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The Campus Climate Challenge: Innovative multi-stakeholder approaches to reducing greenhouse gas emissions at Canadian colleges and universities

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Abstract
The Campus Climate Challenge in Canada involves multi-stakeholder approaches to reducing greenhouse gas emissions on campuses, and transforming university and college campuses into leaders in addressing climate change. Coordinated by the Energy Action Coalition, it is a US-Canada campaign operated by the Sierra Youth Coalition (SYC) on Canadian campuses. Each campus project is based on a unique multi-stakeholder approach, bringing together campus operations, administration, faculty, students, and external organizations to implement sustainability initiatives. This process ensures that each climate change plan is specific to its local context, engages individual campus expertise, builds the capacity of the next generation of Canadian leaders, and has broad commitment from the campus community. Four cases are presented and discussed in this chapter, highlighting the multi-stakeholder aspect of each: Sustainable Ambassadors at Concordia University; a student-built wind turbine initiative at the University of Saskatchewan; Residence Reduction Challenges in southern Ontario; and Go Beyond in British Columbia. These cases provide a demonstration of initiatives at different scales for reducing GHG emissions at complex public institutions. The conclusions offer reflections on the implications of these different approaches for the stakeholders involved; student leaders, sustainability coordinators, faculty, staff, external NGOs and provincial governments.

Keywords
Canada, climate change, university, sustainable campus, Sierra Youth Coalition

Introduction

The Campus Climate Challenge in Canada involves multi-stakeholder approaches to reducing greenhouse gas emissions on campuses, and transforming university and college campuses into leaders in addressing climate change. Coordinated by the Energy Action Coalition, it is a US-Canada campaign which is operated by the Sierra Youth Coalition (SYC) on Canadian campuses. With SYC, over 65 campuses have worked through the Challenge to adopt emissions reductions plans; resulting in 35 applied projects, including 14 comprehensive greenhouse gas (GHG) emissions inventories as of April 2007. SYC, the youth arm of the non-profit organization Sierra Club Canada, provides training, networking, and common evaluation and tracking tools. Each campus project is based on a unique multi-stakeholder approach, bringing together campus operations, administration, faculty, students, and external organizations to implement sustainability initiatives. This process ensures that each climate change plan is specific to its local context, engages individual campus expertise, builds the capacity of the next generation of Canadian leaders, and has broad commitment from the campus community. The cases in this Chapter provide an excellent demonstration of best practices for reducing GHG emissions at complex public institutions, engaging a diversity of stakeholders and laying the foundation for deeper and long-lasting sustainability.

This chapter begins by looking at the campus sustainability literature, and the multi-stakeholder literature. Then there is an introduction of the overall Campus Climate Challenge, the Canadian component, and the multi-stakeholder approach. This is followed by a description of four Canadian campus initiatives, highlighting the multi-stakeholder aspect of each: Sustainable Ambassadors at Concordia University; a student-built wind turbine initiative at the University of Saskatchewan; Residence Reduction Challenges in southern Ontario; and Go Beyond in British Columbia. The discussion compares the campus projects and the conclusion offers implications for different stakeholders and for addressing climate change.

Campus Sustainability Management and Climate Change Initiatives

There is a burgeoning literature on campus sustainability management, which is particularly found in the *International Journal of Sustainability in Higher Education*, and numerous books on the topic (such as: Leal Filho, 1999; Keniry, 1995; Corcoran and Wals, 2004). The Sustainable Campuses program of the Sierra Youth Coalition has been detailed by Beringer (2006) in a comprehensive article on the experience at the University of Prince Edward Island using the Campus Sustainability Assessment Framework (CSAF). The CSAF is a Sierra Youth Coalition tool which is used across Canadian campuses to provide a broad and detailed overview of the social, environmental, and economic sustainability of the institution (Cole and Wright, 2005; Cole, 2003). Canadian experiences in campus sustainability have been sporadically documented in the academic literature (For example: Clarke, 2006; Moore et al., 2005; Beringer et al., 2008; Bardati, 2006; Gudz, 2004; Richardson and Lynes, 2007; Conway et al., 2008), and, for the past several years, comprehensively documented by the Sierra Youth Coalition (Sierra Youth Coalition, 2007b).

Within the campus sustainability literature is a limited focus on climate change-related initiatives. The first group of initiatives focus on energy reduction through building design, through energy efficient equipment, and through social marketing to students (Marcell et al., 2004; Kahler, 2003; Pearce, 2006). This is complemented by increased measuring of energy

savings (Pearce, 2006) and conducting greenhouse gas inventories (Marcell et al., 2004). The second group of initiatives involves the purchasing or generation of renewable energy. For example, the University of Vermont has installed solar panels, and Carnegie Mellon University has shifted its power supply portfolio to include wind power (Marcell et al., 2004).

> According to a 2001 survey of 891 American higher education institutions undertaken by the National Wildlife Federation, nearly a quarter meet some of their energy needs from renewable energy, and more than half have developed energy efficiency design codes for new and existing buildings. (Marcell et al., 2004, p. 169)

In addition to direct energy reduction and renewable energy generation, transportation, offsets, refrigerants, waste, agriculture, and purchasing initiatives can also be used to reduce direct and indirect greenhouse gas emissions from university and college campuses (Sierra Youth Coalition, 2008). Many of these initiatives require a multi-stakeholder approach.

Multi-Stakeholder Approach

At the organizational level, "a stakeholder in an organization is (by definition) any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984, p. 46). When considering issues-based collaborations, such as climate change initiatives, the stakeholders are any group or persons who can affect or are affected by the common agenda. For the purpose of this study, the stakeholders are the formal partners in the four initiatives discussed. These stakeholders may come from within the leading organization, or be external to the organization. Collaboration, which is another term for multi-stakeholder approach, is defined by Gray (1989, p. 5) as "a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible." It is a "process of joint decision-making among key stakeholders of a problem domain about the future of that domain" (Gray, 1989, p. 11).

This chapter builds upon the existing campus sustainability management literature by considering four different Energy Action Coalition initiatives being undertaken in Canada; all of which involve multi-stakeholder approaches.

