

Article

Canadian STARS-Rated Campus Sustainability Plans: Priorities, Plan Creation and Design

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Abstract: The use of integrated sustainability plans is an emerging trend in higher education institutions (HEIs) to set sustainability priorities and to create a work plan for action. This paper analyses the sustainability plans of 21 Canadian HEIs that have used the Sustainability Tracking, Assessment and Rating System (STARS) from the Association for the Advancement of Sustainability in Higher Education (AASHE). The plans were coded thematically with a focus on the sustainability goals, process of plan creation, and aspects of plan design outlined in the texts. This paper finds that sustainability goals focused on the environmental aspects of sustainability, while social and economic aspects were less emphasized. Further, most plans were described as being created through a broad stakeholder-consultation process, while fewer plans assigned timelines and parties responsible to sustainability goals. This paper contributes to our understanding of the priorities of Canadian HEI institutions at the end of the Decade of Education for Sustainable Development and is useful for practitioners interested in developing their own sustainability plans.

Keywords: sustainability in higher education; education for sustainable development; campus sustainability; campus planning; sustainability plans; Canada; post-secondary education; higher education; sustainable development; STARS

1. Introduction

Universities and colleges have been targeted to help to promote a transition to a more sustainable society [1,2]. The United Nations created the Decade of Education for Sustainable Development (DESD) from 2005–2014 and outlined the important role of higher education institutions (HEIs) [3–5]. The DESD called for HEIs to engage their students in sustainability learning, be places of research in sustainability education, be leaders by modeling best practices in sustainability management, and to be “poles of activity” for their communities and nations [3].

To some degree, HEIs have responded to this call to action, as evidenced by the signing of international sustainability in higher education declarations [6–8], the proliferation of sustainability in higher education publications [9], and the creation of organizations like the Association for the Advancement of Sustainability in Higher Education (AASHE). Further, many universities have begun developing sustainability policies and plans for their individual institutions [10–12]. Sustainability policies are institution-wide statements that outline the vision of sustainability within the HEI, and sustainability plans are longer, more detailed documents that provide a basis for implementing this vision. This study focuses on sustainability plans in order to better understand how HEIs are envisioning sustainability on their campuses and how they plan to enact sustainability in higher education (SHE).

The SHE literature to date has focused predominantly on successful campus case studies, but lacks a robust collection of comparative empirical research [13,14]. Additionally, in the past many case studies were criticized for their lack of rigor and their focus on descriptive and narrative accounts [15,16]. This has impacted the SHE community’s ability to understand SHE from a broad perspective, and to allow comparisons between institutions. Within the Canadian context, a need has been identified to study Canadian SHE from a broad, cross-Canada, comparative perspective [17].

This paper aims to address these gaps in the emerging SHE field by analyzing the content of sustainability plans from HEIs across Canada who are members of AASHE and who have completed the Sustainability Tracking, Assessment and Rating System (STARS). This study is a part of a collaborative research project by the Sustainability and Educational Policy Network (www.SEPN.ca), whose aim is to gain insight into sustainability in Canadian formal education. SEPN’s research involved the collection and content analysis of educational policy documents (see [11,18,19]) and is to be followed by a national survey and site studies in primary through tertiary education. This paper presents a sub-set of the larger SEPN document analysis focusing solely on STARS-rated institutions and sustainability plans and will help inform SEPN’s next phase of on-the-ground research.

As sustainability plans are an emerging trend [10], this paper also aims to investigate the quality of the planning documents. In order to address these goals this paper will answer the following research questions: (1) what is the content of the goals outlined within the sustainability plans? and (2) do the plans employ best practices of plan design as noted in the literature? This information will be useful to practitioners working to create or revise sustainability plans as well as to illuminate the sustainability priorities of these STARS-rated institutions.

2. Background

2.1. Sustainability in Higher Education

Higher education has historically adapted to major external societal and economic forces. Further, as the long-term goal of HEIs is advancing science in order to serve society, HEIs must therefore be in touch with current societal needs [20]. In this regard, HEIs can play an important leadership role in fostering change towards creating a more sustainable world [20].

While definitions of sustainability in higher education vary, commonalities include the three aspects of sustainability (economy, environment, and society) as well as all realms of campus life (including employees, students, and campus operations) [21]. SHE scholars have proposed a systems approach to enacting SHE that includes education, research, operations, and community outreach [22–24]. This systems approach goes beyond previous ad hoc campus greening efforts and works to integrate sustainability into the curriculum and make sustainability at the core of the HEIs activities [25].

Integrating sustainability into the HEIs is a difficult task, with the most basic barriers being lack of time and resources devoted to sustainability [13,23]. Within the Canadian context, researchers find that financial barriers are the most common barriers to SHE cited by campus stakeholders [26–28]. Further, although research occurring within the HEI can be innovative, it does not necessarily rub off on the running of the institution [29] as HEIs tend to be very traditional in nature and have a habit of following “path-dependency” [30] (p. 82). Additionally, HEIs are complex organizations with many independent parts [31] and contain diverse stakeholders with differing perspectives on sustainability that can make aligning one vision of SHE difficult [32].

2.2. Sustainability Plans

One tool used to help guide the institutionalization of SHE and overcome some of the identified barriers to SHE is the development of an integrated institutional sustainability plan [10,22]. Sustainability plans include operations, academics (research and education), and administration aspects of campus life in an integrated manner, and should include the environmental, social, and economic aspects of sustainability [10]. These plans differ from sustainability policies as they are longer, more detailed documents that aim to guide the implementation of the SHE vision, often first outlined in a short policy statement.

