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**“UNIVERSITY LEADERSHIP IN SUSTAINABILITY AND
CAMPUS-BASED ENVIRONMENTAL ACTIVISM”**

by

JOSHUA ROOSTH
B.S.B.A, University of Central Florida 2006

A thesis submitted in partial fulfillment of the requirements
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ABSTRACT

This thesis examines the development of environmental sustainability on 194 of the wealthiest colleges and universities in the United States and Canada. Campus-based environmental organization membership data, organizational profiles, participant observation, and sustainability grades (from the Sustainable Endowment Institutes College Sustainability Report Cards 2009) are used to examine the relationship between campus-based environmental organizations and sustainability of higher educational institutions. Linear regression is used to analyze the overall university sustainability grades as an outcome variable. Overall university sustainability grades are impacted by campus-based environmental activism social movement organizations, high endowment per student, the age of the university, and the presence of state renewable portfolio standards. My findings suggest that the Sustainable Endowment Institute's College Sustainability Report Card might be improved by including indicators of greenhouse gas reports and interdisciplinary courses on sustainability.

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LIST OF ACRONYMS/ABBREVIATIONS

AASHE	Association for the Advancement of Sustainability in Higher Education
ACUPCC	American College and University Presidents Climate Commitment
CCC	Campus Climate Challenge
CBEA	Campus-Based Environmental Activism
CSRC	College Sustainability Report Card
FTN	Focus the Nation
IJSHE	<i>International Journal of Sustainability in Higher Education</i>
NTI	National Teach-in
NWF	National Wildlife Federation
SEI	Sustainable Endowment Institute
SHE	Sustainability in Higher Education
SMO	Social Movement Organizations
SSC	Sierra Student Coalition
TSMO	Transnational Social Movement Organizations

INTRODUCTION

We live in a “carbon-constrained world” (Lovins 2008; IPCC 2009). The University of California Berkeley, for example, “has a larger carbon footprint than the nation of Cambodia” (Campusinpower.org 2008). Many universities across the United States and abroad are faced with combating unsustainable practices of environmental degradation, pollution, and overconsumption (SEI 2009). Campuses are known as places suitable for the development of student social movements, while endowed universities are especially known for their political activism (Sztompka 1999: 297, Dyke 1997). The campus sustainability movement is a candidate of engendering intentional social change to improve campuses, states, and federal environmental policy (Isham and Waage 2007). Furthermore, other variables may affect the growth and development of sustainability in higher education campuses. By analyzing sustainability and student social movements, this thesis answers the following main research question: Are universities with higher levels of campus-based environmental social movement organizations more likely to score higher on overall university sustainability grades?

The most common definition of sustainability is that which “meets the needs of the present without compromising the ability of future generations to meet their own needs” from *Our Common Future: Report of the World Commission on Environment and Development* in 1987. This definition is based on meeting demographic needs and reacting to the limitations of the environment and technology. There are several ways to analyze sustainability including looking at endowment spending and transparency, as well as greenhouse gas reports (SEI 2009; ACUPCC 2009).

The existing literature of sustainability in higher education talks about student groups mobilizing for social change and university institutions becoming more competitive with sustainability initiatives (Shriberg 2003; Newport et al. 2003). Examples of social change programs such as teams and organizations are prevalent in the literature (Shriberg 2003; Zimmerman and Hitchcock 2006). The literature also talks about coming up with reliable sustainability indicators to measure institutions of higher education (Flint 2001).

The following analysis uses social movement organization membership and university sustainability grades to explore the sustainability of campuses in the United States and Canada. A scaled dependent variable is used to measure environmental sustainability policy based on the 2009 College Sustainability Report Card. The “green report card” is a broad based comparison of peer institutions of higher education on sustainability (SEI 2009). The report card is used to compare the wealthiest colleges and universities of the United States and Canada. Participation in sustainability movements on campus is used as an independent variable to measure the presence of social movement organizations across North American campuses. The membership of the movement is based on the existence of social movement organizations, which is used as a quantitative measure of their commitment and involvement in environmental initiatives. In addition, control variables are incorporated into the analysis including: state capacity according to the presence of renewable portfolio standards, high endowment per student, university age, and student teacher-ratio. Linear regression is used to analyze the variance of how the universities’ overall sustainability grades are impacted by social movement membership of campus-based environmentalism and the control variables.

LITERATURE REVIEW

There are new academic journals dedicated to the analysis and discussion of sustainability in higher education, indicating that the evaluation of the sustainability of universities and colleges is underway (Starilk *et al.* 2002; Shriberg 2003; Moore 2005; Stephens *et al.* 2008). Although sustainability has become a contested term because of its adaptive meaning in a pro-growth economy (MacDonald 1976; Davison 2008), the best way to categorize sustainability is by the “three legged stool” concept, which incorporates three broad, distinct areas: environmental quality, economic prosperity, and social equity (Newport *et al.* 2003, 357; Hawken *et al.* 1999). For this thesis, the social equity aspect conceptually has to do with **campus-based environmental activism (CBEA)**.

Environmental Quality

Over the past thirty years, the overall environmental quality has continued to decline, while efforts to restore nature through social movement activity have increased (Mertig and Dunlap 1991; Brown 2009). In his book, *Plan B 3.0*, Lester Brown (2009) directs civilization to mobilize against the escalating global environmental problems. Society is faced with environmental degradation amounting to such problems as “peak oil and food security, rising temperatures and rising seas, emerging water shortages, natural systems under stress, and early signs of decline” (Brown 2009, vii-viii). Global warming has been identified as a threatening social problem (IPCC 2009). The importance of

solving these global problems has caught friction from the countermovement (McCright and Dunlap 2000). In the United States, actions necessary to combat global warming draw from the theoretical orientation of conflict theory (York, Rosa, and Dietz 2003). To alleviate such pressing environmental problems as global warming, a grand portfolio of sustainability solutions is needed (Pacala and Socolow 2004). Investments in major environmental initiatives are needed to stabilize environmental degradation (Goodstien 2008). In addition, wealthy university constituencies stand in a leadership position as key actors (Stephens *et al.* 2008). Universities can develop environmental sustainability through renewable energy, energy efficiency, new urban design, low carbon transportation, and planting trees, among other natural capital solutions and ecological modernizations (Carson 1962, Brown 2009, Hawken *et al.* 1999, Mol and Sonnenfeld 2000).

Several universities are involved in sustainability projects that show the importance of teamwork and organizational support. Zimmerman and Hitchcock (2006, 6) present barriers of a “Green Building Renovation Project” at the College of Charleston run by a student “green team”, which consisted of four undergraduate and two graduate students who worked with the oversight of a professor. Pressed with preserving the local historic culture and limited by cost constraints, the “green team” chose to retrofit the buildings with a range of efficiency upgrades (Zimmerman and Hitchcock 2006: 10). The University of Syracuse is developing sustainability on campus by restoring dilapidated buildings left behind by industry into Leadership in Energy Efficient Design (LEED) buildings, based on the greenbuilding permitting code issued by the United States Green Building Counsel. The University of Syracuse is also developing a

renewable energy portfolio to compete with other universities and colleges in the American College and University Presidents Climate Commitment (ACUPCC), where universities commit to achieving carbon neutrality (Cantor 2008). Over 600 university presidents and chancellors of higher education have signed the ACUPCC agreement. Even internationally, universities are urged to make the climate commitment (Beringer 2007).