The Energy Action Coalition

The Energy Action Coalition was founded in June 2004 by youth climate leaders who came together to build a youth climate movement in the US and Canada after the first Fossil Fools Day on April 1, 2004. One year and three international days of action later, the reach of the Energy Action Coalition had skyrocketed, with the second annual Fossil Fools Day in April 2005 being comprised of more than 300 actions in Canada, the United States, England, Nigeria and Panama.

A unique aspect of the Energy Action Coalition is the broad diversity of groups involved. Members are from Canada and the US; they are environmental justice organizations and actions-based NGOs, faith groups and student associations. The Energy Action Coalition has seen its share of challenges, but has become stronger and stronger each year.

The three-year goals of the Energy Action Coalition are to:

1. Build a broad and diverse coalition.
2. Empower life-long leaders for the climate and a just energy future.
3. Pass comprehensive policies for climate neutrality, education, curriculum, research, and community relations on 250 campuses.
4. Engage traditionally disenfranchised communities in climate work and prioritize support and solidarity for these communities.
5. Make 2008 the "Climate Election" [in the United States] and help pass bold, comprehensive, and just federal legislation.
6. Pressure corporations to become accountable to communities and the climate and empower our generation to build the green economy (Energy Action Coalition, 2008).

> The **Energy Action Coalition** unites a diversity of organizations in an alliance that supports and strengthens the student and youth clean energy movement in North America. The partners of the Energy Action Coalition work together to leverage our collective power and create change for a clean, efficient, just and renewable energy future. The work of the Energy Action Coalition is focused on four strategic areas: campuses, communities, corporate practices, and politics.
> - www.energyactioncoalition.org

In spring of 2008, at the end of the second year in this three-year timeline, many of the objectives set out with these goals have already been surpassed.

The Sierra Youth Coalition and the Energy Action Coalition

The Sierra Youth Coalition (SYC) was one of the founding members and is currently the sole Canadian member of the Energy Action Coalition. In the years since its founding, the Energy Action Coalition has undertaken a number of initiatives ranging from Days of Action, to participating in UN negotiations, to the *Road to Detroit*, a hybrid car and biodiesel bus trip to organize activists in local communities on energy issues with the goal of building support for clean car legislation and asking individuals to pledge that their next car will be green. It was determined, however, that a more comprehensive campaign was needed to build a youth movement around climate change – it was from this that the Campus Climate Challenge was developed.

> The **Sierra Youth Coalition**, in each of our program areas, strives to achieve the following objectives:
>
> **Involve**: empower youth in Canada to become active members of their community;
> **Educate**: create a widespread understanding that all things are connected;
> **Change**: challenge unjust and unsustainable systems by using a solutions based approach
> - www.syc-cjs.org

The Sierra Youth Coalition was highly involved in the development of the Campus Climate Challenge. Jeca Glor-Bell was the Ontario Sustainable Campuses Coordinator for SYC at this time, and was a significant participant in developing strategies for the campaign. In the following years, Geneva Guerin and Anjali Helferty, Sustainable Campuses National Coordinators from 2004 – 2006 and 2006 – 2008, respectively, were very involved with the ongoing progress of the Campus Climate Challenge.

> The Campus Climate Challenge is a project of more than 30 leading youth organizations throughout the U.S. and Canada. The Challenge leverages the power of young people to organize on college campuses and high schools across Canada and the U.S. to win 100% Clean Energy policies at their schools. The Challenge is growing a generation-wide movement to stop global warming, by reducing the pollution from our high schools and colleges down to zero, and leading our society to a clean energy future.
> - www.climatechallenge.org

The Sierra Youth Coalition, through its Sustainable Campuses program, engages students on colleges and universities across Canada to make their own campuses more sustainable in their operations, curriculum and culture. Energy-related work is an intrinsic element of campus sustainability, and students in Canada had been working on energy efficiency and conservation initiatives (both directly through reducing the use of electricity and indirectly through reductions in paper use and waste), as well as renewable energy purchasing for several years before the Campus Climate Challenge began. What the Campus Climate Challenge uniquely brought to Sustainable Campuses was the collective strength of a diversity of organizations that were coming together to work on the same issue in many different ways – on campuses and in communities, through clean energy purchasing and retrofits, through direct actions and through collaboration. Each organization was able to take its own strengths and experiences and apply them to running the program. In the case of the Sierra Youth Coalition, one of the main strengths of Sustainable Campuses was, and continues to be, the multi-stakeholder approach to change.

Why Multi-stakeholder?

When running programs and campaigns, it is important that the strategies adopted fit the needs of the campaign. By 2002, Sustainable Campuses was designed around a large research tool – the Campus Sustainability Assessment Framework (Cole, 2003). Given that the project was primarily run by students who were taking it on in a volunteer capacity, there was a clear need for collaboration with a variety of other campus stakeholders if the assessment was going to be successful and if there were going to be changes implemented following the assessment. The SYC staff and volunteers who were working to develop Sustainable Campuses in 2002 and 2003 took the most strategic route available to achieve institutional change, and made the multi-stakeholder approach one of the key elements of the program. The SYC Multi-Stakeholder Guide, in a sentence that builds on the work of Sharp (2002), explains the importance of this multi-stakeholder approach:

> Evidence has shown that the greatest successes in achieving institutional change (for sustainability or otherwise) exist when all the sub-cultures of the campus community (students, faculty, staff and administration) come together to form a shared vision and organizational alignment in their respective departments.
>
> (Sierra Youth Coalition, 2007a, p. 3)

In SYC's Multi-Stakeholder Guide, advice, which is adapted from Innes and Booher (1999), is offered on how to develop a multi-stakeholder group. They suggest that in order to be successful in the initial stages the following is needed:

- Include representatives from all relevant campus stakeholder groups;
- Ensure everyone involved is aware of the purpose and task of the group;

Snap Shot of Why a Multi-Stakeholder Process Works:

- Students will graduate! Efforts will only endure if they are supported institutionally.
- Multi-stakeholder process builds bridges to overcome polarization of departments.
- Information, resources, priorities and perspectives of different stakeholders can be shared.
- The power of the multi-stakeholder group can leverage action from within the university.
- Official recognition by many stakeholders can give campus sustainability a higher profile.