Having completed a sustainability plan has been seen to be a factor significantly related to successful sustainability initiatives [12]. The development of a plan can be a useful step in negotiating the sustainability goals among diverse groups of stakeholders [33], and—once completed—policies and plans can be used to create an overarching framework for campus sustainability [1,12,22,23,29,34,35].

Sustainability plans are an emerging trend in SHE [10]. In the United States, one study found that 35% of AASHE member HEIs had a sustainability plan, while only another 13 plans were found at other HEIs [10] and another study found that less than half of HEIs analyzed had completed a written plan [12]. An initial analysis of all the plans by the researchers at SEPN show that in Canada, 44% of HEIs had a sustainability plan in 2013.

Within the Canadian context, a study by Vaughter, McKenzie, Lidstone, and Wright (2014) found that the majority of sustainability policies and plans in HEIs favored environmentally-focused facilities

management goals, and were vague in the details of sustainability research and education [36]. Similarly, Lidstone, Wright, and Sherren (2014) found that the policies of HEIs who were AASHE members focused on the facilities domain and the environment even though the policies described conceptualizations of sustainability, and SHE that included social and economic aspects, as well as a systems approach of SHE [37].

2.3. Plan Quality

While White (2014) cautions that more information is needed on sustainability plans before we can evaluate what makes a “high quality plan” (pp. 230–231), the literature does provide some guidance. Factors that are known to produce high-quality sustainability plans includes the plan: (1) being formally adopted by the HEI; (2) being communicated to all campus members; (3) including goals, tasks, and timelines; (4) providing a measurement and feedback process to assess goal completion; and (5) identifying the roles and responsibilities of participants [12]. Additionally, Koester *et al.* (2006) argue that timelines can be useful to help prioritize SHE goals [34]. Further, Brown and Hamburger (2012) note that timelines and measureable indicators can be helpful to judge progress of sustainability initiatives during reporting and monitoring phases of the plan [38].

The field of sustainability planning suggests that high quality sustainability plans include consultation and community involvement, and that a longer timeframe and more resources will produce better plans [33]. A community-based collaborative planning process is suggested as it helps build effective policy [39] by reducing conflict, achieving buy-in to the change agenda, and stimulates innovation [33,39,40].

This paper is a first step to investigate plan quality. As this paper is limited to a document analysis it will investigate the following aspects of plan quality: goals and tasks, identify roles and responsibilities of parties, timelines, and if there is a description of abroad stakeholder collaborative planning process. Further research with site studies should be conducted to learn if the plans are being formally adopted by the HEI, if the plans are being communicated to all campus members, and to measure the level of community involvement in the planning process, in order to reveal more about the quality of sustainability plans.

2.4. AASHE and Its STARS

Based out of the United States since 2005, the Association for the Advancement of Sustainability in Higher Education (AASHE) provides resources, professional development, and networking opportunities to its members to support their quest for SHE (see www.AASHE.org). In order to help HEIs compare their sustainability performance among member institutions, and to provide a benchmarking tool, AASHE created the Sustainability Tracking, Assessment and Rating System (STARS) in 2006 that has been gaining popularity among HEIs in North America [41,42]. In Canada, STARS is one of the most common standardized assessment tools used among HEIs along with the *CÉGEP Vert* (popular in the province of Quebec system of general and professional colleges) and the Campus Sustainability Assessment Framework (CSAF) produced by the Sierra Youth Coalition [43]. STARS is a self-reported system where HEIs earn credits for aspects of SHE and receive a rating of bronze, silver, gold, or platinum [44]. The STARS credits align with a systems approach of sustainability

and includes the themes of education and research; operations; planning, administration, and engagement; and special credits for innovation [41].

One of the STARS categories titled *Coordination and Planning* awards points in its credit system for institutionalizing sustainability and making it a campus priority in governance documents. STARS allocates credits for both incorporating sustainability into strategic and physical campus plans, and developing sustainability and climate action plans [41]. STARS requires that plans are created from broad multi-stakeholder involvement, and include measureable goals, with strategies and timelines to achieve those goals [41]. However, as STARS is completely self-reported, a credit awarded for sustainability planning does not guarantee that a plan actually exists, nor does it ensure the quality of the plan.

One critique of assessment tools like STARS, is that the numerous indicators require a lot of data to be collected from across many diverse parts of the campus requiring a lot of time and resources to complete [17,44]. We see this as a benefit for our study, and this commitment allows us to hypothesize that HEIs that have completed STARS have made a substantial commitment to engaging with sustainability. By investigating the plans of those engaging with sustainability we hope to identify trends for SHE goals and plan design.

3. Materials and Methods

This study analyzed the sustainability plans from HEIs in Canada that had completed a STARS rating from AASHE as of September 2013. This sample of STARS-rated institutions was chosen as these HEIs have demonstrated significant engagement with sustainability and to limit the scope of the study due to available resources.

For this paper, a sustainability plan was defined as an institution-wide, integrative document that was a final plan (no draft documents, white papers, assessments, or policies were used for the analysis). The plans were collected over the summer of 2013 with a final check for documents in in September 2013. Data collection was conducted through a search of HEI websites using a Boolean search with the following search terms (and term variations in parenthesis): sustain (sustainable development, sustainability, sustainable); environment (environmental, environmental sustainability); ecological; green; Aboriginal (Indigenous, First Nations, Métis, Inuit) as well as a search of internal sustainability webpages. The AASHE website was also used to compile a list of STARS-rated HEIs that received a credit for having completed a sustainability plan. In those cases where a credit was given, but no plan was found using our search methods, we followed-up by email and phone to the contact name provided on STARS, or the office of sustainability or facilities department at the HEI. Documents were uploaded into a NVivo qualitative software program [18] to help manage and query the data [19].

