities, and barriers involved in working toward these goals, a study which found a common underlying knowledge of these concepts within the cohort (Wright, 2010).

Once an open dialogue has been established with stakeholders on campus around this topic, progress can be made towards determining perceived key elements of a sustainable university, as well as the role of the university in an environmentally sustainable future. The conceptualizations of the stakeholders can be compared against a backdrop of common opinions and conceptualizations of those involved with sustainability and SHE. Throughout this project, “conceptualization” will refer to an interpretation which is formed based on professional experience in dealing with the subject matter.

2.2 University Commitment Through Declarations

One method of garnering enthusiasm and awareness towards SHE is through the written commitment of institutions to further the movement towards a sustainable university. This commitment often comes in the form of a signed declaration. The Talloires Declaration of 1990 gained attention from universities and colleges across the world as one of the foremost declarations on establishing or maintaining sustainability in HEIs. Canada had 31 signatories as of March, 2010, with 9 of these being in Atlantic Canada (University Leaders for a Sustainable Future, 2010). The Halifax Declaration of 1991 worked towards using universities as a method to increase public understanding on matters related to the dangers facing the environment (IISDa, 2010). The Swansea Declaration of 1993 sought to establish a clearer representation of sustainable development within HEIs, and as well prompted universities to utilize their resources to find solutions to overcoming unsustainable practices (IISDb, 2010).

Some HEIs have instead opted to craft their own guidelines for sustainability, adapted from the basic tenets of other declarations, realizing it is not wholly necessary to sign a declaration in order to successfully move toward increased sustainability (Wright, 2002). Although the numbers of signatories of any given declaration are easily measurable, the degree of implementation of these declarations at any specific institution is not known. A call for further research in this particular field was issued in an

attempt to determine the extent to which institutions implemented changes, and whether any difficulties were encountered along the way (*ibid.*).

Although awareness and written commitment on the part of several universities has indicated a larger movement towards sustainability, being signatory to a declaration such as this does not bind an institution to impose change. In fact, although the majority of HEIs in Atlantic Canada have placed some form of lesson on sustainability within their curriculum, not one institution (including those that are signatory to a declaration on sustainability) has realized even half of its SHE potential, according to a recent study (Beringer et al., 2008).

2.3 Role of the Higher Education Institution In Promoting Sustainability

The HEI is widely considered to play several key roles in the promotion of sustainability initiatives. Devine-Wright et al. (2001) stated that HEIs should be seen as the prime movers towards sustainability, the gatekeepers and spokespersons for the network, the bridging institutions to link other institutions together, and they should be an independent monitor in order to evaluate the progress toward a more sustainable society. Evangelinos et al. (2009) established three areas of sustainability promotion within the university: enhancement of awareness of sustainability within the student population as well as society through use of properly-organized environmental management systems; the transmittance of sustainability knowledge to society through involvement in the community; and research and teaching, which allows for the diffusion of knowledge on sustainability into the population of the university. A large part of this final method of promotion of sustainability in universities includes successfully integrating sustainability initiatives into the existing curriculum.

Although there is widespread support for an integration of sustainability-related work into the curriculum (Zilahy and Huisingh, 2009), several barriers to further implementing sustainability within the curriculum have arisen in the literature. These range from a curriculum too full to allow for any further

courses to the fact that many faculty may not know enough about sustainability issues to a resistance of any additions to an already-heavy workload (Nicolaidis, 2006). However, research has found that once included into the curriculum in a way which integrates it properly with pre-existing subject matter, general acceptance towards sustainability is high (Boks and Diehl, 2006). As one of the prime roles of a university is as an educator, a move towards implementing sustainability within the curriculum is a significant step towards a more sustainable university.

2.4 Effective Implementation of SHE Initiatives

Due to the relatively recent formation of SHE, many gaps in research and literature exist. Research has been completed on various institutions around Atlantic Canada to investigate the level of sustainability, yet this same research must be completed on institutions across the country in order for future studies to be fully effective (Beringer et al., 2008). Additionally, a call to develop research priorities as well as initiate further research was issued (Wright, 2007). Further, although attempts to model exactly what makes a sustainable university have been made, and existing levels of sustainability have been assessed in universities (Velazquez et al., 2006; Cole, 2000), steps which are necessary in *working toward* a sustainable university have not yet been identified. Michael Shriberg found that “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,” (Shriberg, 2000. P. 254). This study will take this into account by attempting to provide initial grounds for comparison to Dalhousie, a university with a significantly established sustainability-related background in the form of a newly established College of Sustainability, an Office of Sustainability and numerous student initiatives and policies in place to work toward sustainability.

Key levels in the university system have been identified as being instrumental for change in society. The administrative staff, students, faculty were all identified as important (Sharp, 2002), with

university staff noted as being absolutely vital in their ability to elicit internal change due to their varied expertise and years of experience in similar matters (Jahiel and Harper, 2004). In order to effectively create a sustainable university, merely having small parts working towards the ultimate goal is not good enough. Rather, what is needed is commitment on a variety of levels in the system, where barriers between these groups are overcome (Christensen et al., 2009). It was also found that institutional leaders must actively engage themselves in order for any action plan on sustainability to effectively come to fruition (Clugston and Calder, 1999).