(Adapted from: Sierra Youth Coalition, 2007a, p. 3)

- Be self-organizing, allowing participants to decide by consensus on ground rules, objectives, and tasks;
- Ensure the process is engaging for participants and incorporates informal interaction (community building);
- Ensure the process fosters creative and "out-of-the-box" thinking;
- Seek consensus only after the issues have been fully explored and a significant effort has been made to address and respond to differences amongst the group (Adapted from: Sierra Youth Coalition, 2007a, p. 10).

There are also a number of ways to determine if the process is achieving the desired outcomes. Here are some examples of outcome criteria that can indicate a successful multi-stakeholder process:

- It increases the sense of community, trust and unity of the group or committee;
- It has the support of management (even in principle) that can be substantiated with action;
- The face-to-face communication is well coordinated, facilitated and maximized;
- It produces information and decisions that all the committee stakeholders understand and accept;
- It produces agreements that recommend actions;
- The learning and change are shared beyond the individuals in the committee or group;
- It sets in motion a cascade of changes in attitudes, behaviours and actions, spin-off partnerships and new practices; and
- It improves the ability of the entire campus community to be more effectively responsive to change and conflict (Adapted from: Sierra Youth Coalition, 2007a, p. 10).

Figure I displays a summary of the outcomes of multi-stakeholder initiatives over three time frames.

Take in Figure I

The multi-stakeholder approach advocated by SYC for its Sustainable Campuses program has been used in different and innovative ways by the campuses involved in the Campus Climate Challenge.

Case Studies

In this chapter, we provide case studies of four different projects at Canadian campuses. Of these, two are located within a university, while the other two involve multiple universities at the regional and provincial level. The first example, the Sustainable Ambassadors program at Concordia University in Montreal, Quebec, focuses on energy use reductions directly through individual action of faculty and staff, as well as some minor types of institutional change. In the second case, the wind turbine initiative at the University of Saskatchewan in Saskatoon, Saskatchewan, focuses on local renewable energy production. The Residence Reduction Challenge addresses energy reductions from individual student action across three universities in southern Ontario. Our final example, the Go Beyond campaign, involves reductions across multiple universities in the province of British Columbia, and is coordinated by a formal coalition.

Table I displays the four cases in relation to their stakeholders involved, level of engagement (scale) and the type of climate change initiative. All of these cases involve what Rondinelli and London (2003) call moderately or highly intensive interactions.

Take in Table I

For each case, research was conducted by interviewing involved individuals and through the websites of the respective initiatives. Interviews were conducted for the Sustainable Ambassadors case with Jonathan De Luca, the student coordinator of Sustainable Ambassadors, and Jenn Davis, the Sustainability Coordinator at Concordia University; for the wind turbine initiative case with Jeh Custer, the SYC Sustainable Campuses Prairies Coordinator, and Margret Asmuss, the Sustainability Coordinator at the University of Saskatchewan; for the Residence Reduction Challenge case with Monique Woolnough, the SYC Sustainable Campuses Ontario Coordinator; and for the Go Beyond case with Maggie Baynham, the SYC Sustainable Campuses British Columbia Coordinator. All of these individuals were actively involved with the development and/or delivery of the cases.

Case I - Sustainable Ambassadors, Concordia University

Concordia University is a large university located in Montreal, Quebec, one of Canada's most dense urban centres. The university has a total student population of 31,640. Greenhouse gas emissions for the 2004-2005 academic year were calculated to be 13,471 metric tonnes of CO_2 equivalents (Sustainable Concordia, 2006). Concordia University was one of the first campuses to be involved in SYC's program for Sustainable Campuses, and was the pilot campus for the Campus Sustainability Assessment Framework (CSAF). As a result, Concordia has a history of multi-stakeholder initiatives related to sustainability; these have resulted in the creation of a Sustainability Officer position in the university administration who works alongside student-led initiatives. The mandate of the sustainability office is to address a spectrum of environmental, economic, and social issues related to sustainability.

Influencing the consumption habits of campus community members is one piece of this work, and is addressed through an initiative called Sustainable Ambassadors. Their website explains the project:

> A sustainable ambassador is a member of Concordia's staff or faculty who strives to promote and encourage sustainable actions and attitudes in the workplace by leadership and example. Many people today recognize that, as part of an institution of higher learning, Concordia campus members need to employ and disseminate their knowledge and expertise in moving towards a more sustainable community. This program has been created to access such potential. In creating this change towards more sustainable thinking and action, the passion, knowledge and creativity of the Concordia community are called upon. In becoming an Ambassador, you commit to: make every attempt to lead by example; endeavoring to understand the consequences of your actions; rethink personal behaviours that lead to wasteful consumption patterns and work to reduce them; engage in activities that build a sustainable campus and community; and encourage friends and colleagues to do the same.

(Sustainable Concordia, 2008)

In total, 12 ambassadors were active at the time of study. They conduct energy audits of their departments and provide a recommendations report that identifies pertinent areas for improvement. They also help fellow staff members and faculty identify any new needs or opportunities related to sustainability. In such a large university, communication can be weak about what programs and options are available. Sustainable Ambassadors are a liaison between what the university itself can offer, and how faculty and staff can take advantage of these options. This is relevant in the case of energy in particular, where much control over energy consumption is centralized under facilities management. Sustainable Ambassadors are given the information needed to, for example, know where motion-sensors for indoor lighting could be installed and are able to get in contact with facilities management who can then install the detectors. While the energy reduction of the overall program has not been monitored, one initiative within the program, a two-week lights out campaign, resulted in a 20% reduction in lights left on.

In the context of Concordia University, where a large-scale student initiative had been successful in putting sustainability on the forefront of campus discourse, and particularly amongst the student population, this program is designed to reach staff and faculty and tailor specific programs to their needs. The approach is intentionally bottom-up, in order to communicate effectively with the multiple stakeholders and foster ownership about implementing changes into every day work functions. Some departments are particularly important to work with in this program, such as information technology, as they can set up systems (such as default double-sided printing, or energy efficient computer power usage), which are then used throughout the campus.