International universities have been compared to those in United States using ecological framework methodologies to evaluate proper measures for analyzing sustainability. The University of British Columbia in Canada and the University of Luneburg in Germany have been analyzed by Beringer (2007) hashing out new indicators of sustainability. Beringer's (2007, 454-455) indicators of sustainability include the following: adopting sustainability as a guiding principle, having a center or institute, offering interdisciplinary degrees, having one or more groups on campus, engaging in comprehensive management, and providing faculty with opportunities. For the University of Newcastle, Australia, an ecological footprint analysis (EFA) is used to collect baseline data for the implementation of sustainability in higher education, where "a reduced ecological footprint would mean a movement towards sustainability" (Flint 2001, 60). The main contributors to the ecological footprints are identified and strategies are proposed for mitigation. The two top contributors to the ecological footprint of the University are transportation and buildings, which together account for eighty-six percent of the total footprint (Flint 2001, 56). Students' mode of personal transportation amounts to the largest component of the footprint. Strategies have been proposed to mitigate the

big contributors, which include fostering mass transportation schemes, improving efficiency measures, and enhancing renewable energy production (Flint 2001).

Power Shift 2009, an environmental student mobilization by the Energy Action Coalition, showed that students are dedicated to environmental social change. Some of the students in attendance at Power Shift 2009 came from the University of Florida that runs their bus system by converting algae into bio-fuels. Data from the University of Florida indicates that universities are behind in the sustainability movement and are eco-centric in application of sustainability on campus. It is recommended that universities move towards economic and social goals (Newport et al. 2003).

Economic Prosperity

Universities can be leaders in sustainability as higher education institutions, property owners, service managers, and administrative complexes (Stephens et al. 2008; Moore 2005). Institutions of higher education spent almost \$96 billion annually in the late 20th century just on new construction (Hawken et al. 1999: 315). Speculation as to why campuses elect to go green is divided between those who say that campuses are motivated by the desire to save energy and money (Barlett and Chase 2004; Hawken et al 1999), and others who point to key educational reformers or influential funders (Isham and Waage 2007; Stephens et al. 2008).

Universities and colleges play a critical role in the innovation of new, clean, green technology. Resources provide development opportunities to foster the growth and development of sustainability. Like cities, universities can attract green business

commercialization by having “access to capital, R&D support, workforce talent, supportive policies, and vision” (Pernick and Wilder 2008: 248- 256).

Already over 300 innovative businesses are saving money by voluntarily cutting carbon emissions “through a legally binding commitment” in the Chicago Climate Exchange, which is making these companies more competitive in the marketplace (<http://www.chicagoclimatex.com>). On Friday June 26, 2009 the American Clean Energy and Security Act on the “Cap-and-Trade” of carbon emissions passed in the House of Representatives, and if it passes in the Senate, it will require a broad economic mandate of abatement for America due to start in 2012 (<http://focusthenation.org/>). Subsequently, 10,000 of the largest polluters of carbon dioxide in the United States soon could be enforced to mitigate the emissions first through the Clean Air Act. In the future, universities, businesses, and the United States government will be pressed to become business savvy in the components of sustainability.

With adequate energy efficiency, green buildings can meet energy needs with on-site production of renewable energy, such as photovoltaic solar panels. Extra energy produced from the panels can be sold back into the grid through a process called “net-metering” (USGBC 2008). For instance, LEED buildings can be retrofitted into “net zero” buildings, having a zero net consumption of kilowatt hours. At Oberlin College there is a building designed by William McDonough, co-author of *Cradle to Cradle*, which “makes more energy than it needs to operate and purifies its own water” (TED 2007). Day-lighting, a signature component of LEED buildings, makes the workplace and education more productive. More about day lighting can be found in the documentary *Kilowatt Ours* (2008), which points to an abundance of energy saving

techniques including energy efficiency measures, renewable energy providers, and funding opportunities.

America, as a core energy user and mass consumer of products, should focus more attention on reducing greenhouse gases through sustainability (Stephens *et al.* 2008). According to (Stephens et al. 2008, 324), universities have a very real potential to facilitate “society-wide changes by strengthening climate change mitigation-efforts by [1] reducing carbon emissions through promoting climate policy development, [2] fostering behavior change, and [3] advancing low-carbon emitting technological change”. Reductions in greenhouse gasses are arguably the most symbolic form of sustainability because reductions are concrete and usually accompanied by solar or wind energy production arrays, behavioral change, consumptive change, or offsets purchasing. Nearly all the components of sustainability have a positive effect on mitigation of greenhouse gasses.

The call for a common comparison of sustainability has been asked for by Beringer (2007) and Flint (2001). The Sustainable Endowment Institute was formed by Harvard University graduate Mark Orlowski, which developed the College Sustainability Report Card (CSRC) that grades the wealthiest colleges and universities on sustainability. The College Sustainability Report Card uses a broad based analysis across peer institutions, capturing the annual change of universities’ sustainability policy, management, and endowment. Research by Roberts et al. (2008) indicates that institutional support and climate change awareness determine a university’s overall sustainability grade.

According to the Freedom of Information Act, *public universities* have to disclose a portion of their endowment and private universities do not. However, sometimes transparency comes from peer institution competition. After being involved with the College Sustainability Report Card, Clemson University's endowment went from nontransparent to transparent. Therefore, simply being involved with the College Sustainability Report Card may garner accountability and social responsibility. However, detractors say that ethics can get in the way of "financial performance" (Dada 2008, 1).

University endowments have the highest rate of return among institutional investors. From 1991 to 1998, university endowments and foundations received a 44 percent Internal Rate of Return. This is a much higher return than the Internal Rate of Return for private advisors, public pensions, and corporate pension funds (Leaner et al. 2008). An average of 5 percent of endowments can be invested into financial stock or infrastructure. Alumni can play a critical role in reinvestment decisions as private equity and venture capital in investment banking for new technology companies and direct university endowment investments (Leaner *et al.* 2008).

Dada (2008) explains how endowment returns are tax free. Private universities pay for all their expenses, while public universities receive state general funds. Endowments must cover the current payout and keep up with the current rate of return. Private endowments are built up by donors who have specific requirements. Some successful private universities increased their funding to financial aid in avoidance of government intervention. Over the past decade, there has been double digit endowment growth by hundreds of universities. For example, Princeton University received a 15.1 average annual Internal Rate of Return from 1998 to 2008. After many years of

economic success, during the economic downturn Princeton lost 30 percent of its endowment, which exemplifies what most higher educational institutions lost in capital.

There are 136 colleges and universities in the United States that have endowments greater than 500 million dollars. Endowments each year invested by the wealthiest universities equates to 3.4 billion dollars, giving colleges and universities a robust financial muscle (5 percent of 500 million is 25 million times 136 universities equates to 3.4 billion). This number is presumed to be higher because it does not include schools with smaller endowments, such as the University of Central Florida that ranks 344 out of 791 universities nor does it allow for the outliers like Harvard endowment holdings (NABSCO Endowment Study 2008).