Finally, although it has been widely used, the very word “sustainability” has been deemed conceptually flawed by some, and a need for proper contextualization has arisen (Wals and Jickling, 2002). Due to the relatively complex definition of the word, and the “fuzziness” of the meaning (there is no distinct division between sustainability and unsustainability), sustainability has been said to be a subjective term (Phillis and Andriantiatsaholiniaina, 2001). Due to this lack of definition, it is necessary to ensure a common meaning is implemented across all levels of the institution before changes come underway.

Section 3: Methods

This study was used to open an initial dialogue with a cohort of faculty teaching in the College of Sustainability at Dalhousie University, and gain insight into their conceptualizations on the topic of sustainability and sustainable universities, as well as the role a sustainable university can play in society and barriers toward making a university more sustainable. Their understanding and professional opinion of the topic was explored through use of closed-ended (questions requiring a short answer, usually as brief as one or two words) and open-ended questions (questions which require a more elaborate and well formulated response), as well as two checklists designed to identify perceived key concepts and themes on the topic of sustainability (See appendix I for details). The choices within the checklists are

based on ideas which were, at one point or another, mentioned in the media or literature as having to do with sustainable development or sustainable universities. As this was an exploratory rather than a representative study, use of non-probabilistic sampling techniques was employed. The subjects were not representative of the entire faculty at Dalhousie. Rather, an initial exploration into the depth of knowledge of those affiliated with sustainability-related courses was completed. This may provide a background for a study into underlying comprehension of the subject within the entire faculty. The methods for this study are directly informed by Wright (2010), who conducted a similar study which investigated university presidents' conceptualizations of SHE. Initially, the population was chosen, and the interview questions were prepared from previous literature on the topic. Interviews were held individually, and results were analyzed through use of respondent themes. The next section will detail each individual step in the process of methods.

3.1 Population

The sample for this study was drawn from a population of university professors who currently teach, or have previously taught at least one course within the College of Sustainability. This particular population was chosen due to their pre-existing general knowledge of sustainability, indicating there may already be some similar level base of understanding of the concept. Therefore, this study examined knowledge and conceptualizations beyond the base level of theme identification related to sustainability. In order to provide a background for the group that was studied, the program or faculty they are closely affiliated with was requested. Each of the seven respondents came from a different program, ranging from history to architecture to environmental science.

3.2 Procedures

A list of courses available within the College of Sustainability was accessed online January of 2011. For each course listed, current and past professors (2010/11) were identified to create a sampling frame of 12 individuals. Each individual was contacted via email and/or telephone with an invitation to participate in the study. A total of seven individuals responded positively for a response rate of 58.3%. Face to face interviews took place over a two week period. Interviews took approximately half an hour, and included questions concerning sustainable development and sustainability, as well as the place of sustainability within the university, barriers to implementing further sustainability initiatives within HEIs, and the role that universities with sustainable practices can play within society (See appendix II).

To ensure confidentiality, and to allow the interviewees to be more candid with their responses, all those interviewed were assigned a respondent number, and no names are published or will be published in subsequent publications. All interviews were recorded with a digital voice recorder after obtaining permission of the interviewee to do so. Once all interviews were completed, analysis of data took place. The interviews were recorded and transcribed in full, including all hesitations and speech disfluencies, which may aid in more accurately relaying the attitude and line of thought of the interviewee. Interview transcripts were examined for general themes which are implicit in each of the responses, as well as “residual themes”, which do not fall under any specific category, grouping together responses containing like themes (McCracken, 1988. P. 46). This approach is based in the qualitative analysis method of grounded theory. Due to the relatively small number of interviews completed, theme-grouping and analysis was done by hand.

3.3 Limitations / Delimitations

One of the most significant limitations imposed was the relatively short amount of time available for completion of this project. A longer period would allow for a greater number of subjects to be interviewed. This limitation extends to the depth of interviews allowable as well. Though sufficient

time may be available to the interviewer, some of those being interviewed may be pressed for time, resulting in responses which may be significantly less elaborate than would be achieved under less pressing circumstances. A further limitation was the rate of response on the interviews. Although over half of the subject group responded, more varied results may have been provided with a greater response rate.

A considerable delimitation of this project involves the group which was interviewed. The sample was limited to faculty at Dalhousie University who teach or have taught, a course within the College of Sustainability. Although the College of Sustainability was only established in 2009, the faculty who teach in the program are understood to have a firm grasp of the subject matter, and have had significant experience dealing with topics concerning sustainability will have a greater understanding than those external to the College.

3.4 Outputs

The final report warrants an insight into a cohort of College of Sustainability faculty members' conceptualizations of sustainability and sustainable development in relation to the Dalhousie University and universities in general. Once this, as well as the perceived barriers toward implementing further sustainability initiatives on campus, has been identified in depth, the implementation of further initiatives and movement towards a more sustainable university may be made. Although this is only an exploratory study, this work may also pave the way for a representative study to be done on the same topic, to find out the overall level and depth of sustainability across campus. Upon completion of this project, a presentation was done to address the project as well as key findings and results.

Section 4: Results and Discussion

This section provides an overview of the results from data collected during the interviews, as well as the most prevalent themes which appeared in the responses to each of the questions in the interviews.

Question 1: From your perspective, what do you feel will be key issues to the functioning of your university in the next 10 years?