In this case, the students have the advantage of working within a well-established and respected office on campus and are able to leverage the pre-existing administrative support present at Concordia University to establish their legitimacy as a student group running a program for faculty and staff. Given that the program has only just finished its second year, it is still quite small; however, there is a great opportunity for growth within the institution for this unique model of multi-stakeholder engagement.

Case II - Student-Built Wind Turbine, University of Saskatchewan

The University of Saskatchewan is a mid-sized university, located in a major city of a sparsely populated and largely rural province. The campus covers a large land base, and includes one of only four veterinary colleges in Canada, as well as one of the most comprehensive agricultural colleges in North America. It has a student population of 18,620. University of Saskatchewan C02 emissions for 2006 were calculated at approximately 197,805 tonnes of CO_2 equivalents. This is about 4.5% above the 1990 levels, much lower than the provincial increase of emissions of approximately 56% since 1990. A wind turbine is being constructed by students to be placed on campus and produce energy for campus use. The projected energy production of the wind turbine is unknown at this time.

Students have spearheaded the process, negotiating the regulatory approvals and fundraising through small-scale events. When interviewed, Footprint Designs, the student group leading the

initiative, stressed that the turbine is a symbolic step, showing that student ideas can be implemented with the support of different stakeholders at the university. It can also serve as an educational tool for the university and wider community when completed and placed in a public space on campus. Furthermore, the operation and maintenance of the turbine is an opportunity for specific technical instruction – the project proponents are currently exploring having students manage the turbine as part of course work. According to Footprint Designs, it is a challenge that the university lacks a formalized commitment to sustainability – the multi-stakeholder process within the university could be formalized to ensure that the project can go further and that sustainability becomes the norm.

Although the project is student-driven, they have brought on board different stakeholders in facilities management and beyond. The completed project will bring the student-made turbine onto public university land, producing energy for facilities management. According to Margret Asmuss, the Sustainability Coordinator at the University of Saskatchewan, "We are trying to intersect our operational issues with student research projects and student education in general. This is the sort of thing we need to be doing, working with students, and how they can help us address sustainability issues."

In this case, there is no specific program being delivered and, as a result, there is less of a need for a formal multi-stakeholder approach. In order for the turbine to be operational on campus, there will certainly be a need to work with the facilities management; however, there is not a clear need to have a buy-in from many other campus stakeholders. Where the multi-stakeholder approach is necessary in this case is in looking beyond the operational aspect of the turbine to the learning and development elements; for example, the possibility of students working on the turbine as part of their coursework. There are many opportunities for this type of innovation on campuses, and it is essential that a diversity of stakeholders be able to participate in the initiative in order to maximize the potential for innovation.

Case III - The Residence Reduction Challenge, Southern Ontario

The Sierra Youth Coalition operated the first Residence Reduction Challenge in southern Ontario during the academic year 2007-2008. It ran on three campuses, the University of Waterloo, the University of Guelph, and Queen's University. The three universities are all mid-size, with student populations ranging from 20,550 to 24,160. The competition was both intra-university, held between residences at each university, and inter-university, between the three universities. It involved a number of challenges:

1) Which institution could encourage the most students to sign a sustainability pledge as a proportion of their population,
2) Which institution could provide evidence of the most behavioural changes related to energy use, through before and after surveys, and
3) Which institution could reduce the most energy and other consumption during the course of the challenge, according to metered records.

A solar panel was provided as a prize for the winning residence at each university. The combined totals of the proportion of students who had signed the sustainability pledge for each university determined the overall inter-university winner.

The two month long competition achieved many tangible results alongside building important relationships and heightening the dialogue on energy use. The winning university had 46% of students in residence signing the sustainability pledge, out of a residence population of 729. One of the residences at the University of Waterloo reduced their water consumption by 62%, with an average reduction across the residences of 21.5%, and electricity consumption at the university was reduced overall by 4%. The Sierra Youth Coalition estimates that around 10,000 students were exposed to the Residence Reduction Challenge through posters in residences, events and programming, and on-campus media attention. Of these 10,000 students, approximately 2500 students signed a pledge committing them to taking specific actions to reduce their ecological footprint. The Residence Reduction Challenge resulted in signed commitments at each university from residence staff to work with Facilities Management to reduce consumption in residences, and included an action plan for implementing the Residence Reduction Challenge on each campus. In several residences, energy and water were not metered at the time of the competition – there is now a concerted effort at these residences to have meters installed.

Major proponents of the initiative varied at different universities, from student union coordinators to staff positions in Facilities Management. At the residence level, it was the student-staff residence advisors who took on much of the responsibility. Different stakeholders were involved at each of the universities, primarily in facilities management and student relations. The Challenge provides both environmental gains as well as a financial incentive when consumption is reduced. As a result of the competition, reducing energy consumption has become part of the job training for residence assistants. The project strengthened relationships between facilities management, student groups, and students in the residence.

In the case of the Residence Reduction Challenge in southern Ontario, the entire program was dependent on buy-in from at a minimum the residence administrators and student staff and the facilities management, and received additional support from student union staff or environmental committees and clubs on some of the campuses. The three schools who participated in the Challenge were selected by the Sierra Youth Coalition explicitly because this high level of buy-in existed and the program was going to be supported. In this case, the multi-stakeholder approach was known to be an absolutely key component of the success of the program in a short timeline, and with that support from each campus the program was successful. In the case of campuses where this support did not previously exist, it would have been much more difficult to successfully run the program and a longer timeline would have had to have been utilised to establish time for the establishment of on-campus support.