This study was part of the larger SEP research project on sustainability education that investigated governance documents of primary through tertiary formal education in Canada education. In order to allow comparison between various types of documents coded by different researchers at dispersed sites the team employed a content analysis using a collaborative coding method [45,46]. First, a codebook was created by conducting an individual round of coding on a sample of five of each type of governance document (sustainability policies and plans, and strategic plans). Second, the team met, discussed emerging codes, and reached consensus on code meaning and structure. The codebook included code definitions, examples, and exclusion and inclusion criteria [45]. Third, the team coded the documents

with an iterative coding process that included codebook updates and inter-coder reliability checks [46]. The codebook was created from mainly inductive coding that emerged from the documents, as well as some codes that were the expressed interests of the researchers (ex. timelines, goals), and the codebook structure was based on the domains of SHE within the literature. Although the coding was conducted collaboratively with a team of researchers, the coding and analysis for this paper was conducted by the lead author. After the coding was completed, frequency counts of the codes were created to gain an understanding of the most and least common codes. The cross-tabulation function within the NVivo software was used to determine what codes overlapped with text coded as goals, timelines, and parties responsible.

4. Results

This section begins with a general description of the results from the data collection of plan documents, followed by the first research question investigating sustainability goals, and concludes with the second research question investigating plan quality.

4.1. Overview of Plans

Of the 21 STARS-rated Canadian HEIs we found that 14 (67%) had a sustainability plan (Table 1). Of the HEIs that had plans, twelve were universities, and two were colleges. Of the seven that did not have a plan, three were public universities that had plans but only in draft form at the time of the study, three were colleges, and one was a small (fewer than 700 students), private university. It should be noted that these three colleges and the private university self-reported that they had a sustainability plan within the STARS database, however no plan was found through our initial search methods and follow-up contact with these HEIs revealed that plans were still in development.

Table 1. Details of the Sustainability Tracking, Assessment and Rating System (STARS)-rated Canadian Higher Education Institutions (HEIs) and plan documents.

| HEI Name, Province | Pop. | Plan | Plan Title | Plan Date | Pages |
|--|------|------|--|-----------|-------|
| Royal Roads University, BC | S | Yes | Royal Roads University Sustainability Plan | 2008 | 33 |
| Simon Fraser University, BC | L | Yes | Sustainability Strategic Plan | 2013 | 28 |
| Thompson Rivers University, BC | M | Yes | Campus Sustainability Action Plan | 2010–2012 | 16 |
| University of British Columbia, BC | L | Yes | UBC Sustainability Strategy | 2006–2010 | 35 |
| University of Northern British Columbia, BC | S | Yes | UNBC Green Strategy | 2009–2011 | 6 |
| University of Alberta, AB | L | Yes | Sustainability Plan | 2012–2016 | 25 |
| University of Calgary, AB | M | Yes | Institutional Sustainability Plan | 2011 | 38 |
| Northern Alberta Institute of Technology, AB | M | Yes | NAIT Sustainability Strategy | 2009 | 42 |

Table 1. Cont.

| HEI Name, Province | Pop. | Plan | Plan Title | Plan Date | Pages |
|--|------|-------|--|-----------|-------|
| Red River College, MB | M | Yes | Sustainability 365 | 2013 | 1 |
| University of Ottawa, ON | L | Yes | Advancing Environmental Sustainability at the University of Ottawa | 2010 | 24 |
| University of Western Ontario, ON | M | Yes | Creating a Sustainable Western Experience | 2012 | 18 |
| Wilfred Laurier University, ON | M | Yes | Sustainability Action Plan | 2012–2016 | 32 |
| Dalhousie University, NS | M | Yes | Dalhousie Sustainability Plan | 2010 | 12 |
| Saint Mary's University, NS | S | Yes | Sustainability Strategy Task Force Report | 2009 | 5 |
| University of Saskatchewan, SK | M | Draft | Campus Sustainability Plan | 2012 | 72 |
| McGill University, QC | L | Draft | 2013 VISION 2020: Creating a Sustainable McGill Action Plan | 2013 | 23 |
| Concordia University, QC | L | Draft | Draft Planning for Sustainability at Concordia University | 2007 | 6 |
| Okanagan College, BC | M | No | N/A | N/A | N/A |
| King's University College, AB | S | No | N/A | N/A | N/A |
| Durham College of Applied Arts and Technology, ON | S | No | N/A | N/A | N/A |
| Sheridan College Institute of Technology and Advanced Learning, ON | L | No | N/A | N/A | N/A |

Note: Pop.: Denotes the population of the HEI and is the number of students enrolled as listed in institution's annual plan for 2011–2012, including all full and part-time undergraduate and graduate students. S = ≤ 8500 ; M = 8501–33,999; L = $\geq 34,000$; Shading: White denotes the presence of plan that were analyzed in the study; light grey denotes HEIs with a draft plan; dark grey denotes HEIs with no plan.

The 14 HEIs in our study that did have plans were located in 5 of the 10 Canadian provinces (Table 1). Their student populations ranged in size from 2772 (Royal Roads University) to 51,768 (University of British Columbia), however most of the HEIs in our sample had between 20,000 and 40,000 students. The province that had the most plans was British Columbia with 5 plans. All HEIs sampled are English language institutions with the only French language representation being from a bilingual HEI.

The most common titles given to the documents include “action plan”, “strategy”, and “plan”. Despite this diversity in titling, this paper will use the term “plan” to describe all of the documents, as it is the most commonly used term in the documents collected, and is the term most often used in the literature [10,12]. The dates the plans were published begin in 2006, with 12 plans published since 2009.