As shown in Table I, the majority of respondents felt that the most significant issue facing the university in the next decade will be related to enrolment, including maintaining sufficient numbers of students and attracting more students to the university. One respondent noted their concern about ensuring a steady or increased level of student enrolment in conjunction with being able to accommodate the desires of prospective students enough to attract them to the university:

[Student enrolment] of course relates to an exciting curriculum, and “walking the talk” in operations, and reflecting what’s needed in society, and I think we’d have to draw from more than just Nova Scotians, we’d have to draw from across Canada and internationally. If we’re trying to be diverse and meet the needs of people coming from all around the world, we’ll have to be a contemporary university, reflected in how we treat people and that kind of thing.

This level of response can be directly compared to the pilot study (Wright, 2010), in which the most frequent response to this question given by interviewed university presidents was concerning the issue of enrolment. This indicates that it is fairly universally understood in these cohorts that a university thrives upon student enrolment, and as such, it is the main area of concern for universities.

Another theme which occurred frequently, and is linked to the concept of increasing enrolment, was the issue of economic viability of the university, and ensuring a constant flow of funding to the university system. A decline in student numbers would inevitably incur a decline in funds for the university. The concern to maintain a constant stream of funding was detailed by one respondent:

I have, at a broad scale, concern about the maintenance of the institutional or economic viability of academic institutions in general, Dalhousie in particular, given its location in a have-not region of the country, given its scale in terms of it being the smallest full-service university in the country.

Although all interviewees were affiliated with the College of Sustainability, only two gave a response to this question which concerned the environment or resource use. Although these factors

may be important to many on campus, they do not appear to be thought of as key issues to the functioning of the university within the next decade within this cohort. This was echoed in the pilot study, where some respondents mentioned the ecological footprint of campus buildings, and only one respondent mentioned SHE as an area of concern. In this study, one respondent referred to energy concerns in regards to the curriculum, while the other referred to “resource use” in a curricular sense:

I think we need to enhance skills and knowledge around implementing renewable energy technology. We’re sort of at the cusp and so I would think it would be great for Dalhousie’s engineering faculty to have a renewable energy undergraduate or Master’s program that would match what the Community College is doing on the technical side.

I think some of the challenges are making effective use of the resources that are already here at Dalhousie, but using those resources to deal with, I think, changed conditions of education, and also an evolving mission of education.

Table I. Key issues facing the university in the next decade

| Key Issue | Number of Respondents |
|-----------------------------------------------------|-----------------------|
| Student enrolment / growth of student body | 5 |
| Funding / economic viability | 3 |
| Adapting to accommodate environmental concerns | 2 |
| Energy / resource issues | 2 |
| Quality of curriculum / research | 2 |
| Remaining relevant to society and students | 1 |
| Faculty retention / regeneration | 1 |
| Overcoming increasing specialization and challenges | 1 |
| Ensuring access to education | 1 |

Question II: When you hear the term sustainable development, what does this mean to you?

All respondents provided fairly unique responses to the question (Table II); however, nearly all had some vein of similarity. Six of seven respondents associated the term “sustainable development” with the environment in some way, although many of these responses mentioned the environment in regards to finding a balance between environmental, social and economic factors.

It means balancing the needs of humans and...both at the individual level, institutions and the environment. I would probably put the...cast the environment broadly, both the physical and the biological environment, over some timeframe.

[...] depending on how one defines opportunities in the future, [sustainable development] could be predicated on a whole wide suite of different capital inputs; financial, social, biophysical.

These responses display some familiarity with the Goodland (1995) definition of sustainability as the necessity to properly balance the concept in its three forms: environmental sustainability, social sustainability and economic sustainability. Further, four respondents used or referred to some form of the definition provided by the Brundtland Commission in their response, indicating the utility of this particular definition:

[...] when I hear that, it brings to mind the Brundtland Commission definition that it's about meeting the needs of the present without compromising the need...the ability of future generations to meet their own needs.

So the short answer would be...human development that doesn't compromise the ability of other species to develop, and doesn't deplete the resources available to sustain humanity indefinitely.

One respondent felt that sustainable development was not defined in the temporal sense. This is interesting, because, as a concept, the timeframe of sustainable development is often purposely vaguely defined, and is thought of more as a dynamic and ongoing process (Newman, 2005), as opposed to one with a set time span.

I would probably put the...cast the environment broadly, both the physical and the biological environment, over some timeframe, and to me, what one of the dilemmas to establishing what sustainable development means is: what's the timeframe you're talking about? Is it 10 years, is it 20 years, is it 100 years, is it 10,000 years?

Further, one respondent felt that the phrase was problematic, and labelled it as an oxymoron. Although occasionally referred to as such in the literature (Redclift, 2006), the phrase seems to have been largely accepted as a proper term in the English language.

To me, it's almost an oxymoron, in that, can you really have development and be sustainable at the same time? So...maybe it's more "sustainable something else" that we're looking for..."sustainable equilibrium", maybe something like that, but I'm always scared when we associate sustainability with development...

Table II. Meanings of sustainable development

| Key Issue | Number of Respondents |
|------------------------------------------------------------------------------------------------------------|-----------------------|
| Environmental factors | 6 |
| Balancing economic, societal and biophysical factors | 4 |
| Non-environmental factors | 3 |
| Timeframe issues | 2 |
| Oxymoron / Problematic term | 1 |
| Challenging the imperative objective which is problematic in terms of our collective ability to understand | 1 |
| A reminder of the past | 1 |

Question III (Checklist I): Please check off all items which you feel are essential aspects of sustainable development.