Case IV - Go Beyond – British Columbia

Common Energy, the Sierra Youth Coalition, and the University of British Columbia Sustainability Office have come together to create a university initiative spanning the province of British Columbia. The Go Beyond project is set to launch on three campuses in September 2009, with twelve additional campuses involved and targeted for the coming years. The campuses involved range from large universities in urban centres to small colleges in rural settings. The largest university, the University of British Columbia, has a student population of 44 190. In comparison, the University of Victoria is under half that size, at 18,890 students. At 7480 students, Thompson Rivers University is the smallest of the three launch campuses. At the time of the release of their 2006 report, emissions at the University of Victoria were 35,612 T of CO_2

equivalents according to a scope of activities that includes direct and indirect emissions. For the University of British Columbia, they were 154, 586.00 T of CO_2 equivalents counting direct and indirect emissions. Thompson Rivers University has not yet conducted a GHG inventory.

Go Beyond was started by a student network from across the province in order to facilitate collaborative work at different universities to address climate change. The project aims to see the universities in British Columbia not only achieve carbon neutrality, but go beyond by marshalling all their assets (land base, research capabilities, etc) to create regional solutions. The project originally went by the tagline 'Get Evolved, Be Involved' where 'Get Evolved' was the first phase targeting individual lifestyle changes, and 'Be Involved' was the second phase which encouraged participation in institutional change. Recently, the name was changed to Go Beyond.

A key window of opportunity emerged at the provincial level, with a new set of climate change policies introduced by the provincial government mandating that universities, as public institutions, would need to achieve carbon neutrality by 2010. Go Beyond was then developed as a project that would help students lead their institutions on the path towards creating a low-carbon future, and the formal partnership between Common Energy, the UBC Sustainability Office, and the Sierra Youth Coalition was established. Given the goal of carbon neutrality by 2010, the universities understand that capacity building is crucial and dialogue and planning have started immediately.

The scope of the project is broad and the campuses are diverse in their size, type, and location. The context at each school will be different and each stakeholder group will be able to contribute its unique experience with the campuses. Sierra Youth Coalition provides the grassroots networks, training student leaders and providing the broader perspective on sustainability management systems; the Sustainability Office at the University of British Columbia provides technical expertise from their history of cutting-edge sustainability initiatives; and Common Energy has led the way in bringing youth together to drive collaborative climate change planning. Common Energy marries both the top-down policy approach with bottom-up student initiatives, creating a space for both to work together. Faculty have an important role in Go Beyond both in developing curriculum that integrates practical and innovative steps towards carbon neutrality, and as champions within each specific university. Strategic support is provided by the formal partnership created by all stakeholders.

In addition to the main project partners, the British Columbia provincial government and BC Hydro, the power utility in British Columbia, have become involved as funding partners in the initiative and are also involved to a lesser extent in the program development. SYC, Common Energy, and the UBC Sustainability Office had been working together for several months prior to the involvement of the funding partners and were well poised to propose that this program be the youth outreach component of the climate change programming that the provincial government and BC Hydro were planning to undertake. In addition to funding central staff positions, students on the three pilot campuses will be paid to coordinate Go Beyond on their own campus through social marketing campaigns and encouraging involvement with campus-wide energy initiatives in collaboration with other campus stakeholders.

In this program, the pilot schools were selected by the group because of the level of on-campus support and administrative buy-in. Both the University of British Columbia and the University of Victoria have active sustainability offices and have the capacity to support large-scale campus sustainability projects. At Thompson Rivers University, the capacity was primarily present in the student group and in strong relationships with key members of the administration, faculty and staff. With the new provincial mandates around carbon neutrality in public institutions, support of the province for the initiative was essential and the additional support from the energy provider, BC Hydro, was also very beneficial. While this program has not rolled out yet on campuses, it has all the potential to be a successful initiative. While carbon neutrality is the ultimate goal, the first phase of student awareness initiatives alone are estimated to create a 4-10% reduction in GHG emissions, and the remaining reductions will come during the second phase from institutional changes.

Discussion

The case studies outlined in this chapter are at varying stages of development in their multi-stakeholder processes, and have therefore resulted in different types of outcomes. Each of the cases is summarized in Table II based on five factors: 1) the participants involved; 2) the structure; 3) the processes; 4) the leadership; and 5) their greenhouse gas emission reduction initiatives. Participants, structure and processes are common dimensions on which to explain collaborations (Huxham and Vangen, 2000) though they tend to focus on the tangible aspects, so a category of leadership was added.

Take in Table II

In terms of participants, in all the cases, it was essential that students were involved in the implementation of the initiatives. The vast majority of initiatives associated with the Sierra Youth Coalition are student-led, and all SYC initiatives have a substantial student component. In analyzing initiatives associated with SYC, there is therefore going to be a substantial student influence and many students and young people in leadership roles. All of the cases required the support of Facilities Management, emphasizing the importance of the role that the Facilities staff have in energy-related initiatives on campuses. All of the cases also received direct or casual support from campus sustainability offices, with the highest level of involvement shown in the Sustainable Ambassadors, where the initiative is housed in Sustainable Concordia; and Go Beyond, where the University of British Columbia Sustainability Office is one of the key project partners. The Sierra Youth Coalition is linked to the creation of many of the sustainability offices mentioned in these cases – most directly to Sustainable Concordia, where the office was created as a result of the process of piloting the Campus Sustainability Assessment Framework in 2003 – but also to the office at the University of Guelph, the office in the student government at Queen's University, and the office at the University of Victoria.

In all the initiatives, a lead agency was required; this could be one of the stakeholders involved, or the partnership itself, as is the case of Go Beyond. This is in accordance with Waddell and Brown's (1997) findings on the two different kinds of partnerships. However, the stakeholders leading the coordination of the initiatives and those implementing the initiatives were not necessarily the same. The Sustainable Ambassadors program demonstrates this the most – the initiative is coordinated by students and implemented by staff and faculty. It is typically more

difficult to have a voluntary program in which the group of stakeholders for which the program was intended did not create the program and are not involved in its delivery. This type of initiative would likely be easier to run had it been started by and was coordinated by faculty and staff. The same pattern is found in student-led initiatives that target students – it is easier to engage students on a project if it is student-led and student-developed. While the Sustainable Ambassadors program has been successful, it has not, at this point, had the widespread success that has been witnessed in the many other initiatives undertaken by Sustainable Concordia that are directed and implemented by students.