This was not a surprise, as sustainability plans are an emerging trend [10], and plans are often designed to be updated every three to five years. The length of the plans vary from 1 to 42 pages, however the average was 23 pages.

4.2. Plan Goals

The sustainability goals outlined in the plans were mostly divided into the domains of university life (research, education, facilities, community engagement, planning or administration) similar to those outlined in the STARS framework. Two exceptions to this trend were the University of British Columbia (UBC) and Northern Alberta Institute of Technology (NAIT), which divided their goals into social, economic, and ecological categories, more closely echoing the language in the general realm of sustainability.

Plan goals usually had a broad overarching goal, followed by a series of strategies necessary to accomplish the broad goal. All plans included facilities goals and most plans included community engagement and education goals, while research and administration goals were less prominent. The following section will provide a synopsis of these sustainability goals.

4.2.1. Facilities

All of the 14 plans outlined goals for improving the sustainability of facilities management on campus (Table 2).

Table 2. Facilities themes.

| Facilities Themes | Of 14 plans: | |
|-------------------|--------------|----|
| | % | # |
| Waste | 100% | 14 |
| Building | 93% | 13 |
| Procurement | 86% | 12 |
| Emissions | 86% | 12 |
| Food | 86% | 12 |
| Transportation | 86% | 12 |
| Energy | 71% | 10 |
| Water | 71% | 10 |
| Landscaping | 57% | 8 |
| Resource | 43% | 6 |
| Technology | 36% | 5 |

Waste management or “reduce, reuse, recycle” was a theme discussed in all of the plans. We found that 29% of plans had the ambitious waste reduction goals of becoming a zero waste campus. For example, the University of Ottawa recommends to “move towards becoming a zero-waste campus, achieving a waste diversion rate of 70% by 2015 and of 75% by 2020”. Plans often sought to go beyond traditional waste streams and sought to manage e-waste, compost, and reduce the use of food packaging. Plans also included an increase in the amount of collection sites in residences, offices, and construction sites. Conducting audits, planning for, and/or reporting waste on campus was present in 29% of plans.

After waste, buildings were the next most common theme, which included the topics of sustainable building design, construction, building standards, and reducing building sprawl. Incorporating sustainable building design and construction was seen in 93% of plans. The most common sustainability building standard seen in the plans was the “Leadership in Energy and Environmental Design” (LEED). LEED goals ranged from achieving LEED standards for specific upcoming new buildings, to meeting or exceeding LEED Gold standards for all buildings. Some HEIs also aimed to follow their own internal building guidelines. Building themes also overlapped with other facilities themes (water, energy, recycling) that were incorporated into sustainable building design, as well as education to promote the sustainable behavior of building users (signage to turn off lights). Reducing building sprawl, increasing building density, and/or creating sustainable liveable communities close to or on campus was seen in 36% of plans. For example UBC aimed to “develop and implement an equitable space allocation policy to encourage downsizing, the sharing of space, and more efficient use of under-used space” and to become “a Model Sustainable Community [to] create a truly liveable campus environment in which people may flourish at work, at home, and at play”.

4.2.2. Community Engagement

We found that 86% of plans had community engagement goals. The plans described that engaging the community would help to advance sustainability by building capacity, increasing participation and education, and receiving community feedback to improve sustainability planning and practices. This section first describes which stakeholders were described within these goals, and then describes of engagement that was planned.

The majority of stakeholders were simply described as the internal campus community and the external community or public (Table 3). Some plans also described stakeholders with more specificity and included non-governmental organizations (NGOs), businesses, government, and other HEIs. Sustainability committees and offices were also commonly discussed on-campus stakeholders. Only one plan, from the UBC aimed to engage with local Indigenous communities by “partner[ing] with the Indigenous people of the southern interior of British Columbia (under MOU of 2005 with the Okanagan Nation Alliance) in order to continue to development programs and courses on Okanagan Indigenous culture, history, philosophy, and knowledge that are collaborative, mutually respectful, complementary, and authentic”.

The plans described the manner or type of engagement they planned to conduct with the stakeholders described above (Table 4). We found that 57% of plans aimed to create partnerships or formal relationships with networks, organizations, businesses, and municipalities in order to promote and/or engage in sustainability work. For example, Simon Fraser University aimed to “develop partnerships with businesses and not-for-profit organizations to co-generate solutions, prototypes and grant applications to better connect current work being done by these organizations and the University”.

Similarly, 50% of the plans aimed to engage in collaboration or informal relationships with stakeholders. These more informal initiatives included creating spaces for collaboration on sustainability issues on campus, creating university-community groups to identify issues of importance, or simply using the term “collaboration” in short goal statements.

Table 3. Stakeholders.

| Stakeholders | Of 14 plans: | |
|--------------------------|--------------|---|
| | % | # |
| Campus Community | 64% | 9 |
| Public/Community | 57% | 8 |
| NGOs | 50% | 7 |
| Sustainability Office | 43% | 6 |
| Faculty | 36% | 5 |
| Students | 36% | 5 |
| Government | 29% | 4 |
| Other HEIs | 21% | 3 |
| Staff | 21% | 3 |
| Sustainability Committee | 21% | 3 |
| Businesses | 14% | 2 |
| Indigenous Communities | 7% | 1 |

Table 4. Type of community engagement outlined in the plans.

| Types of Community Engagement | Of 14 Plans: | |
|------------------------------------|--------------|---|
| | % | # |
| Partnerships | 57% | 8 |
| Collaboration | 50% | 7 |
| Communication | 43% | 6 |
| Community service | 43% | 6 |
| Consultation | 36% | 5 |
| Advocate for sustainability policy | 21% | 3 |

4.2.3. Education

We found that 86% of plans had goals within the domain of education in both formal and non-formal learning (Table 5).