After determining each respondent's own definition of sustainable development, they were asked to examine a checklist and check off any concepts which they felt were essential to sustainable development. The most popular responses are detailed in Table III. Although there was significant variety across the checklist as to what constitutes sustainable development, four categories were unanimously agreed upon by all participants. These were 1) conservation of species diversity; 2) conservation of genetic diversity within species; 3) equity among those of future generations; and 4) integration of environment, social concerns and economics into decision making. These results are completely consistent with the pilot study, in that the most popular concepts which occur in this cohort were found to be ranked near the top in the studied group of university presidents. In both studies, "integration of environment, social concerns, and economics into decision making" garnered a response

rate of 100%, which is in tune with many responses given in question II, as well as the concepts most commonly found in the literature.

Of interest are the concepts “balance high CO2 levels with an increase in the number of trees planted” and “favouring aspects of the nonhuman world that have benefit to the human race”, which each garnered a single response. The first concept, although perhaps seen as a step in working toward a more environmentally sustainable society, may not have been thought of as essential with more respondents due to its specific approach to a broad problem. The second, an anthropocentric approach to sustainable development, runs parallel to another choice, “inherent valuing of the nonhuman world”, of which five respondents selected. Further, as seen in the pilot study, most of the respondents noted gender equality as an essential concept in sustainable development, yet this concept was not mentioned at all in the responses given in the previous question. However, anomalies aside, most of the selected concepts were echoed in the responses given in question II.

A small number of concepts were added by some respondents to the bottom of the checklists. These include a) mandatory environmental education; b) generational justice as framework; c) increased respect for conservation of cultural diversity; and d) food and water security for all. The first and perhaps the most unique point, mandatory environmental education, will be brought up further in the following question. The others slightly overlap with concepts already existent on the checklist, such as “increased respect for conservation of cultural diversity” being related to the existent “maintaining and enhancing cultural diversity”, or “generational justice as framework” being related to “equity among future generations”.

Table III. Essential concepts of sustainable development

| Essential Concept to Sustainable Development | Rate of Response |
|---------------------------------------------------------------------------------|------------------|
| Integration of environment, social concerns, and economics into decision making | 100.0% |
| Conservation of genetic diversity within species | 100.0% |

| | |
|-------------------------------------------------|--------|
| Equity among those of future generations | 100.0% |
| Conservation of species diversity | 100.0% |
| Conservation of biodiversity | 85.7% |
| Development and preservation of natural capital | 85.7% |
| Gender equality | 85.7% |
| Equitable provision of basic needs | 85.7% |

Question IV: What role do you feel universities should play in achieving sustainability?

Responses in this section were fairly consistent in the understanding that a university should provide an education in environmental or sustainability-related fields to students, while at the same time playing the part of a leader in sustainability in the surrounding community (Table IV). This is in direct comparison to the pilot study, where it was reported with consensus that academic programming and role modeling of sustainability are the two most important roles a university should play in achieving sustainability, as well as the literature, which notes education to be one of the main methods of fostering sustainability in a society. It is interesting to note that the interviewed professors did not all mention the need for sustainability in the curriculum, while the university presidents in the pilot study reached a consensus on the matter that sustainability should be in the curriculum. As professors tend to have a first person view of any subjects taught and may have stronger opinions on subjects that should be taught, it is surprising to see that not all think a university's role in achieving sustainability should be through its teachings.

[...] they should have it reflected in their curriculum operations, every aspect of their life and it makes good business sense to be sustainable. It's important to follow ecological values and be a good leader in this area and students certainly...you know, values are reflected in that, but also just as a member of society. It's important to do that on the operational side and it's always continual improvement.

Similar to the pilot study, only two respondents felt that the university should use research as a method of working toward sustainability. This is intriguing because, as Wright noted, one of the main functions

of a Canadian university is to provide research in its varied fields of study, and the dissemination of the knowledge gleaned from this research (2010).

[...] our job is to expand the sum of human knowledge, but we have a critical mass and we have human resources to argue for research projects, which then spill into our teaching, that remind policy-makers and remind the public of the importance of the natural world.

One respondent felt that one of the main ways for a university to achieve sustainability was to specifically teach a sustainability-related education to all students, regardless of program. This touches on a need which has been recognized in the literature, where it has been pointed out that skills-based courses, from art and music to language and writing courses, could feasibly integrate an element of sustainability into the curriculum (Burns, 2009 in Filho, 2009).

[...] one role I think that universities should play is they should provide a very thorough environmental education to students...and by environmental education I mean a science education, not discounting the importance of the human or social side but I think more students need a science education...and the reason that I think that is because we are a society that is based on very profound levels of extraction...exploitation of our natural environment. And I think that one of the fundamental problems that we face when addressing sustainability is that a huge proportion of our population is completely uninformed about the science of those extraction processes, where their food comes from for example; where their energy comes from...all of these things...where their cell phone comes from and how it works...almost all of these things are almost at the level of magic for most people.

Table IV. Role universities should play in achieving sustainability

| Key Issue | Number of Respondents |
|------------------------------------------------------|-----------------------|
| Shaping values of students through education | 5 |
| Provide leadership in the community | 4 |
| Research | 2 |
| Provide a forum for discussion | 2 |
| University should follow ecological values | 1 |
| Reduce / minimize ecological footprint of university | 1 |

Question V: When you hear the term “sustainable university,” what does this mean to you?

Most (four out of seven) of the respondents, when hearing this term, felt that either it was unclear, or it was designed for use as a marketing tool when used as an outcome, but when used as an adjective, was suitable (Table V). These results are in contrast to the pilot study, which found only a very small minority of respondents (two out of seventeen) who felt the term was jargon.