At Stanford University endowments are “composed of over 6,000 distinct funds; each of which has different restrictions imposed by the donors” (Dada 2008, 1). “Some of the endowment funds are designed to support undergraduate scholarships or graduate fellowships, while others support faculty salaries through endowed professorships and specific areas of research, academic programs, centers and institutes” (Dada 2008, 1). Dada (2008, 1) states:

“According to federal law, most private foundations are required to pay out 5 percent of their assets each year toward their charitable purpose. No such requirements exist for university endowments. Donations to universities are tax exempt, and endowment funds are tax exempt”.

Therefore, universities endowments are formed by multiple funds, from multiple donors, for multiple purposes, and are tax exempt.

Students, who spend most of their time on campus, have ties to the university's endowment spending. At public institutions students can serve as proxies at shareholders' meetings because they pay for classes and student fees. University endowments range from 10 million to 50 billion in the SEI 2009 College Sustainability Report Card. However, at the end of 2008 and at the beginning of 2009, during the economic recession, most university endowments shrank by one-third. In terms of shareholder engagement, making a school endowment transparent is ethical and environmental initiatives are a safe and profitable investment (Power Shift lecture 2009). Contrary to popular belief, environmental initiatives have multiple financing opportunities and decent payback periods, which equate to more revenue (Hawken et al. 1999).

Practical steps to mitigate carbon dioxide are determined by “organizational governance”. Organizations should make decisions, share information, distribute wealth and resources, and determine each factor of how organizations become climate friendly (Isham and Waage 2007: 174). Mechanisms of change toward sustainability include changing the old paradigm of business as usual—tracking progress, forming teams, goals, and strategies, and rewarding employees for sustainability at work. *Overall, sustainability being institutionalized and embedded into the organizational framework is the biggest driving force to implementation* (Isham and Waage 2007).

Social Equity

According to Newport *et al.* (2003, 361):

Modern universities are increasingly global players with increasing global responsibilities. Commitment to students does not stop with a degree, a state line, or an international border. More so every day, graduates are citizens of a global community, so universities are more aware of their own global citizenship. Moreover, graduates taking corporate jobs will increasingly be expected to be articulate and skilled in principles and practices consistent with a broad understanding of sustainability. It is not without merit to consider that in the future students will include the universities transparency and record of sustainability issues as criteria for choosing where they will enroll for their undergraduate and graduate studies.

Higher education has a substantial impact on workforce training, social responsibility, and its own development as research institutions. Some researchers argue that interdisciplinary environmental education studies also play a key role in sustainability (Stephens et al. 2008; Gough and Scott 2007; Moore 2005). The interdisciplinary movement in sustainable education programs at the University of British Columbia (findings from Moore (2005, 229-330)) concluded that the idea is to infuse sustainability into every decision possible such as education by decreasing class size and giving more incentives toward teaching as opposed to research. However, universities shape technological change differently based on their locale, how they are funded, their governing body, research- community partnerships, and through transdisciplinary studies (Stephens et al. 2008).

Campus-Based Environmental Activism

The first Earth Day celebration in 1970 marked the third phase of environmentalism. Under the leadership of a Senator Gary Nelson, thousands of colleges and universities across America took part in a national protest and teach-in (Dunlap 1973, Envirolink 2009). The grassroots success of the first Earth Day is present each year on April 22; subsequent Earth Days continue to bring awareness to the environment.

Campus-based environmental activism (CBEA) organizations are social movement organizations (SMO), which are touted as having been active in developing college campuses into “living models” of sustainable institutions (Newport *et al.* 2003: 361). SMOs differ from other organizations because they act to create intentional social change and adapt their goals to restructure society (Zald and Ash 1966).

For instance, being pressured by students, Lewis and Clark College bought carbon offsets voluntarily to reduce on-campus emissions to comply with the international Kyoto Protocol climate agreement (Dautremont-Smith 2003: 260-262). Also, Connecticut College used green fees to reduce greenhouse gas emissions on campus by implementing a twenty-five dollar student fee increase to purchase renewable energy. Moreover, with a landslide vote in 2000 Colorado University-Boulder’s students decided to increase student fees by a dollar to purchase wind power (Dautremont-Smith 2003, 260). Consequently, successful student movements are likely to have grassroots leadership, administrative buy-in, access to capital, and the ability to overcome barriers (Dautremont-Smith 2003; Pernick and Wilder 2008; Zimmerman and Hitchcock 2006).

Social changes on campuses are not always successful without administrative support. For instance, research of Shriberg (2003, 273) illustrates that the University of Michigan had a strong grassroots initiative but lacked strong top-down leadership within the administration. The extracurricular club, Students of a Sustainable University of Michigan, drafted a bill similar to the Kyoto Protocol, which the university was reluctant to sign even after letters and petitions by thousands of students. The author identifies niches of environmental activity, including CBEA, and faculty support, but found that it lacked overall coordination (Shriberg 2003).

Student social movements include the peace movement, human rights, women's rights, anti-war, anti-imperialism, and the environmental movements (Envirolink 2009). During the sit-in protests of the civil rights movement, students and professors became much more radical with non-violent civil disobedience (Zald and Ash 1966). In the 1950s and 1960s, student protest movements against the Vietnam War and the Cuban Revolution took precedence over environmental issues (Woodhouse 2008, Botelho 1999). Social responsibility is a common goal of student social movement's culture. In the 1980s, student activism influenced universities to pull their endowment investments from funding apartheid in South Africa (Altbach and Cohen 1990), which carried a broader mandate of "divestment" for the rest of the economy (Meznar et al. 1994; Rottenberg 1986).

Students' activism has built a strong interest to help monitor social justice and foreign policy; for example, during the second term of the Reagan era, students fed up with the yuppie culture and human rights issues in South Africa, began to protest anti-apartheid. Due to the universities' investments in South Africa, students at over a

hundred campuses engaged in non-violent protests such as sit-ins against university administrations to divest from South African apartheid. Starting with the protest at Columbia, other protests followed at universities such as University of California Berkeley and Cornell. Technologically advanced tactics were used and the media also played an active role. Public opinion and Congress began to side with divestment, and during the spring of 1985 student protests for divestment hit an all time high, similar to the amount of activism during the student social movements of the 1960s. As a result, universities began to divest totally or partially. Being successful in what it set out for, the student anti-apartheid movement ended in 1987-1988 just as quickly as it began (Altbach and Cohen 1990).

Shantytowns -makeshift structures- used to display the apartheid in South Africa, were a tactic of students during the divestment movement. Diffusion of the shantytown tactic was found to be relative to the type of university (liberal arts), the level of endowment and prestige, as well as prior social movement activity. Schools that are resource-rich are more likely to have protests, along with elite schools and those with a past history of social movement activity (Soule 1997). Furthermore, when students attended protest training on anti-globalization, they were more likely to amass protest events and be involved in grassroots activism at their schools. Protests form because the time is ripe for political action or collaboration for resources amongst organizations (Dyke 2003).

Contemporary student environmental movements directed by sustainability issues include climate justice, clean energy, and green jobs (Pellow 1999; Aygeman and Evans 2003; Sustainability Conference 2008, Power Shift 2009). Climate justice takes into

consideration the effect of the Global North's overconsumption upon the Global South's inability to protect itself from environmental disasters (Aygeman and Evans 2003).

Clean energy refers to the soft path of decentralized renewable energy production that differs from the "hard path" the United States, which uses centralized petroleum and uranium sources of power (Lovins 1976). Green jobs can "lift people out of poverty", have an environmental component, and range through the division of labor (Power Shift). These three goals are common ideals throughout the "climate movement" and guide the actions of organizations, and reverberate with prominent sociological theory. When such factors become prevalent, Catton and Dunlap (1978) would say, by moving away from anthropocentrism, society has transferred into a new ecological paradigm.