Table 5. Education goals outlined in the plans.

| Education themes | Of 14 Plans: | |
|---|--------------|----|
| | % | # |
| Formal curriculum | 79% | 11 |
| -Integrate sustainability into existing courses | 36% | 5 |
| -Increasing no. of courses or programs | 36% | 5 |
| -Foundational course for all students | 14% | 2 |
| Non-formal learning | 50% | 7 |
| -Residence life programming | 43% | 6 |
| -Orientation of students and/or employees | 29% | 4 |
| Audit of sustainability course offerings | 21% | 3 |
| Campus as a living laboratory | 14% | 2 |
| Interdisciplinary learning | 14% | 2 |

In terms of formal learning, HEIs planned to develop curricula by both integrating sustainability into existing courses and by increasing the number of sustainability course offerings, programs, minors, and certificates. For example, St. Mary's University (SMU) aimed to “increase the number of environmental and sustainability-oriented courses at SMU [;] increase the environmental and sustainability content in existing SMU courses [; and] increase the number of students engaged in environmental and sustainability-oriented courses”. Two plans had goals related to specific sustainability topics: UBC aimed to increase the number of students studying Aboriginal and international issues and perspectives, and NAIT aimed to continue to offer a course on fuel cell technology.

In terms of non-formal learning, HEIs aimed to engage students, staff, faculty, and the broader community in sustainability learning outside of the classroom in order to increase the sustainability literacy and awareness. The most common initiatives were to integrate sustainability learning into residence life programming and orientation for students and/or employees. However, a myriad of other initiatives seen in the plans also included hosting a speaker series, conferences, workshops, creating publications, and tours available to all campus and community members. For example, Wilfred Laurier

University aimed to “improve marketing of Sustainability Office resources, including the website, Green Guide, EcoReads newsletter, programs, events, *etc.* [and to] publicize an annual sustainability report via social media and relevant presentations”.

4.2.4. Administration, Governance and Planning

This section of goals captured aspects of campus administration, governance, and planning within the plans (Table 6).

We found that 64% of plans aimed to measure and report on sustainability goals in order to improve transparency and aid in planning for campus sustainability. Some of these plans included a reporting component directly into their sustainability plan. For example, Wilfred Laurier University included their entire sustainability report within their plan document.

We found that 57% of plans clearly stated that they planned to create new policies and plans on specific subjects related to sustainability (climate action, transportation, procurement, food, *etc.*). For example, Red River College aims to “approve a new Sustainability Policy that incorporates social, economic and environmental factors [...and...] a new Green Building Policy to guide construction renovation, leases and operations”, among others.

Table 6. Administration, governance, and planning theme.

| Administration Themes | Of 14 Plans: | |
|--|--------------|---|
| | % | # |
| Sustainability reporting | 64% | 9 |
| Creating specific policies/plans | 57% | 8 |
| General finance | 50% | 7 |
| Endowment investments | 36% | 5 |
| Diversity and accessibility | 29% | 4 |
| Health and safety | 21% | 3 |
| Integrate sustainability into high-level plans | 21% | 3 |

Finances, including both general finance and endowment investments, were described in two distinct ways within the plans. First, 57% of plans described goals to ensure long-term funding of sustainability projects on campus and/or investing in companies that followed sustainability principles. These plans included initiatives like revolving funding models, leveraging government and donors for funds, and creating seed programs to fund sustainability projects proposed by staff, faculty and students. For example, Simon Fraser University aimed to “enhance and stabilize sustainability funding by creating a revolving loan fund for collaborative cross-unit projects (including those with longer term Return on Investment)”. While 29% of plans had goals to address sustainability within their own endowment investments, only one plan mentioned a set of standards to guide sustainable investment: the UN Principles on Responsible Investment. Second, 29% of the plans also had financial goals that aimed to ensure the long-term financial stability of the HEI through consistent financial support. These plans included initiatives like increasing fundraising, the endowment fund, and attracting government funding to “ensure ongoing financial viability” (UBC) of the institution.

4.2.5. Research

We found that 50% of plans had goals related to sustainability research (Table 7). Providing or recruiting more funding for students and faculty to conduct sustainability research (student TA/RA positions/scholarships, funding research projects, including sustainability in internal grant criteria, and attracting federal and provincial funding) was most commonly seen. Providing resources for sustainability research included the creation of a new graduate program, a center of excellence for sustainability research, and a field station for graduate and faculty research. Proposed methods to reduce the barriers and increase the level of inter or trans-disciplinary research included creating an interdisciplinary graduate program, supporting faculty, and creating trans-disciplinary research clusters. For example, the University of Western Ontario commits that “innovative partnerships will be developed across Western academic disciplines to research and propose solutions to societies most pressing sustainability challenges...[and] external collaboration will be encouraged to increase opportunities for trans-disciplinary sustainability research and raise awareness on the scope of Western’s research activities in fields of sustainability”.

Table 7. Research goals outlined in the plans.

| Research Themes | Of 14 Plans: | |
|---|--------------|---|
| | % | # |
| Funding | 36% | 5 |
| Other resources/structures | 21% | 3 |
| Increasing interdisciplinarity | 21% | 3 |
| Greening research practices | 14% | 2 |
| Tracking sustainability research | 14% | 2 |
| Integrate sustainability into HEI research plan | 7% | 1 |

4.3. Plan Quality

This section includes details of the plans that point to the plan's quality as detailed in the literature—the process of plan creation, timelines, and parties responsible. As previously described, these results are limited to what was stated within the plan documents. Further research is necessary to investigate the other details about the plan creation process, including the breadth and depth of the consultation, if the plans are formally adopted by the HEI, and the level of communication of the plan to campus stakeholders.