It sounds to me like a marketing slogan, and it sounds to me like a number of marketing slogans about “green this” or “low-energy that” that are intended to confuse rather than to enlighten.

I find [the phrase] not overly clear, not overly meaningful, as to what it’s trying to do. I mean, it’s two words coupled together in an orientation that leaves me wanting to know more. It’s hard for me to...if I take it on its face, the face definition would be, for me, sustainable...so sustainable company, sustainable mug, sustainable implies that thing, the object, is inherently...its provision is in keeping with broad scale definitions, objectives of sustainability.

Perhaps the reasoning for many respondents feeling the term was used as a marketing phrase, or was unclear, stems from the common perception of sustainability, not as an endpoint or goal, but as an ongoing process. In this sense, labelling something as “sustainable” may be seen by some as inherently flawed due to the ever-evolving nature of the concept, or the ambiguity of defining something which is sustainable in the present time. Two respondents relayed this point succinctly:

[...] sustainability is never a state of permanence; it’s a fluctuating thing. It’s not...it’s always redefining itself and that kind of thing, so you’ll always be doing it, sort of like housework.

As an adjective, I think it’s okay, you know the university’s trying to be sustainable, working towards it, trying to do these things in the various aspects of its programming. You know, “we’re working on sustainability at Dalhousie,”. As an end outcome, “it’s a sustainable university”, I think philosophically, nobody can really do that, because it’s an evolving thing, so I would think “marketing” if I heard a sustainable university.

Although a significant number of respondents felt that the term was misleading, or flawed as a concept, there was an equal number of responses which discussed the university in an ecological sense, and mentioned the greening of campus facilities and operations as a quality of a sustainable university.

The definition of a sustainable university in this sense was more typical of the definitions given in the pilot study as well as those found in the literature (van Weenen, 2000; Velazquez et al., 2006).

I think of it more in terms of operations I guess. I don't see the university's curriculum imperiled. I don't see...when I think of the phrase "sustainable university", I think more in terms of a university with a model footprint, and again, being a model citizen, and because of our size in most of our host universities, we have a real opportunity.

All respondents provided answers which are traditionally associated with SHE, however none directly associated the curriculum within the university as essential to a sustainable facility. This is surprising as the previous question showed that most respondents felt providing an education in sustainability was vital in working toward sustainability. Further, one respondent felt that merely taking environmental and social concerns into account in the present was not enough, and that some form of long-term planning would need to take place in order to ensure a continued pattern of sustainability. This line of thought brings to mind the Brundtland definition of taking into account future generations, as well as the literal definition of sustainability as something which endures indefinitely.

[...] we also have to look forward to the future and make sure that we can...like set our long term goals so that we are going to continue to get better and better. At the physical plant, the physical running of the place and also the social justice piece, again, making sure this place is accessible to everybody for a long time to come.

Table V. What does the term "sustainable university" mean to you?

| Item | Number of respondents |
|-----------------------------------------------------------------------|-----------------------|
| Jargon/marketing term | 4 |
| Greening of campus facilities / ecological footprint | 4 |
| University which balances financial, environmental and social aspects | 1 |
| Leadership in the community | 1 |
| Long term planning | 1 |

Question VI (Checklist II) – Please check off all items you feel are essential aspects of a sustainable university.

Due to disagreements with usage of the term “sustainable university”, and the belief that a university could not ever achieve sustainability, two respondents opted to instead select the options which were essential to a university which has a main focus of being a leader in sustainability (Table VI). The results were much more consistent than the initial checklist, with full consensus on seven items. These items included: the university 1) makes sustainability issues a top-priority in campus land-use; 2) arranges opportunities for students to study campus and local sustainability issues; 3) performs regular sustainability audits on campus; 4) establishes environmentally and socially responsible purchasing practices; 5) encourages critical thinking about sustainability issues; 6) reduces the ecological footprint of the university; and 7) engages in community outreach programs that benefit the local environment. These most mentioned topics have been often discussed in the literature as key elements to a sustainable university, so it is satisfactory to see this particular cohort is in the same line of thought as many other researchers.

Of note is that one respondent felt that providing monetary reimbursement to any students taking a sustainability course was an essential aspect of a sustainable university. This factor ties in with the responses given in question, and the financial burdens on a university which may hinder the move toward sustainability in the future.

Other topics brought up by respondents which were not on the checklist included acting as an opinion leader on sustainability within the community, providing support for community based organizations promoting sustainability, accounting financially for environmental externalities in financial decision making, employing resources and staff dedicated to sustainability efforts, and having documents and policies to support sustainability.

Table VI. Essential aspects of a sustainable university

| Item | Response Rate |
|-----------------------------------------------|---------------|
| Makes sustainability issues a top-priority in | 100.0% |

| | |
|------------------------------------------------------------------------------------------------------------------|--------|
| campus land-use | |
| Arranges opportunities for students to study campus and local sustainability issues | 100.0% |
| Performs regular sustainability audits on campus | 100.0% |
| Establishes environmentally and socially responsible purchasing practices | 100.0% |
| Encourages critical thinking about sustainability issues | 100.0% |
| Reduces the ecological footprint of the university | 100.0% |
| Engages in community outreach programs that benefit the local environment | 100.0% |
| Makes sustainability issues a top priority in campus building planning | 85.7% |
| Incorporates environmental knowledge into all relevant disciplines at all levels of study | 85.7% |
| Encourages students to participate in various volunteer opportunities around the community | 85.7% |
| Creates partnerships with government, non-governmental organizations, and industry working toward sustainability | 85.7% |

Question VII: What are the current barriers preventing full implementation / realization of sustainability at Dalhousie?