Using a framework of participation of social movements, Klandermans (1993) explains the differences in mobilization potential and comparisons of multi-organizational fields of three distinct movements in the Netherlands including the labor, peace, and women's movements. Mobilization potential is defined as the "individual members who are, in general, willing to support the movement ... the larger the mobilization potential, the higher the level of participation" (Klandermans 1966: 386,388). The success of the movement can either be measured by the movement's campaign or by a massive turnout. Multiorganizational fields are composed of "the total number of organizations with which the organization might establish linkages" (Klandermans 1993: 386). Organizations may be directed toward social change or a countermovement against change. These movements had various forms of national level autonomy and action orientations (Klandermans 1993).

Landmark research on organizational transformation helps to explain changes of social movement organizations (SMO) based on movement goals, leadership structures, membership, and the sentiments of society. Many vicissitudes of the latter reshape SMO including the following: whether the goals are internal or external to the organization, leadership structure has an authoritative influence, if membership is inclusive or exclusive, and the type of commitment pledge required for participation. The “ebb and flow” of society directs the solving of social problems, and determines the membership of potential supports (Zald and Ash 1966, 330).

Social movements may also form inter-SMO relations including co-ops, coalitions, and mergers (Zald and Ash 1966: 335). These inter-organizational dynamics come into play through the analysis of the “climate movement” directed by CBEA of SMO (Isham and Waage 2007). Cooperation is unlikely unless there is a revolution or a massive legislative lobbying. Organizations often join forces to establish grand movement goals, garner a larger resource base, and mobilize when success is in sight. To strengthen the common goals, SMOs tend to give up some of their differences when forming a coalition, which is ruled through a committee. The combining of organizations decreases the variations in voices that speak for the movement and may have severe results for the support base. Contrary to a merger, factions and splits occur and affect the diversity of the membership base and the authority of the leadership. Separation is more likely to occur when organizations are moved to create social change at the societal level, as opposed to just in their internal membership base (Zald and Ash 1966).

SMOs are also getting involved with alternative communication channels to promote social change. The interface of Web 3.0 including MySpace, Facebook, and

YouTube have been used to reach the millennial “internet generation” for additional campaign exposure during the 2006 election (Gueorguieva 2008: 288). As a “social generation unit”, the internet generation does not know the world without the presence of the internet, which socializes internet-based networks into routine communication (Gueorguieva 2008). Using fieldwork and qualitative interviews, Juris (2005,205) found that “computer supported social networks” have been used to mobilize thousands of activists for anti-globalization protests from an “emerging digital activist networking culture”. Empirical research in Japan found that both formal and informal social networks increase political participation. Less impact on political participation was found where members have hierarchical relationships (Ikeda and Richey 2005).

Resource Mobilization Theory was established in the 1970s in consideration of the mobilization of resources to provide links to other groups, external support, and potential incentives for its members (McCarthy and Zald 1977). For example, campus-based environmental actors include influential students, professors, and organizations; in addition to, organization founders, local organizers, and recognized climate champions (Power Shift 2009; Canan et al. 2008). “When activities are planned on a large scale – for instance, in a state university – the time of thousands of students and faculty amounts to a great resource” (Smelser 1967: 160) and being involved in SMOs requires the mobilization of resources time, money, energy, and commitment at universities. Furthermore, the ability for SMOs to mobilize depends on the resources available in the industry. Most of the monetary capital usually found in SMOs is typically from grants from foundations, donors from the private sector, and contracts given by the government (Edwards 2007: 3895). Resource Mobilization Theory places such an emphasis on

structure that it ignores the cohesion amongst leaders and active members of the core group. Resource Mobilization Theory does well to address social movement questions based on resources; however, it does not provide essential answers as to why actors form social movement organizations (Stallings 1973; Fitzgerald and Rodgers 2000; Jenkins 1983).

Social psychological theories focus on whether social movements have specific motivations, ideologies, beliefs, or values (Geschwender 1968; Stalling 1973). These theories draw from the research of collective behavior, where people organize to solve social problems (Zurcher and Snow 2007). Social psychological theories elucidate why actors participate, the influence of the leader's charisma, and the resource symbols of movement activism including the costs and benefits of participation (Zald and Ash 1996, Klandermans 1984). Norgaard (2006) found that emotions play an important role in why Norwegians choose not to think about global warming. Researchers point to a gap between resource mobilization theory and sociology psychology, and encourage a mixed methodology for studying the culture of social movements (Sztompka 1999, Klandermans 2002).

This simply adds to Canan et al. (2008) finding that the campus-based environmental movements such as Focus the Nation (FTN) are hybrid SMOs carrying the characteristics of multiple types of social movements. Canan et al. 2008 identified FTN at University of Central Florida's membership and social capital for the "National Teach-In on Solutions to Global Warming" event January 31, 2008, uniting the university, community, city, and state around sustainability. Canan et al. (2008, 13), elucidated that the organization Focus the Nation, of the youth climate movement, was formed by a

“network of networks”. From an activist researchers’ vantage point, viewed as a node within the larger mobilized structure, Focus the Nation at UCF was identified as a campus/community environmental solutions group with varying levels of commitment in a loosely organized national social movement organization (Canan *et al.* 2008).

Social movement theories have focused on aspects of social movements such as diversity, mobilization, and leadership. Only a handful of research has been done on membership in social movements and sustainability grades (Cantor 2008; Newport et al. 2003), which is why I am doing this study. My research examines the relationship between membership in campus-based environmental activism SMOs and university sustainability grades using the 2009 College Sustainability Report Card. Other factors also explored as to why this phenomenon of the “greening” of universities is happening, including: state capacity according to renewable portfolio standards, high endowment per student, university age, and student-teacher ratio (Isham and Waage 2007; Andrew 1998; Power Shift 2009; Stephens et al. 2008).

METHODS

College Sustainability Report Card Data Set

For the purposes of this study sustainability is defined using the indicators of the Sustainable Endowment Institute's "College Sustainability Report Card". Currently, the College Sustainability Report Card incorporates a broad based analysis across peer institutions to capture the annual changes measuring the management and policy of sustainability for the wealthiest universities (M. Orlowski, personal interview May 5, 2009). To analyze sustainability on the 200 campuses in this study, I used the College Sustainability Report Card for 2009 as a scaled dependent variable.

The Sustainable Endowment Institute begins data collection in June and ends in August of the 2008. College Sustainability Report Card data were retrieved from the website of the Advancement of Sustainability in Higher Education under the "public and members-only sections" (SEI 2008, 228). Data were also retrieved from each institution's website, as well as from media coverage, the United States Environmental Protection Agency, and the United States Green Building Council. The initial findings were sent to all university presidents, sustainability coordinators, or "a similarly designated sustainability professional" to confirm the data (SEI 2008, 229). If those people above did not respond, SEI contacted the school via email or phone. According to the 2009 SEI methodology, 271 of the 300 schools (90.33 %) responded to the campus surveys, 247 of the 300 (82.33 %) schools participated in the dining surveys, and 211 of

the 300 (70.33 %) schools responded to the endowment management surveys. These response rates show an efficient means of data collection.