4.3.1. The Process of Plan Creation

We found that 93% of plans described the process or initiatives on their campus that led up to the creation of the sustainability plan (Table 8).

Table 8. Activities that led to the creation of the sustainability plan.

| Plan creation history | Of 14 plans: | |
|---|--------------|----|
| | % | # |
| Consultation with campus stakeholders | 79% | 11 |
| Staff resources for sustainability | 50% | 7 |
| Campus sustainability policy | 43% | 6 |
| Past sustainability initiatives across campus | 29% | 4 |
| Internal sustainability commitments | 14% | 2 |
| External sustainability declarations | 14% | 2 |
| Campus located in natural setting | 14% | 2 |

We found that 85% of plans described how broad stakeholder consultation or a collaborative planning process was used in the creation of the sustainability plan. There was a variety of ways that plan creators consulted their community, these included: surveys, focus groups, interviews with key stakeholders, email and web forums. For example, UBC describes how “in preparing this plan, a stakeholder consultation process was carried out with more than 40 departments, all faculties, and all major student organizations at the UBC campuses. Together these groups developed a framework and identified major goals for sustainability. Next, these groups identified objectives and set specific targets. The result is that each of the objectives listed in Inspirations and Aspirations: The Sustainability Strategy has at least one UBC unit that has assumed responsibility for achieving it”.

Most of this consultation was conducted with campus community members such as faculty, staff, and students; however the plan from Dalhousie University also described consultation with the local municipality. Four plans described the length of time over which the consultation occurred; these ranged from eight months to two years.

We found that 50% of plans described how the appointment of human resources to sustainability efforts preceded the creation of their sustainability plan. These staff resources included the creation of a sustainability committee or office, or a staff appointment responsible for sustainability.

4.3.2. Timelines

We found that 79% of plans integrated timelines into their plans to some degree. While 50% of plans assigned a specific timeline for the completion of each goal, 14% of plans assigned one single timeline for all the goals within the plan (Table 9). For example, the Wilfred Laurier University's plan is from 2012–2016 and the text states that the plan guides actions over this timeframe. For each specific goal there is also an assigned target year (when the goal should be accomplished) and an indicator (used to measure goal success). At the end of the plan, there is an appendix where all action items are broken down into ongoing, short term (2012–2014), and mid-term (2014–2016) timelines.

In those cases where there were specific timelines assigned to each individual goals, the timelines were not equally distributed throughout the plans. Facilities goals were assigned the majority of the timelines followed by education, and community engagement goals. For example, the University of Ottawa's plan has a series of outcomes for the year 2020 for each set of goals (teaching, research, operations, *etc.*). This plan also has some specific timelines for operations goals, such as, “increasing outdoor and indoor greenspace on campus by 20% by 2020”.

Table 9. Timelines employed within the plans.

| Types of timelines used | Of 14 plans: | |
|------------------------------------|--------------|---|
| | % | # |
| All/most goals assigned a timeline | 50% | 7 |
| No timelines in plan | 21% | 3 |
| Whole plan assigned one timeline | 14% | 2 |
| Only one goal assigned a timeline | 14% | 2 |

4.3.3. Parties Responsible

We found that 72% of plans had assigned responsibility for all or some goals to a campus community member (Table 10). Of these, 14% assigned a senior administrator (usually a vice president) responsible for each goal. For example, UBC's goal for fair trade coffee reads “Target: Offer “fair trade” coffee at all eligible Food Service units [;] Timeline: 2007 [;] Responsible Portfolio: Food Services [;] VP ADMIN & FINANCE”. Even in those instances where there is more discussion to be had before a firm goal could be created (ex. sustainable endowment investments) these plans assigned a senior administrator responsible for moving forward on that issue. We found that responsibility was assigned to the appropriate party whose job description fits the theme of the goal. For example, responsibility for curriculum goals was assigned to the Vice President Academic (VPA), faculty, deans, and/or senate. We found that when a plan had a high level of goal assignment (all or most goals were assigned a party responsible) the type of parties assigned were senior administrators, staff, or whole departments. When there was a low level of goal assignment within the plan (some goals were assigned a party responsible) this was mostly to define the role of the sustainability committee or office (Table 10).

Alternatively, we found that 36% of plans invited participation from campus community members in order to help implement the goals (Table 10). For example, Royal Roads University actively encouraged the engagement of employees through both a senior level committee and a grassroots volunteer group. The University of Western Ontario did not have a party responsible for each goal and instead invited the

whole campus community to take responsibility for sustainability goals “We have been inspired by your visions. Our strategy “Creating a Sustainable Western Experience” is testament to that inspiration, setting us forth on a shared direction for Western’s sustainability endeavors. The strategy sets out our 10-year goals and our 5-year desired outcomes. It now needs you—Western students, staff, faculty and alumni—to work with us to implement the “how”...The involvement and input of the entire Western Community will move the campus into the next phase of its planning and sustainability pursuits”.

Similarly UBC asked campus community members to take responsibility upon themselves to be sustainability leaders in conjunction with assigning a party responsibility for each goal. UBC even produced “*Inspirations and Aspirations: The UBC Sustainability Strategy AND YOU* is a companion document that outlines the various targets that we, as individuals, can strive for in our own work, study, and research at UBC” (italics not in original).