Although all respondents provided varied perceived barriers, one commonality was that all respondents mentioned the reluctance or resistance of people toward change, even if that change is perceived as a good one, as one of the most significant barriers to implementing sustainability on campus (Table VII).

Another challenge is the tendency for people, whether they're faculty, or staff or students, to bifurcate their behaviour from their beliefs system, so that we know that a certain kind of behaviour makes more sense but we keep on doing the thing we've always done.

There's a barrier there in that people feel...I think to some degree, people feel that there's a system...you're trying to modify a system, and that system is not necessarily amenable to modification in a structural way. You can tinker, play with it, but it's difficult to find points in the

system in which you can modify or leverage in different directions so that you change the overall direction of the system. And there's no incentive to do that, so there's not really a lot of incentive for change.

This study found the same top three results as the pilot study, albeit in a different order. The pilot study found the most commonly mentioned barrier to be financial barriers, followed by a lack of understanding and awareness, then resistance to change. This may be explained through the position of the respondents in each study within the respective universities. University presidents in the pilot study may have more of an insight into the channelling of funds, as well as the financial state of the university, while university professors, located closer to the people within the university, are in a position to be firsthand witnesses to the attitudes of students and staff alike.

An interesting viewpoint held by one of the respondents talked about the difficulty in coercing people to move toward change without imposing or forcing upon them an ideal which does not exist in line with their own. Sustainability, just as any other way of thinking and acting, is an organized set of understandings and beliefs held by a group of people. However much this group may believe the values inherent in sustainability are true, forcing others to submit to this system is not the way of properly affecting change in the population. Rather, presenting the facts to the public concerning the benefits of this approach and allowing them to make their own informed decision allows for a much deeper appreciation of the topic by all involved.

I may think it's important, you may think it's important, but to go into one institution that is ostensibly about freedom of inquiry and thought, and impose what is still a contentious and not universally shared moral value is both inappropriate and unrealistic. We can lead by example, we can believe in the importance of what we're doing in the larger climate, literally, but the idea of forcing people rather than inviting them to see the environmental dimensions of their work is inappropriate.

One respondent provided feedback on the reluctance of this, or any, university to change, while providing an example to relate this point.

I think an operational barrier to the university is long standing tradition of doing things the way we've always done them on the academic side, so that we have an enormous physical plant (i.e. campus buildings and facilities) that's used in the least opportune times of the year. I heard an estimate somewhere that if we were to close the university for January, and extend the winter term for a month, that would cut a third of our fuel bill out.

A suggestion that school be extended through the summer months and closed in winter may at first glance seem out of the ordinary; however this type of "thinking outside the box" may be what is necessary to work more effectively toward a more sustainable university. Many of the processes within institutions such as the university have become habit, but continuing to do something because it has always been done that way may not an effective way of moving forward. It is refreshing to see that members of the university community have put significant levels of consideration into non-traditional approaches to sustainability.

Table VII. Current barriers preventing full implementation of sustainability at Dalhousie

| Item | Number of Respondents |
|------------------------------------------------------------------------------------|-----------------------|
| Resistance to organizational or behavioural change | 6 |
| Financial barriers | 4 |
| Lack of understanding of the issue | 3 |
| Competing priorities | 3 |
| Low level of commitment | 2 |
| No immediate incentive to change | 2 |
| Energy Issues | 2 |
| Administrative issues | 1 |
| Imposing one method of thought on an institution which promotes freedom of inquiry | 1 |
| Desire to expand/perpetuate university | 1 |

Question VIII: What do you foresee as barriers to implementing sustainability initiatives on campus in the future?

Many respondents felt that the present challenges would extend into the future, with five replying that economic or financial burdens would, at least to a small degree, play some role in determining to what extent sustainability initiatives on campus would be instituted in the future,

although some felt the financial barriers to sustainability at the university would become more important (Table VIII).

[...] if you don't have the capital, you can't do the project. Then you have to borrow it from somebody, and if the interest rates are high then you're less likely to borrow. So if the economic situation changes where all those things come to force, and makes capital really hard to get, then that would be a future barrier for our plans for major sustainability projects like the heating plant upgrade. We just switched to natural gas, which is about 1.8 million. We just got some grants from government, so if those grants go away, it's hard to get capital, then that will be a potential barrier.

[...] maybe two and a half years ago, in 2008, before the economic meltdown, people were actually feeling fairly positive about the direction of the university, the direction of funding, the fact that, you know, we maybe had a position from which we could take some risks. I think that was part of the climate that led to us starting the College of Sustainability, and actually getting it approved.

This result parallels the responses given in the previous question in the pilot study, which found that current barriers were mainly financial, while the future showed a more optimistic outlook. Further, over half felt that the future would bring with it more socially based barriers, such as the need for attitude shifts within the university, the adaptation to needs and desires of the students, and the need to keep students interested in the issue of sustainability. This final suggested social barrier seems like it may be the least problematic, as the interest in matters related to sustainability has been fairly sustained for a significant period of time. However, keeping up the level of desire to engage in sustainability programs should remain a concern in the future.