The College Sustainability Report Card carries the data from the top universities in 2007, 2008 and 2009, which increases its sample size over the years from 100 to 200 to 300. This study uses the 2009 College Sustainability Report Card's overall university sustainability grades for the first two-hundred of the wealthiest colleges and universities in North America in a scaled dependent variable of sustainability scores because these institutions possess \$343 billion or 80 percent of capital endowment in higher education (SEI 2008). I also used the 2009 version only because it has more variables, the formation of the College Sustainability Report Card variables changed slightly from 2008 to 2009 with the addition of the student involvement variable, and because the 2009 version College Sustainability Report Card has the most recent applicable data. Additionally, the sample represents only 2 ½ percent of the total colleges and universities in North America (Yahoo 2008; Yahoo 2008). However, these two-hundred schools represent more than \$343 billion dollars in endowment assets" in endowments ranging from "280 million to 35 billion dollars" (SEI 2008, 4). From 2008 to 2009, disclosure from shareholders increased from 15 percent to 30 percent and shareholder engagement increased from 13 percent to 18 percent.

There are limitations to SEI. For instance, among indicators of sustainability it does not include the emissions from the institutions' carbon footprints or the emissions from student transportation. Furthermore, "while these indicators take a broad range of policies and programs into consideration, they do not encompass all college and university sustainability efforts nor do they include teaching, research, or other academic

aspects concerning sustainability” (SEI 2009). This analysis is limited in that it does not account for the Sustainable Endowment Institute’s agency of administering the College Sustainability Report Card, even though some schools, like Drexel University, have become more sustainable because of joining the study.

Dependent variables

In the 2009 College Sustainability Report Card there are a total forty-three indicators of sustainability. These forty-three indicators consolidate into nine component variables of sustainability, which make up the overall university sustainability grade. These include: administration, climate change & energy, endowment transparency, food and recycling, green building, investment priorities, shareholder engagement, and transportation, and student involvement. The materialization of each component variable decreases greenhouse gases. A list of the College Sustainability Report Card indicators is found in Appendix C. These different variables measure a large amount of sustainability in higher education and are currently the best available data of sustainability. Each of the component variables were measured out to a whole letter grade. The combination of the component variables grades were averaged to form the overall university sustainability grade, shown as either a positive, negative, or whole letter grade. An interval scale of numbers was used in the coding scheme for the universities’ overall sustainability grade, which is as follows: A+=12, A=11, A-=10, B+=9, B=8, B-=7, C+=6, C=5, C-=4, D+=3, D=2, D-=1, F=0. Missing data were excluded from the analysis, which left the sample size at 194.

Independent variables

Participation in sustainability movements on campus is used as a main independent variable to measure the presence of campus-based environmental organizations, which are social movement organizations (SMO) across North American campuses. Membership of the movement is based on the existence of these social movement organizations, which is used as a quantitative measure of their commitment and involvement in environmental initiatives on campuses. There are a total of four national campus-based environmental activism SMOs that are used to form the variable social movement membership. These organizations of interest include the Campus Climate Challenge, Focus the Nation, the National Teach-in, and the Association for the Advancement of Sustainability in Higher Education. Campus-based environmental activism SMO membership was documented if university constituents planted a flag, locating their group geographically on the SMO websites' electronic Google maps or lists. As Canan et al. (2008, 5) espouses, "Each flag planted represents a local instance of a climate-change-solution group, loosely knit into a nation-wide network". In order to code that the campus SMO were present on each campus, each SMO was first coded as a binary variable, with the coding scheme as follows: no presence=0 presence =1 for each SMO including Campus Climate Challenge, Focus the Nation, National Teach-in, and Association for the Advancement of Sustainability in Higher Education. Then I used those data to create a scaled dependent variable for social movement membership by adding together the number of SMOs per campus: zero SMO =0, one SMO=1, two SMO=2, three SMO= 3, and four SMO= 4. In the following campus-based

environmental activism SMO organizational profiles are defined. If these SMOs were on the campuses they were each coded with a 1. Then each campus's SMOs were added up to form the social movement membership variable.

Campus Climate Challenge

The coalition's mission is to unite "a diversity of organizations in an alliance that supports and strengthens the clean energy movement among students and young people in the United States and Canada". In 2009, the coalition's council had fifty organizations representing diverse grassroots campaigns (M. Hancock, personal communication June 26, 2009). Membership roles are defined as either an active, supporting, or as a trial member (L. Veazey, personal communication June 26, 2009). Resources available include millions of dollars from fundraising and time donated by volunteers. Some other resources include green fee tool kits, media guides, and recycling campaigns. Tactics are varied across the coalition and most are local actions including letters to editors, meeting with representatives, staging different actions (non-violent protests), and call-in days (M. Hancock, personal communication June 26, 2009, L. Veazey, personal communication June 26, 2009). The coalition put on Power Shift 09, which was the second national student protest and lobby day in Washington DC. Technically, the coalition is a transnational social movement organization because Power Shift 2009 took place at eleven different countries around the world.

Focus the Nation

Focus the Nation's current mission is to empower "young leaders to accelerate the transition to a more just and prosperous clean energy future" (<http://focusthenation.org>; M. Ruskin, personal communication June 26, 2009). Focus the Nation works with volunteers in local communities to organize national events on climate change to effect decisions made by policy makers (S. Duncombe, personal communication June 26, 2009; M. Kimbrell, personal communication June 26, 2009).

The National Teach-in on Global Warming Solutions

The National Teach-in (NTI) also developed by Eban Goodstein is similar to Focus the Nation. National Teach-in provides support for having conversations in symposium on campuses about environmental degradation and climate change to bring people together from different disciplines (G. O'Shaughnessy, personal communication July 2, 2009). National Teach-in operates with an advisory board of climate champions including key educational reformers, business entrepreneurs, and community organizers (www.nationalteachin.org). The organization launched web casts to connect students to Congress and fostered civic engagement with local, state, and national politics (G. O'Shaughnessy, personal communication July 2, 2009; www.nationalteachin.org).

Association for the Advancement of Sustainability in Higher Education

The Association for the Advancement of Sustainability in Higher Education (AASHE) was founded in 2006 (www.aashe.org). AASHE's mission "is to empower

higher education to lead the sustainability transformation” (www.aashe.org). AASHE organization works in teams as a collaborative effort including executives, managers, and staff (Britney, personal communication June 26, 2009). AASHE has a paid membership, unlike the other student climate organizations, that grants the entire institution as a member, so that students, professors, administration, physical plant managers, sustainability coordinators, and university presidents can use the vast amount of resources of AASHE (D. Novell, personal communication June 18, 2009). AASHE’s “resource center” has valuable tools for organizing and offers technical support (D. Ford, personal communication June 26, 2009). AASHE also holds an annual conference and has an increasing number of students in attendance (D. Novel, personal communication June 18, 2009, D. Ford, personal communication June 26, 2009). AASHE has helped “collaborate among experts in different areas to confront specific sustainability problems in the many different sectors of sustainability in higher education including governance, operations, curriculum, and outreach” (Stephens et al. 2008: 330-331). For example, a campus organizer of the Southern Energy Network was recently interviewed on green fees, which is posted on the Association for the Advancement of Sustainability in Higher Education website.