Table 10. Level of goals assigned responsibility and examples of party described within the plans.

| Level of goals assigned responsibility | Example of party described | Of 14 plans: | |
|---|---|--------------|---|
| | | % | # |
| Assigned responsibility to all goals | Senior administrators (VP, senate, deans) | 36% | 5 |
| | Staff member or whole department | | |
| Assigned responsibility to some goals | Sustainability committee/office | 36% | 5 |
| Invited participation for goal completion | Staff, faculty, students, groups | 36% | 5 |

5. Discussion

This study sought to examine the content of sustainability plans from STARS-rated HEIs in Canada. In particular, the study sought to understand the HEIs sustainability goals for the future, and the quality of the planning documents. Literature reviewed for this study revealed that comparative studies of SHE were lacking and that while we knew that sustainability plans were an emerging trend in integrating SHE, we lacked information about the content of these planning documents. Therefore, this study employed the following research questions to help investigate these issues: (1) what is the content of the goals outlined within the sustainability plans? and (2) do the plans employ best practices of plan design as noted in the literature?

The key findings identified in this study are that: (1) the majority of STARS-rated Canadian HEIs have a sustainability plan; (2) the goals in the sustainability plans accentuate the environmental aspects of sustainability while social and economic are given less emphasis; (3) the plans commonly describe a process of broad stakeholder engagement during the creation of the plan; and, (4) many sustainability plans have incorporated timelines and assigned accountability to implement their sustainability goals.

5.1. Overview of Plans

Compared to other studies [10,12,36], our results suggest that STARS-rated HEIs have more sustainability plans than other HEIs. A broad sample of 220 HEIs from across Canada (including STARS-rated HEIs) shows that 50% of HEIs had either a sustainability plan or policy in place at the time of this study [11,43]. These findings are similar to those of White (2014) who found that in the United States 35% of AASHE member HEIs had a sustainability plan, while only another 13 plans were

found at other HEIs in across the country (however this study only used the title of “plan” and not “strategy”) [10]. Another American study found that fewer than half of HEIs analyzed had completed a written plan [12].

We concur with White (2014) who suggests that the STARS credit for an integrated sustainability plan may have encouraged the AASHE member HEIs to create a plan, or it may be that the higher prevalence of plans in STARS-rated HEIs is explained by these HEIs being already more engaged in sustainability than other HEIs [10]. In Canada, having a sustainability policy or plan was strongly related to having completed a sustainability assessment like STARS [43]. Further research is needed to understand the role of assessments like STARS in SHE decision making.

As more and more HEIs begin to engage in sustainability planning it is important that organizations engaged in SHE support practitioners with best practices of plan creation, design, and implementation as they become available. Sustainability directors interested in creating a sustainability plan can look to the AASHE website for resources of other HEI sustainability plans, and other planning professions (environmental planners, strategic planners) for plan creation and design best practices.

5.2. Plan Goals

Sustainability goals within the plans analyzed in this study had a focus on the environmental aspects of sustainability, while social and economic aspects were less emphasized. This was evidenced by environmental goals in the facilities domain being present in all plans. Economic goals (*i.e.*, finances at 50% and investments at 35%) and social goals on campus were less prominent than environmental, but were definitely present (*i.e.*, accessibility and diversity at 29%, and health and safety themes at 21%). However, community engagement is a type of social goal that was present in 86% of plans.

The emphasis on the environmental facet of sustainability is congruent with the findings of Lidstone, Wright, and Sherren (2014) [37]. The authors found that this emphasis on the environmental facet of sustainability was in contrast to the policies’ broader conceptualizations of sustainability and SHE (which included the economic and societal aspects of sustainability and a systems view of SHE) [37]. One of the main components of sustainability is intra-generational equity [47] and on campus this can be envisioned as occupational health and safety, equity and poverty, and access for handicapped users [22]. This suggests that while HEIs envision a broad systems view of sustainability seen in the literature, there is more work to do on social and economic goal setting in order to align with that vision.

Sustainability research was present in fewer plans, yet in more detail than in Canadian STARS-rated institutions’ sustainability policies [37]. Goals within the plans focused on incentivizing faculty and students to pursue sustainability research by providing and securing funding and other resources. Academic freedom demands that administrators cannot dictate that sustainability research be conducted; however these goals seem to suggest that they have found ways to encourage it.

Educational goals within the plans included formal, non-formal, and informal learning. The majority of plans had goals for the formal curriculum, with the integration of sustainability into courses and the creation of new sustainability programs. However, there was little discussion of how this would be implemented or what type of learning outcomes were to be achieved. Educational goals found in this study align with the systems approach to SHE that includes formal, informal, and non-formal learning [22]. Education for sustainability within the plans was similar to sustainability policies from STARS-rated

HEIs with both the integration of sustainability into the curriculum of existing courses and creating new programs, as well as the lack of specific learning outcomes or implementation details [37]. White (2014) and McNamara (2010) also found that the majority of HEIs, 81% and 84% respectively, had sustainability curriculum goals [10,12].

Learning outcomes for education for sustainable development described in the literature include creating change agents, thinking in systemic, holistic, and interdisciplinary ways [48], and problem solving skills [43]. However, overall integration of sustainability into the curriculum within HEIs has been described as “patchy at best” [49] (p. 40) and few educational institutions have implemented these learning outcomes or implemented them fully [48]. The lack of detail within curricula in this study may be because the tradition of academic freedom limits the power of sustainability planners. Academic freedom demands that any reform towards sustainability will come in very different shapes as it is interpreted by different thinkers [48].

We speculate that the reasons behind these gaps between theory and planning may be due to the mandate of sustainability directors or committees to focus on environmental issues, and that goal setting in research and curriculum is under an academic mandate and not the purview of sustainability staff. However more research needs to be done to understand these issues more fully.