I'm very much a Canadian in that I'm always waiting for the other shoe to drop. I never want to get overly confident. So when 300 kids showed up first year, and 330 showed up the second year, I'm still feeling like, you know, I'm having a party and nobody's going to come next year. So next year, I might be teaching to 12. And...one thing that we can't guarantee is, how do we keep our initiatives out there to the extent that people want to come here and take it.

Table VIII. Barriers to sustainability at Dalhousie in the future

| Item | Number of Respondents |
|--------------------------------------------------|-----------------------|
| Economic / financial issues will take precedence | 5 |
| Social issues will become more important | 4 |
| Same issues as before | 3 |
| Less barriers / optimistic outlook | 2 |

Question IX – What factors would it take to put becoming a model of sustainability on the top of Dalhousie’s list of priorities?

All respondents provided some answer to this question which would ideally lead to sustainability at the top of Dalhousie’s list of priorities (Table IX), as opposed to the pilot study, which found a portion of respondents feeling sustainability would never be a top priority within their university. This optimistic outlook on the matter within this cohort puts a positive light on an already hopeful situation. Although most statements came with some form of stipulation (most often financial and social factors), it is promising to see that some feel only a small number of changes need to be made before sustainability is a top priority within the university, and even more promising that some feel it is already nearly a top priority in the university.

I think it’s pretty close to the top of the list right now, from what I’m hearing. I think that the administration are very pleased with the way the College of Sustainability has developed, and the way the Office of Sustainability is doing what they’re doing. I guess one of the challenges will be to keep it there...

The most common stipulation in the move toward sustainability as a priority involved some form of financial or economic circumstance, such as the need for increased funding, a grant, or even an endowment made to the school in the name of sustainability. This is consistent with the responses to the previous question, in which most felt that the biggest barrier to implementing sustainability on campus in the future was some form of economic barrier.

Dalhousie is fairly late to the game on this, and for them to vault over with something as innovative as the College was really kind of a 180. So the idea that they need to be reassured that it’s not a fiscal gamble, but instead both intellectually responsible and fiscally responsible.

Four respondents also felt social factors would play a part in the move to sustainability. These factors included the need for more interest from those involved, a drive for desire to this goal, and an increased level of positive feedback from the surrounding community.

I think the community has to continue to talk about it. It has to get back to the senior administration over and over again that our sustainability efforts are appreciated, and they're valued by the greater community. I think that would really work wonders. You know, when the architects and the builders in the city are saying Dalhousie's doing it right, and when that gets back to the president, they're going to say "Okay, we're going to keep going".

Another frequent response was the perceived need to have buy-in from all levels within the university, particularly the President and Board of Governors. Finally, one respondent felt that, before any movement toward becoming a model of sustainability is made, we must first define what that model looks like. This line of thinking is very true, in that it may prove to be very difficult to move toward being a leader in a slightly abstract concept. However, some work has been made in the literature in defining what a model of sustainability may look like within a school. One suggested model school is one which an education on sustainability in many aspects is taught, the school structure itself is sustainably built and operated, and it is situated in an area which can take advantage of its natural and cultural context to provide illustration of the concept of sustainable development (van Weenen, 2000). However, bearing this in mind, this particular response demonstrates that there are many ways of looking at the same concept, and care should be taken in working toward any one goal which may have a variety of outcomes.

Well I guess there would have to be some work around defining what that looks like. I don't think anybody's done that yet. I mean, what does it mean to be a model? How do you know you're there? So my understanding of sustainability is...as a physical thing, or as an idea, there's a continuum of progress from where you are now to somewhere you could be, so you become more green, use less energy, you know, emit less carbon. Make sure the university professors earn the same amount of money, whether you're a man or a woman, which they don't. And so on. Make sure students have access to organic food...I don't know. Pick your indicator that defines whether something is green or not.

Overall, these results are consistent, if not slightly more reassuring, than the pilot study. With all respondents feeling that sustainability becoming a priority within the university is a possibility, it may be possible to more positively envision how these changes can come about, knowing that they stand a greater chance of becoming a reality.

Table IX. Factors to put sustainability on top of Dalhousie's list of priorities

| Item | Number of Respondents |
|------------------------------------------------------|-----------------------|
| Economic factors (bigger budget, more funding) | 5 |
| Social factors (interest, continued attraction) | 4 |
| Necessary buy-in from upper levels in the university | 3 |
| Already one of the main areas of focus | 3 |
| No definition of what being a model looks like | 1 |

Section 5. Conclusion

The feedback for the interviews completed was sufficiently detailed, and provided good insight into the underlying level of knowledge on sustainability in this particular cohort. Although the group interviewed could be considered small, the feedback provided gives an initial exploratory glance into the opinions and conceptualizations of sustainability, sustainable universities, and the barriers of working towards each at Dalhousie University. The results show a consistent level of comprehension across most topics within this group, with the exception of a small number of concepts. As in the pilot study, the majority of respondents felt that sustainable development as a definition was focused more on environmental factors, although over half recognized the need to balance environmental with social and economic factors. Most respondents felt that shaping students through education was the main role universities should play in achieving sustainability, a result which may have been given due to one of the primary roles of all respondents as educators. The optimistic outlook of most respondents was brought to light in the final question, which showed that all respondents felt sustainability becoming one of the school's priorities was possible, if only with some changes.