The wind turbine initiative is clearly-student led in the inception and building of the actual turbine, but its implementation as a successful campus initiative is entirely dependent on Facilities Management for installation and ongoing maintenance, and on faculty for integration into curricula. The wind turbine did not engage faculty members from the beginning, and this has presented the most challenges in implementing the project. It was also expressed by the students leading the initiative that it would have preferable had they been supported by an institutionalised commitment to sustainability from the University of Saskatchewan and through a formalized multi-stakeholder process.

While it has proved difficult to engage faculty in these student-led initiatives, this has not been the case with Facilities Management. In the three cases where Facilities Management was approached, there have been very successful partnerships. It is possible that Facilities Management is seen by the students as more essential to the programs than the faculty, and that more effort has been directed at this engagement. It is also possible that a different type of strategy is needed for engaging faculty, and that faculty are more difficult to engage with a bottom-up approach. It is also notable that no senior administrators have been key partners in these initiatives, and it may similarly be the bottom-up approach that has made this engagement difficult (and perhaps unnecessary).

Students have had certain measures of success independently leading the on-campus initiatives, such as in the cases of the wind turbine and Sustainable Ambassadors. When there was a cross-campus or provincial element, having an external organization, such as SYC, participating in a networking and coordinating role was determined to be very beneficial. The main need from external groups engaging in campus initiatives was a high level of buy-in from the campus stakeholders to the initiative.

In the case of the Residence Reduction Challenge, the initiative was successful. It was originally developed by SYC, coordinated by a small team of student volunteers from each of the universities involved, and implemented primarily by student staff in residences with the support of Facilities Management. This success could be due to SYC being more closely aligned with student perspectives and needs than students are with faculty or staff needs as in the case of the Sustainable Ambassadors. It could also be related to an existing power dynamic between students and faculty or staff that is not present between SYC and students. It was essential in the Residence Reduction Challenge to work with campuses that had the capacity and interest to run the initiative and had previously established relationships between on-campus stakeholders; in fact, one of the three universities where the Residence Reduction Challenge was originally

planned to occur was replaced by another university very early on in the process when it was determined that the capacity, relationships, and interest were not present at that university.

In general, stakeholders implementing the project should be involved early on in the design process; however, it is possible to still achieve success when those designing the initiative are closely in line with the thinking of the stakeholders implementing the project, or these additional stakeholders are brought in following original development but before the project launch.

It is interesting to note the involvement of provincial governments in the two larger partnerships – the Ontario Ministry of Energy funded the Residence Reduction Challenge through their Community Conservation Initiatives program, and the British Columbia provincial government has committed to funding Go Beyond through their Climate Change Secretariat. It is likely that the partnership and multi-stakeholder element of both of these initiatives was appealing to the governments when they were making their funding decisions. An important difference, however, is that the Ontario funding came from an official funding program and only SYC was involved in writing the proposal; whereas the British Columbia funding came through a process of collaboration involving the provincial government. This is related to the scale of the initiatives – it is less likely that a provincial government would be involved in an SYC-driven initiative involving student residences at three universities than that it would be interested in a collaborative program targeting all the universities and colleges in British Columbia.

The role of the provincial governments, in particular the government of British Columbia, is interesting in analysing from where the leadership for these initiatives is stemming. Certainly, Go Beyond would not be developed to its existing level, nor would it have the funding it currently does, without the support and involvement of the provincial government through the Climate Change Secretariat. However, it is important to acknowledge the high level of involvement of SYC, Common Energy, and the University of British Columbia Sustainability Office in the program for many months before any funding was involved. The University of Victoria and the University of British Columbia were already leaders in addressing climate change on campuses, and Thompson Rivers University was also involved at a relatively high level, although with less institutionalised capacity to take on major initiatives. Since the provincial government has mandated that all public institutions are required to become carbon neutral, the many other colleges and universities that have not been as active will need to draw from the store of best practices available to succeed in making the on-campus reductions that are required. This government leadership has helped to raise the minimum level of involvement in energy issues on campuses.

From analysis of the structure of the relationships of all the cases, it appears that the larger the scale, the more formal the partnership. Go Beyond has the greatest level of formal partnership, then the Residence Reduction Challenge, then the Sustainable Ambassadors and finally the wind turbine initiative. This correlates directly with the scale of the initiatives – ranging from province-wide to regional to within an office on campus to a student group. The level of formality is also related to the ease of the project; students from Footprint Designs expressed that, had there been a stronger multi-stakeholder group at the University of Saskatchewan before the project began, the process of getting permission to erect the turbine on campus would have been simpler. In addition, key leaders from Go Beyond have also indicated that, despite a

number of formal agreements, a more official structure would have been helpful in facilitating the complicated decision-making process of large partnerships.

Three of these four cases built on existing sustainability history on the campuses, particularly with the sustainability offices and multi-stakeholder groups. Without these existing conditions, it would have been much more difficult to launch the Sustainable Ambassadors program or the Residence Reduction Challenge, or to have the expertise required to develop Go Beyond. The only initiative that did not require existing sustainability infrastructure was the wind turbine; however, it was clearly expressed that they would have appreciated more institutionalization of a commitment to sustainability and a more advanced multi-stakeholder process. In the case of the wind turbine, some of the challenges could have stemmed from being in the first stage of the outcomes of a multi-stakeholder collaboration – "Initial Outcomes" in Figure I – and that the more advanced outcomes had not yet been realised at the University of Saskatchewan.

An interesting finding regarding the scale of the initiatives is that there was no clear indication of which scale was the most effective for university and colleges to deal with the issue of climate change. In the three initiatives aimed at creating individual behavioural change, the level of the partnership varied significantly, as did the stakeholders involved. In addition, the complexity of the issue did not influence which stakeholders were leading the initiative – in both of the larger scale cases, students implement the program. This is in contradiction to what is predicted by Waddock (1991) in her article on types of social partnership organizations. She proposed that the level that the problem (such as climate change) is salient will determine the appropriate partnership type. Her other dimension, degree of interdependence, still holds true (Waddock, 1991). Addressing climate change seems salient at all these levels.