Including research and curriculum, as well as social and economic goal setting within sustainability plans is an important step to ensure that the plan encompasses a systems approach to SHE that touches all aspects of life within the HEI. Based on the findings of this study, we recommend that practitioners who are working to create or revise a sustainability plan collaborate with campus stakeholders responsible for social and economic themes related to sustainability (such as accessibility, diversity, health and safety, investments), as well as faculty and other researchers to develop sustainability goals that reflect a systems approach to SHE. For this to be achieved sustainability staff must be given a wide enough mandate to ensure that the role of the sustainability office or committee goes beyond campus greening and has a coordinating role with faculty and researchers, and administrators responsible for social and economic themes.

5.3. Plan Quality

The plans were assessed against indicators of planning quality outlined in the literature that could be analyzed in the text-based analysis used in this study: engaging in a process of broad stakeholder engagement for plan creation [33,39,40,50] and assigning timelines and accountabilities for goal completion [12,34,38]. STARS criteria for sustainability planning also requires that plans are created from broad multi-stakeholder involvement, and include measureable goals, with strategies and timelines to achieve those goals [41]. It is important to note that this paper only presents what was described within the plan texts and information about the plan creation process may have not been described.

We found that 79% of plans explained how the plan was created through a process of broad stakeholder engagement. These results are slightly higher than those of White (2014) who found that 62% of plans in the United States described a similar process including campus-wide meetings, working groups and subcommittees [10]. If HEIs are engaging in a collaborative planning process as the plans describe, this is a welcome sign for sustainability in these institutions as collaborative planning and the stakeholder consultation that it requires are recommended for a number of reasons. First, the process of

policy development can be a form of education about the change agenda for many diverse stakeholders, and can be used to foster organizational change [12,51]. Secondly, a community-based collaborative planning process is suggested as it helps build effective policy [39] by reducing conflict, and getting buy-in to the change agenda [33,40,50]. Additionally, a collaborative approach is ethically desirable [39], helps build social capital [33], and enables innovation through shared learning [40].

Based on these points, we recommend that practitioners engage in as much depth and breadth of stakeholder consultation or collaborative planning process as their resources allow. A collaborative planning process at an institution as diverse as higher education and with a topic as widely interpreted as sustainable development is a difficult task. We recommend that practitioners use resources currently available from the field of planning and that organizations like AASHE collect and distribute best practices.

We found that 64% of plans had timelines for all or most of their goals and 72% had assigned an employee responsible for all or some goals. Additionally, 36% of plans invited participation from the campus community to implement sustainability goals. We see from McNamara (2010) that high quality plans are correlated with progress on sustainability initiatives, and these plans include timelines and assigned roles and responsibilities to staff [12]. Other SHE scholars note the importance of attaching timelines to goal setting [8,52], to help prioritize sustainability goals [34]. Timelines and measureable indicators can also be helpful to judge progress of sustainability initiatives during reporting and monitoring phases of the plan [38]. Having leadership from administrators in sustainability change efforts is important to provide both resources, public statements of leadership, and adopting policy [17,32,46,50]. Given these suggestions we advocate that more timelines and responsible parties be assigned, especially upper administrators, for specific targets are implemented in sustainability planning practice. However, more research is needed to see if these practices are successful in SHE change.

5.4. Study Strengths, Limitations and Avenues of Future Research

The strength of this study is that it provides a more robust understanding of the content of sustainability plans in a comparative study of Canadian HEIs active in sustainability. The limitations of this study are that it presents a snapshot of HEIs in Canada that were STARS-rated as of the spring of 2013 and focuses only on sustainability plans. As a purely text-based analysis, information about the plan creation process, communication of the plan, or implementation of plan goals was not captured.

Based on these limitations, three avenues of future research are recommended. First, further breadth and depth of text-based analysis should be conducted. This should include other institutional planning documents related to sustainability (such as health and safety), as well as general HEI strategic plans in order to provide a clearer picture of HEIs goals and directions for sustainability. This would highlight visions for the HEI that align or contrast with those for SHE outlined in the sustainability plan and may be leverage points or barriers to institutional sustainability change. Further, as this study represents only a snapshot in time of STARS-rated HEIs in Canada, subsequent follow-up studies would measure changes over time, and other samples (other assessment types, other regions) may be compared.

The second avenue of future research is to conduct site studies to further investigate the plan creation process, level of HEI communication of the plan, the level of use of the plan and the implementation of the plan goals. The third avenue for further research is the use of the STARS data (self-reported credits

on SHE indicators) as a proxy for SHE practice. The data from this study could be used to find correlations to the STARS data to learn about the efficacy of sustainability plans.

6. Conclusions

Higher education institutions have a role to play in the transition to a more sustainable society. In a modest way, this study aimed to help understand how HEIs that are engaging in sustainability in Canada are taking on this task. The study's objective was to learn the content of STARS-rated HEI's sustainability plans, with particular attention to future goals and indicators of plan quality. This objective was achieved through a content analysis of sustainability planning documents. The study finds that the sustainability goals outlined within the plans provides a welcome vision of SHE that includes environmental, social, and economic aspects of sustainability, as well as many aspects of campus life. However, more work needs to be done to enhance the goals for social and economic sustainability. Plan creation was described as including broad stakeholder involvement as is suggested in the literature, however, aspects of plan design including timelines and parties responsible were only incorporated in some plans. This paper illuminates the state of sustainability planning in HEIs in Canada that are engaging in sustainability. We hope this research will be of use to researchers and practitioners interested in institutionalizing sustainability on campus through the development of sustainability plans, as well as those engaging with STARS.

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Author Contributions

Lauri Lidstone conducted the research and wrote the paper. Tarah Wright was the thesis supervisor and Kate Sherren was the sole committee member. Both provided guidance, revision, and feedback.

Conflicts of Interest

The authors declare no conflict of interest.

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