About the Organizations’ Foundings

The foundings of all of these campus-based environmental activism SMOs were formed based on preexisting formal structures, which have a strong convergence to the literature on the start of national SMOs (Tilly 1978; McAdam 1982; Gamson and

Schmeidler 1984; Morris 1984). Campus Climate Challenge was formed in 2004 after several ENGOs convened for the Fossil Foils Day Rally (<http://www.energyactioncoalition.org/about>). Focus the Nation was formed from the Greenhouse Network (Isham and Waage 2007). National Teach-in was formed from a disagreement in the direction of Focus the Nation (M. Kimbrell, personal communication June 26, 2009, G. O'Shaughnessy, personal communication July 2, 2009). AASHE was formed from the regional Education for Sustainability Western Network's success into a national organization in 2004 (<http://www.presidentsclimatecommitment.org/html/faq.php>). Therefore, this movement's momentum was built off the autonomy of past generations of SMOs that have transformed their goals to cope with contemporary environmental problems.

Strengths and Weaknesses of Membership Data

The relative strengths of the membership data are that it tells the number of participating social movement organizations per campus. The data was also readily available and uses an unobtrusive measure of data collection. The weaknesses are that little knowledge is known on the activity of campus organizations for each school and the degree of participation by these organizations may vary in terms of their level of activism (Klandermans 1993). However, each organization plays a part of the big picture in respect to sustainability. Focus the Nation currently works on activating political participation towards strong climate legislation, but used to focus mostly on teach-ins. The Campus Climate Challenge controls a large framework of regional and national

organizations involved in the campus climate movement and uses the largest variety of tactics. The association for the Advancement of Sustainability in Higher Education is a resource hub for sustainability initiatives. National Teach-in is focused on improving sustainability education, reducing carbon emissions, and creating conversations about sustainability on campus.

Campus-Based Environmental Activism Membership

In order to code that the campus environmental SMO were present on each campus, each campus's SMOs were coded as binary variables. Then the numbers of SMOs were added up to form the social movement membership variable.

In addition, in 2008 a SMO multiorganizational field was also created to find out how many campuses in the United States and Canada had campus-based environmental activism SMOs and how many were on each campus. For research purposes, multiple organizing committees at the same location were counted once. Membership categories included are: colleges, universities, institutes, and community colleges, and specific "higher education type" schools (like law schools). Not included are: academies, prep schools, or "schools" of a non-specific nature. The organizational field is not used in the quantitative analysis; it was simply to take account of the size of the movement. The multiorganizational field also counts the presence of The American College and University President's Climate Commitment, which serves as a pledge to reduce carbon emissions for universities, specifically with the commitment of university presidents or chancellors.

Control Variables

Control variables in the overall sustainability grade analysis include differences by student faculty ratio (collected from the Princeton Review), availability of renewable energy sources as indicated by the presence of state renewable portfolio standards (collected from the Department of Energy), if the university is a private school (collected from the SEI), and the age of the university (collected from the respective university websites). Age was recoded so that the oldest colleges and universities had the highest input value after finding a negative correlation coefficient the first time. High endowment per student was coded as a dichotomous variable using the same coding scheme as Soule (1997) when analyzing the divestment movement by using the median student endowment as the cut off point.

The coding scheme for the control variables goes as follows: Faculty Student Ratio: 0= Between 1 and 4 to one, 1= Between 5 and 9 to one, 2= Between 10 and 14 to one, 3= Between 15 and 19 to one, 4= Between 20 and 24 to one, 5= Between 25 and 29 to one, 6= Between 30 and 34 to one. Private school: 0= public school 1: private school. Age of university: 0= Established between 1950 and 2000, 1= Established between 1900 and 1949, 2= Established between 1866 and 1899, 3= Established 1800 and 1865, 4= established earlier than 1799. State Capacity: 0= No Renewable Portfolio Standards, 1= Has Renewable Portfolio Standards. High endowment per student: 0= low, 1=high determined by the median endowment per student \$97863.78.

Linear Regression Analysis

Linear regression is used because the dependent variable has an interval level of measurement and some of the independent variables are at the interval level and others at the nominal level. For the linear regression analyses social movement membership variable is the combination of the added membership of each school amongst the SMOs researched for the 2009 academic year including: Campus Climate Challenge, Focus the Nation, National Teach-in, and Association for the Advancement of Sustainability in Higher Education. This includes all the variables from the social movement membership variable from the 2009 academic year except the American College and University President's Climate Commitment (due to multicollinearity). Using the scaled independent variable of social movement membership, regression analysis is used to determine if the level of social movement membership impacts the overall university sustainability grades.

Hypothesis

HA: Campuses with higher levels of membership to campus-based environmental organizations are more likely to score higher on the 2009 overall university sustainability grades.

RESULTS

The dependent variable used in the analysis is the 2009 overall university sustainability grade which has a range of 0-10 (F to –A), an arithmetic mean of 6.64 (C+), a standard deviation of 2.15, which is just over 2/3rds of a letter grade. Membership of campus-based environmental activism social movement organizations has an interval level of measurement that ranges from 0 to 4 organizations. It has an arithmetic mean of approximately two organizations and has a standard deviation of one organization.

Raw student endowment of 200 of the wealthiest universities and colleges in the USA and Canada has a mean of \$226,893.98 and median \$97,863.78. Moreover, when used in the regression analysis, all the schools with endowments per student higher than the median were coded as high and everything lower was coded as low endowment per student. Student teacher ratio has a range from 0-6 (low to high) and an average of 10 to 14 students per class. The age of the university has a range of 0-4 (young to old) and with the average wealthy university being established 160 years ago. A large percentage of the wealthiest universities and colleges were established in between 1800 and 1865, and similarly after the Civil War from 1866 to 1899. Of the 200 wealthiest universities and colleges in the USA and Canada 65.5 percent are private schools and 77.5 percent are located in states with renewable portfolio standards.

Table 1: Distribution of University Sustainability Grades and Independent Variables

Mean	Median	Mode	SD	Range
<i>Dependent Variables</i>				
2009 Overall University Sustainability Grade (N: 194)				
6.64 (C+)	7 (B-)	6 (C+)	2.15	0-10 (F to -A)
<i>Independent Variables</i>				
Membership of Campus-Based Environmental Activism SMOs (N:200)				
2.05		2	2	1.08 0-4 (0 to 4 orgs.)
Raw Endowment Per Student (N: 200)				
\$226,893.98	\$97,863.78			
Student Teacher Ratio (N: 188)				
Average of 10 to 14 students to 1 professor				0-6 (low to high)
Age of University (N: 200)				
Average university established 160 years ago				0-4(young to old)
	Frequency	%		
Private School (N:200)				
Private	131	65.5		0-1 (dummy)
State Renewable Portfolio Standards (N:200)				
Operating in	155	77.5		0-1 (dummy)

There are approximately 7804 campuses in America and Canada (Yahoo 2008; Yahoo 2008). In 2007 there were about 2,000 four-year colleges in the U.S. (Soule 1997). There are 791 colleges and universities with comparatively large endowments in the NABSCO endowment study.

In mid June 2008, when the data on the multiorganizational field of campus-based environmental organization commitments were collected there were approximately 1,322 campuses. As shown below, Focus the Nation enrolled the most campuses in 2008, mobilizing for campus sustainability and legislative action. As noted in the researcher's definition of membership in SMOs, some of these numbers may appear to have been larger on the websites. However, after coding for duplicates and non universities and colleges, the actual constituency of higher education went down to the numbers show below.