A unique aspect in the within-campus cases of Sustainable Ambassadors and the Residence Reduction Challenge, which came directly from the students leading the initiatives, is the inclusion of different types of greenhouse gas reduction initiatives other than energy, as indicated in Table I. Sustainable Ambassadors also includes water, transportation, and waste initiatives; and the Residence Reduction Challenge included a water use reduction element. In SYC's greenhouse gas inventory calculator tool, which is adapted from the Clean Air-Cool Planet tool in the United States, these indirect sources of emissions are also calculated in measuring the total emissions of the campus. This more holistic approach to addressing on-campus sources of greenhouse gas emissions is a unique aspect often brought by SYC or students. Whereas most campuses are addressing indirect sources through, for example, paper purchasing and use policies, it is often the students who contribute a more holistic framing, including emissions reductions, to these types of initiatives.

In terms of actual greenhouse gas emissions reductions, there were considerable differences between the cases. For the Residence Reduction Challenge, the average energy reduction over the two-month period in which the program took place was 4% at Queen's University and the University of Waterloo. Data from the University of Guelph was unavailable because the buildings were not individually metered, although Facilities Management expressed surprise at the level of engagement of the students in energy reductions and indicated that project provided an additional impetus for installing meters for each building. The impact of the program was constrained in this case because of the limited control that students have over their energy

consumption – the 4% reduction therefore came from reduced electricity from lighting, the plug load, kitchen appliances and building systems but not heating for the buildings. A much more substantial decrease was in the water consumption which was only included in the program at the University of Waterloo, and was measured at an average of 21.5% since students have a much greater control of their water consumption. Overall, the impacts of the Residence Reduction Challenge were about institutional change as much as GHG reduction. They outcomes included engaging students in dialogue with administrators and facilities staff and integrating this type of challenge into the residence programming on an annual basis at all three schools. As a result of the success of this first year of the program, it is likely that there will also be longer-term impacts that have a larger impact on the actual energy use in the buildings.

In the case of the Sustainable Ambassadors program, while the overall GHG reduction has not been monitored, one initiative has shown concrete results. The Flick Off project, which was conducted as part of student-initiated coursework, was over a two-week period and involved tabling, posters and stickers on light switches on two floors of a classroom building. It was focused on getting students to turn off classroom lights when they left the room. While this was a short period of time, the results were quite dramatic with a 20% reduction in lights left on measured.

As both Go Beyond and the wind turbine initiative have not yet taken place, it is not possible to determine the level of climate change impact of the programs. An estimate for Go Beyond, based on individual lifestyle changes, is between 4 – 10%. The impact of the wind turbine remains to be seen at this point.

Conclusion

From analysis of these four cases, it is clear that students are able to provide the momentum and vision to spearhead campus energy initiatives; however, they need to have the support of key stakeholders for the initiative to be successful, and the need to engage these stakeholders early in the development of the initiative to ensure buy-in. In cases where there is not a significant level of institutional support, it is better to start with initiatives within a campus that targets a peer group rather than a multi-campus initiative or one that targets staff or faculty. In the case that an initiative is going to target staff or faculty, the likelihood of success is higher if the staff or faculty are brought into the decision-making for the initiative.

Sustainability coordinators, however, are in a unique position to support student initiatives, engage staff or faculty, and work collaboratively on regional or provincial activities. The student support element is particularly strong for many Canadian coordinators, who were previously involved as leaders in the student sustainability movement and often created the office on their campus with the support of SYC. They are also positioned within the administration and are therefore perceived to have a higher level of legitimacy among faculty and staff, and also are able to take on initiatives year after year on a full-time basis. This permanence can strengthen any initiative, and enables a larger scale of collaboration.

All of these four cases are complementary – one campus could be doing them all at the same time. In fact, initiatives similar to these are concurrently in progress at the University of British Columbia and are coordinated by the sustainability office on that campus. This speaks to the

ability of well-supported sustainability coordinators to work in a variety of contexts and on a variety of projects whereas students without the institutional support find this very challenging. The Sierra Youth Coalition also plays a key role, particularly in the multi-campus initiatives, in terms of providing support and networking. While students are often not able to coordinate a variety of initiatives on their own campuses, the driving force, motivation, energy, and creativity for these initiatives often comes from the students, so the importance of their leadership cannot be minimized. What is less clear is which approach comes first – whether initiatives should be created by more structured and formal organizations, like SYC and sustainability offices, and implemented and directed by students; or whether students should be the drivers of the initiatives and be supported by SYC and the sustainability offices. A possible conclusion is that it depends on the capacity of the student group, the campus and regional context, and the relationships previously developed on the campus.

Another element of note is the emergent nature of these initiatives, and how little they resemble each other. This is very much like the early days of sustainability management systems in Canada, where students were trying to engage in all the steps of the process. Eventually, students found their leadership niche in the assessment phase, leading SYC to adopt the CSAF tool for the Sustainable Campuses program. Engaging through assessments enabled students to initiate institutional change rather than just undertake individual projects. For campus climate initiates, it is unclear whether conducting greenhouse gas inventories, which is what SYC was originally promoting with the Campus Climate Challenge, is the most strategic and effective role for students to commence with when addressing climate change on their campus.

What is certain is that a multi-stakeholder approach is essential to a successful energy-related initiative, whether on individual campuses, regionally between campuses, or provincially. In each of the cases, there is a clear correlation between the strength of the multi-stakeholder process and the success and ease of the initiative. However, whether the specific model that SYC has been promoting for Sustainable Campuses, creating campus-wide multi-stakeholder groups, is the best option for addressing climate change is not obvious. In these cases, there were more bilateral partnerships and a wider diversity in levels of scale of the multi-stakeholder approaches than has been observed with the broader Sustainable Campuses approach. These changes in scale, which stakeholders are involved, and in which ways they are involved, have created types of multi-stakeholder engagement which are specific to the needs of campus climate initiatives.