This study provided fairly positive responses across the board; however it must be kept in mind that this is an exploratory study within a select group of individuals already situated within the context of sustainability at a university in which sustainability has had a significant physical manifestation in the form of a College of Sustainability, Office of Sustainability and numerous student and faculty initiatives, as well as numerous other policies to guide its development. With this in mind, these results can be used

as a starting point for further research within the field, as well as background to a more in depth study using a larger cohort, investigating those in different programs and positions within the university. Further research could be done on a much larger scale as well, investigating nation-wide or global conceptualizations of the same ideas.

Although it may be assumed that by simply teaching a course on the topic of sustainability, one may have a clear understanding of the concept, the results of this study show that many interpretations can exist concerning the same core idea. For example, the study turned up very surprising results on the perceived meaning of the term “sustainable university”. The respondents were divided over whether this was a term to describe a university which promotes greening of its campus facilities and operations, or was merely jargon or a marketing term. This is of note as it may prove to be difficult to work toward a sustainable university if major players are not necessarily sure what a sustainable university is.

This study can directly contribute to the literature on SHE, providing a background and insight into the opinions of an uncommonly studied cohort of stakeholders in the field, and the results can contribute to further discussion on the topic. The results shows that a majority of the focus within SHE in this cohort is on environmental factors, therefore it may be prudent to place more emphasis on involving social and economic factors in the discussion. Further, due to the division of the definition of a sustainable university, perhaps more research could be done into developing this concept as a more mainstream idea. Although all respondents may have had background in sustainability to some extent, valuable information has been produced which can be beneficial to professors and other stakeholders both within the field of sustainability and exterior, by opening a dialogue between professors both at Dalhousie University, or other institutions in similar situations, on the topic of SHE, a topic which can always be discussed more often.

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Appendix I: Interview Questions

Q1: What are the key issues facing your university in the next 10 years?

Q2: When you hear the term 'sustainable development', what does this mean to you?

Q3: What role, if any, do you feel universities in general should play in achieving sustainability?

Q4: When you hear the term 'sustainable university', what does this mean to you?

Q5: What, if any, barriers do you see preventing your university from engaging in sustainability initiatives?

Q6: Do you foresee different barriers and challenges in the future?

Q7: What factors do you think would make becoming a model of sustainability a top priority for your university?

CHECKLIST ON SUSTAINABLE DEVELOPMENT CONCEPTS

Please check off which of the following you feel are the essential aspects of sustainable development:

- Conservation of species diversity
- Conservation of species that benefit the human race
- Conservation of genetic diversity within species
- Conservation of biodiversity
- Acceptance of species extinction provided there is no impact on the human world
- Equity among present generations
- Equity among those of future generations
- Development and preservation of natural capital
- Increase in global GDP
- Appropriate economic development
- Increasing economic growth
- Halting the depletion of the non-renewable resource base at a manageable level
- Conservation and enhancement of the resource base
- Maintenance of appropriate human population level
- Prevent populations from exceeding their carrying capacity
- Ensure a continual level of consumption
- Increase average quality of life standards
- Increase longevity of human life
- Equality among various age groups
- Gender equality
- Greater regional self reliance
- Greater individual self reliance
- Shift from a national government to a global government
- Integration of environment, social concerns, and economics into decision-making
- Inherent valuing of the nonhuman world
- Favouring aspects of the nonhuman world that have benefit to the human race
- Sacrifice of nonhuman species to provide humans with the essentials for survival
- Determining the carrying capacity of earth
- Species growth is limited by carrying capacity
- Equitable provision of basic needs
- Balance high CO₂ levels with an increase in the number of trees planted

- Maintaining and enhancing cultural diversity
- Political diversity
- Satisfy vital human needs
- Other: _____
- Other: _____

CHECKLIST ON SUSTAINABLE UNIVERSITY CONCEPTS

Please check off which of the following you feel are the essential aspects of sustainable universities:

- The university makes sustainability issues a top priority in campus land-use
- The university makes sustainability issues a top priority in campus transportation
- The university makes sustainability issues a top priority in campus building planning
- Installs solar panels on campus buildings
- Incorporates environmental knowledge into all relevant disciplines at all levels of study
- Research done on campus must include a summary of potential environmental issues that may be faced during the course of the experiment
- Arranges opportunities for students to study campus and local sustainability issues
- Consults students on their opinions of sustainability
- Provides incentives for students to participate in environmentally friendly activities
- Performs regular sustainability audits on campus
- Performs sustainability audits on the surrounding community
- Establishes environmentally and socially responsible purchasing practices
- Provides support for individuals who seek environmentally and socially responsible careers
- Encourages students to participate in various volunteer activities around the community
- Creates a written statement of their commitment to sustainability
- Each department within the university must create their own written statement of their commitment to sustainability
- Encourages critical thinking about sustainability issues
- Provides monetary reimbursement for individuals taking environmental courses
- Establishes policies that allow for the hiring, promoting, and granting tenure to faculty based on their knowledge of and work in sustainability
- Establishes policies allowing for the termination of faculty if they fail to incorporate environmental strategies into their course material and research
- Reduces the ecological footprint of the university
- Reuses campus waste
- Uses renewable and safe energy sources
- Emphasizes sustainability through support services
- Engages in community outreach programs that benefit the local environment
- Creation of green community centers to benefit the local environment
- Creates partnerships with government, non-governmental organizations, and industry working toward sustainability

- Greater self reliance within the university
- Other: _____
- Other: _____