Table 2: Number of colleges for campus CSMOs, total organizational field

	<i>FTN</i>	CCC	ACUPCC	AASHE
2008 Total Campus Membership	924	366	477	385

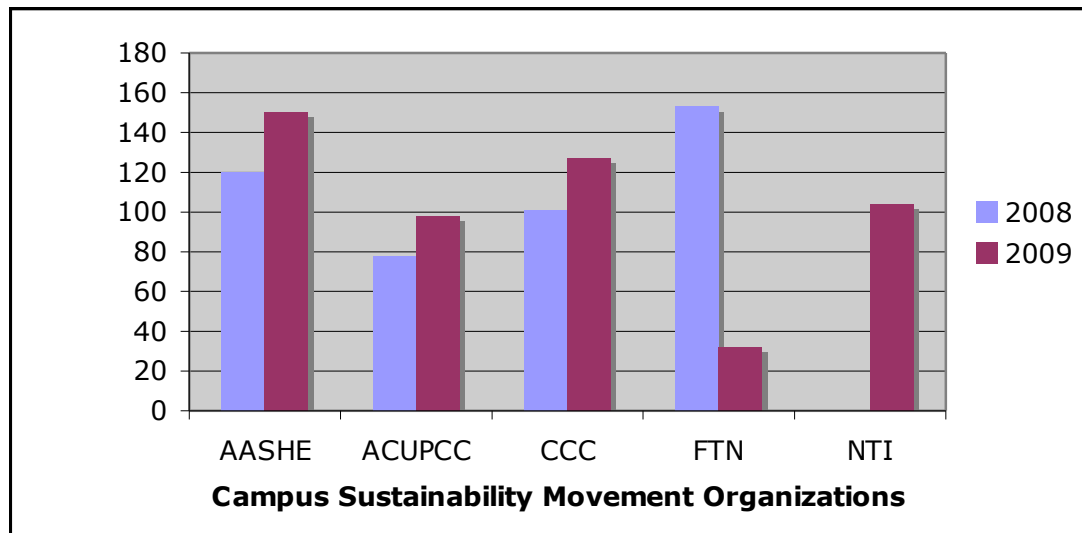
As shown below in Table 3, for the 200 campuses included in College Sustainability Report Card for 2008, Association for the Advancement of Sustainability

in Higher Education was on 120, American College and University President Climate Commitment was on 78, Campus Climate Challenge was on 101, and Focus the Nation was on 153. For the same two-hundred campuses included in the SEI CSRC for 2009, Association for the Advancement of Sustainability in Higher Education was 150, American College and University Presidents Climate Commitment was on 98, Campus Climate Challenge was on 127, Focus the Nation was on 32, and National Teach-in was on 104. Most of the campus sustainability movement organizations increased in their participation of universities and colleges from 2008 to 2009, except for Focus the Nation. The chart below also shows that Association for the Advancement of Sustainability in Higher Education, American College and University Presidents Climate Commitment, and Campus Climate Challenge each increased in commitment among colleges and universities in the Sustainable Endowment Institute's group of the 200 most endowed.

As shown in Table 3, Focus the Nation lost more than three-fourths of its membership in 2009. Around the same time a restructuring in leadership took place at Focus the Nation, and a new organization, the National Teach-in was born in 2009. National Teach-in formed carrying the old leadership of Focus the Nation 2008's social movement mobilization success led by Eban Goodstein, an economic professor formerly at Lewis and Clark College with a strong social capital and family history of social movement organizing during the civil rights era (M. Kimbrell, personal communication June 26, 2009; Isham and Waage 2007). Elements that brought on the National Teach-in surge of membership include the organizing model for the national teach-in to develop constructive conversations about climate change and the ever changing political climate around climate legislation (O'Shaughnessy, personal communication July 2, 2009). After

the restructuring, FTN had to start over by acquiring new funding and staff and overcoming “organizer fatigue” from the 2008 campaign and did not have as much success in membership as the year before (O’Shaughnessy, personal communication July 2, 2009).

Table 3: SEI 200 Comparison of Campus-Based Environmental Activism Social Movement Organizations



Model one in table 4 demonstrates a 31.0 percent proportion of variance explained of the overall university sustainability grade. Within model one, several of the variables are statistically significant. Membership of campus-based environmental activism social movement organizations has a positive effect on overall university sustainability grades. With each incremental increase in social movement membership the overall university sustainability grade increases by .795. High endowment per

student has a positive effect on the overall university sustainability grade. The mean difference between low and high endowment per student schools is .818. The age of the university has a positive impact on the overall sustainability grade, with older universities tending to have higher overall university sustainability grades. With each incremental increase of when the university was established, the overall university sustainability grade increases by .616. The presence of state renewable portfolio standards also demonstrates a positive effect on the overall university sustainability grade. The average difference between universities in states with and without renewable portfolio standards is .894. Comparing the standardized coefficient scores, membership of campus-based environmental activism SMOs exhibits the most effect upon the overall university sustainability grade. Variables of student teacher ratio and private school are not found statistically significant affecting overall university sustainability grades.

As expected, a positive relationship is exhibited by statistically significant impact of membership level of social movement membership on overall university sustainability grades. Furthermore, several variables were found to have a positive relationship with statistically significant impacts on the overall university sustainability grade. These include: high student endowment at the .05 level, age of the university at the .001 level and state renewable portfolio standards at the .01 level. Only positive relationships were found. The analysis not only found that social movement membership significantly impacts campus sustainability, but several other key factors play a critical role in its development of climate restoration. Therefore, the research hypothesis is accepted based on the statistical significance. Campus-based environmental activism positively affects the 2009 overall university sustainability grades.

Table 4: Multiple Regression Results: The Impact of Students, Endowment, and Control Variables on the 2009 Overall University Sustainability Grades

Independent Variables	Model 1
Membership of Campus-Based Environmental Activism SMOs	.795/.387*** (.132)
High Endowment per Student	.818/.187* (.376)
Student Teacher Ratio	-.186/-.077 (.205)
Age of University	.616/.252*** (.158)
Private School	-.749/-.164 (.412)
State Renewable Portfolio Standards	.894/.175** (.335)
Intercept	3.205
N	183
R Square	.310

Unstandardized Coefficient B/ Standardized Coefficient Beta and (Standard Error) ***p≤.001, **p≤.01, *p≤.05

DISCUSSION

In this section the significant independent variables impacting the dependent variable(s) are discussed with consistencies within the literature. Treating membership level of campus-based environmental activism social movement organizations as an independent variable and the university sustainability grade as the dependent variable, the combination of the retrieved data from the social movement websites and the grading data illuminate significant impacts.

The finding of this thesis that social movement membership significantly impacts high overall university sustainability grade supports the research of Roberts et al. (2008) on “the role of institutions in supporting student action on climate change” (1). Roberts *et al.* (2008) interest in the variation of Sustainable Endowment Institute’s College Sustainability Report Card led the authors to examine grades of administration and student involvement through survey research using a random sample of students at universities and colleges that scored high (A-) and low (D or and F) on the overall university sustainability grade. Results indicated that “students in high support and with high levels of climate change knowledge were found to demonstrate the higher levels of action” (Roberts et al. 2008: 20). Students at universities with high sustainability grade were found to conserve more energy by “turning off their computers, having fewer appliances, and adjusting their thermostats” (Roberts et al. 2008: 16). “Empowered students”, identified by Roberts et al. (2008) were found to take the most action along with individuals at institutions with high institutional support (24).