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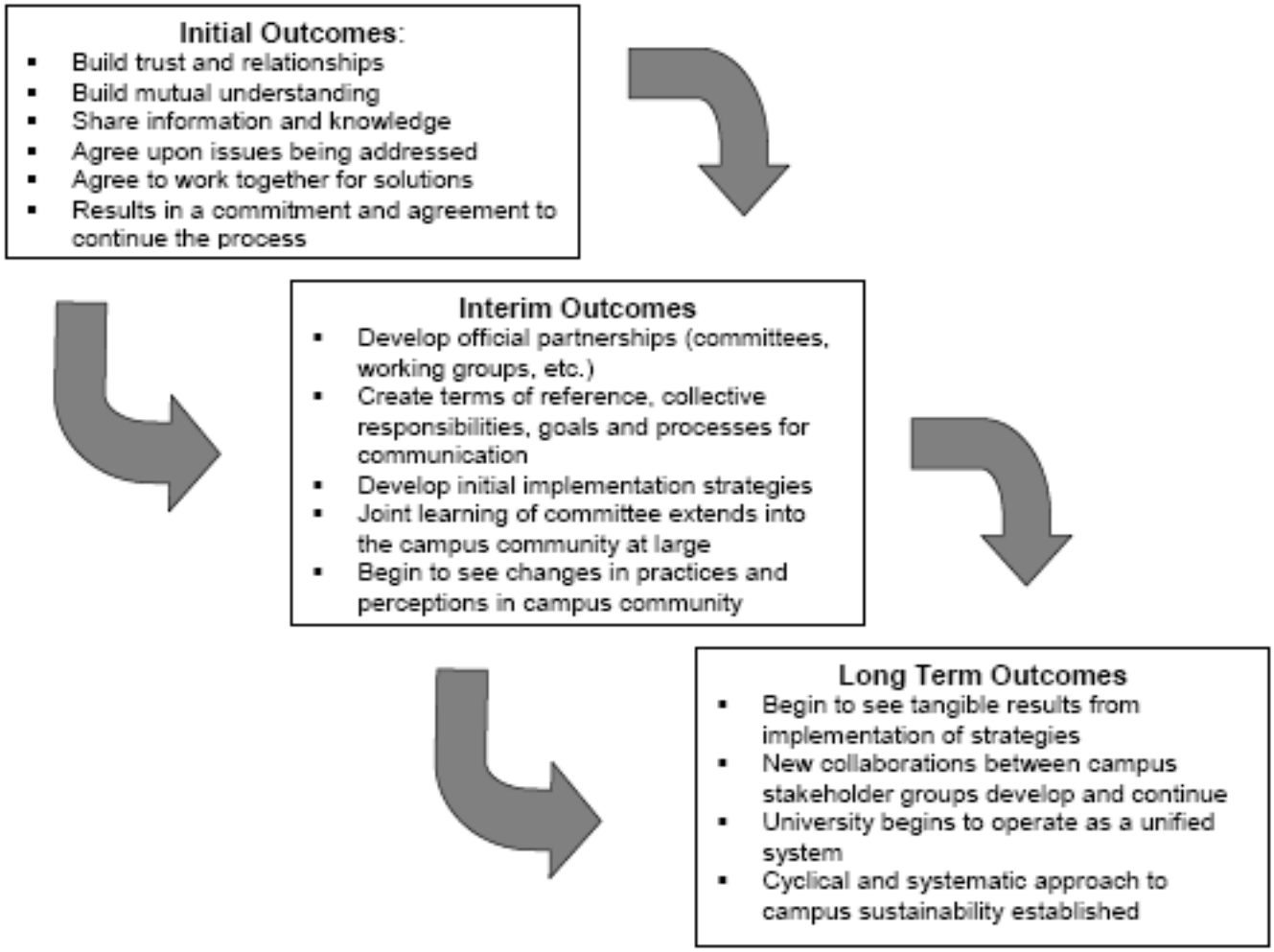
Figure I: Initial, Interim, and Long Term Multi-Stakeholder Process Outcomes



(Sierra Youth Coalition, 2007a, p. 11)

Table I: Introduction to Four 'Best Practice' Cases

Case	Stakeholders Involved	Level of Engagement			Climate Change Initiatives		
		Within One University	Between Universities	Provincial	Energy Reduction	Energy Production	Other GHG Reduction
Ambassadors	Students Faculty Facilities Mgmt. Employees	X			X		X
Wind Turbine	Students Department Facilities Mgmt. SYC	X				X	
Residence Reduction Challenge	Residences Universities Facilities Mgmt. SYC		X		X		X
Go Beyond	Universities Government Private Sector Other NGO SYC			X	X		

Table II: Cross-Case Comparison

	Sustainable Ambassadors	Wind Turbine	Residence Reduction Challenge	Go Beyond
Participants	Students Faculty Employees	Students Departments Facilities Mgmt. SYC	Students Residences Universities SYC	Students Universities Government Private Sector Other NGO SYC
Structure	Coordinated in student offices (Sustainable Concordia); involves student outreach to faculty, staff, admin. Implemented by faculty, staff, admin.	Coordinated by students involved in campus sustainability working with facilities management and faculty. Implemented by coordinating students and facilities.	Coordinated by student project team from three universities and SYC. Implemented by staff and students in residences.	Coordinated by SYC, UBC Sust Office, Common Energy; supported by BC Hydro and BC Climate Change Secretariat. Implemented by students.
Processes	Leaders embedded in multiple departments on campus; supported and initiated by Sustainable Concordia	Students spearheaded initiative and engaged facilities support	SYC engaged students and residence staff	Engaging in university planning process alongside broad communications campaign; initiated by multi-stakeholder partnership
Leadership	Individual champions, Sustainable Concordia	Students	Students, SYC	Universities, SYC
GHG Reduction Initiatives	- Individual reductions - Direct GHG emissions reductions as well as indirect reductions through water, transportation, waste - Institutional changes that reduce GHG consumption (e.g. light sensors)	- Production of sustainable and local energy displaces coal, natural gas and hydro electric power in the grid	- Individual actions by many students – measurable energy use reductions - Direct GHG emissions reductions as well as indirect reductions through water - Element of institutional change with increase in metering	- Individual reductions - Cross-sectoral approach and partnership with energy provider (BC Hydro) enables monitoring