The positive relationship between campus-based environmental activism and overall university sustainability grades is also a function of the opposite directional hypothesis that low membership is synonymous with low sustainability grades. This supports Norgaard's (2006) research on climate change denial that demonstrates that "the desire to avoid unpleasant emotions and the practice of emotion management can also work against social movement participation" (391). Moreover, Roberts et al. (2008) research compliments this stating that, "institutional support was more closely linked with pro-environmental behavior than to knowledge, demonstrating the boundaries of individual action in a community with low support" (Roberts et al. 2008: 22). Therefore, students followed the example of their university because the administration did not make sustainability a priority (Roberts et al. 2008).

Several control variables of interest were found statistically significant in the regression analysis. Sustainability was found to have a positive relationship with age of the university. As age went up, so did the overall university sustainability grade. To test a hunch, I ran a quick correlation and found that age is highly correlated with endowment holdings at the .01 level, which supports that older institutions are significantly wealthier. The ability to finance up-front costs of sustainability projects is likely to play into the growth and development of sustainability on campus. This finding that older institutions are more sustainable is inconsistent with the claim that older schools may pollute more because they are running on antiquated and inefficient technology. Older universities and colleges are likely to have sustainable campuses.

High endowment per student is found to impact high sustainability grades, suggesting that schools with large endowments and small student populations are likely

to score higher on the overall sustainability grade. This supports the finding by Soule's (1997) research on the student divestment movement that high endowment per student is synonymous with activism. Affluence and population, among others are "classic" determinants of climate change mitigation found by the United Nations Population Fund (2001); therefore, the positive relationship between high endowment per student and high sustainability grades confirms past research on social science aspects of climate change.

High endowment per student, found to have a statistically significant impact on overall university sustainability grades, carries a familiar mandate for universities and colleges to be socially responsible and ethical in their investment decisions. Intrinsic to the divestment movement of the mid 80's, endowment transparency exhibits an extraordinary social movement opportunity and burden for most finically savvy endowment investors. University endowments have the best track record amongst investment sectors (Learner et al. 2008), and are not always ethical in their pursuits. Most recently in financial literature, endowment investors are found to be driven by profit and have the best financial returns. Subsequent research suggests that profiteering is more common place with environmental sustainability investments such as renewable energy and energy efficiency, which mitigates the carbon footprints (Lovins 2008; Hawken et al. 1999). However, universities will need to be pressed with a much more radical student body to forgo the already astounding investment returns, and even less likely to become transparent in such a terrible recession. Much value must again be placed by the student body on endowment transparency to stem the warming of the planet.

State renewable portfolio standards are a mandate for an increase in the amount of electricity distributed per state that must be generated from renewable sources. First

states complete greenhouse gas inventories, and then set forth plans to guide future policy using a diversity of renewable energy sources (Isham and Waage 2007). It is likely that state renewable portfolio standards demonstrate a strong degree of both state government and business sector entrepreneurialism. Renewable energy development is not only a critical starting hitch to a “green economy”, but also is synonymous with the “soft path” of a more sustainable energy future (Lovins 1976).

Theory and Analysis of Campus-Based Environmental Activism of the SMOs

Campus-based environmental activism organizations are located in the literature as hybrid social movement organizations (Canan et al. 2008, Caniglia and Carmin 2005). These organizations have a diverse arsenal of direct action tactics and all have a common energetic goal of creating sustainability to mitigate climate change as a part of what is being called the “youth climate movement”. These hybrid movements gather resources, strive toward political opportunities, and mobilize structures locally through campus-based membership with national social movement organizations (Canan et al. 2008, McAdam et al. 1996, Pichardo 1997, Jenkins 1983). Literature on student social movements of this nature parallels the campus-based environmental activism through historic events such as the first Earth Day celebration’s national teach-in and the Freedom Summer training program as a part of the anti-globalization student movement (Dunlap and Mertig 1992, Dyke 1997). Contemporary student movements such as the anti-globalization movement demonstrate a similar web-based mobilization strategy for

protesting and networking of the youth climate movement (Juris 2005, interviews with SMOs).

Commonplace products of activism, organizations, and networks of the climate movement are large-scale events, as witnessed by mobilization from Focus the Nation's national teach-in 2008 and the Energy Action Coalition's Power Shift 07 and 09. January 31, 2008 the Focus the Nation organization amassed the largest national teach-in throughout United States history. Built by the campaign of an economist, Eban Goodstein, Focus the Nation's "network of networks model", developed on "campuses across the country engaged in a national day of action with events ranging from keynote speakers, symposia, round table discussions, concerts, political debates, lectures, seminars, and festivals" (Canan et al. 2008, 13 and 4). As documented by Canan et al. (2008), the national teach-in evoked university-community partnerships and was coalescence by a loosely structured, web-based grassroots initiative. Identified as being a part of the "take off" of the climate movement's success, Focus the Nation joined the "growing number of university-based initiatives aimed at mobilizing the nation to address climate change" (Isham and Waage 2007: 46, Canan et al. 2008:1).

However, Focus the Nation's story confirms the research of Zald and Ash (1966) on the maturation of social movement organizations. Focus the Nation's faction after the teach-in event supports Zald and Ash's (1996) claims that social movement organization leaders leave because of a clashing of ideology when there tends to be an increased rationalization of administrative structure, resulting in a drop of membership and in the degree of readiness for mobilization (Zald and Ash 1966, M. Kimbrell, personal communication June 26, 2009, O'Shaughnessy, personal communication July 2, 2009).

As evidenced through a preliminary comparative analysis, neither Focus the Nation, nor its predecessor, the National Teach-in for 2009 shared the same success as Focus the Nation the first time around.

In retrospect, Focus that Nation and the National Teach-in joined an already mobilized social movement industry, of the Energy Action Coalition, composed of fifty social movement organizations. Birthed in 2004, the “coalition” has expanded from 25 people to as many as 300,000 “teens, tweens, and twenty-somethings” who signed a commitment in the 2008 election to vote for a climate president (ethnography, M. Hancock, personal communication June 26, 2009, S. Oaks public forum September 9, 2008). In 2007, the student climate movement galvanized Power Shift in Washington D.C. for the first national summit on climate change with nearly 7,000 students. Then again in 2009 Power shift webbed-in 12,000 students, which escalated the social movement into a stage of “building majority public support” (Isham and Waage 2007: 54). Approximately 3,000 students petitioned the government for climate change legislation by meeting with their representatives at each event. Power Shift also became an informal means to learning direct action skills, staying up to-date with current events, and building networks to engender social change back at their states and universities (as documented by the researcher’s ethnographic experience).

CONCLUSION

This thesis supports that the efforts by campus-based environmental activism SMOs demonstrate not only the creation of political advocacy groups, but also recognizes their impact in the establishment of campuses as sustainable communities (Canan et al. 2008). In addition, this thesis enhances the notion that students and social movement organizations involved in campus-based environmental activism are critical to transforming universities and colleges into to being sustainable (Roberts et al. (2008).

The overall university sustainability grade has implications which are critical to sustainable campuses and climate restoration. Statistically significant findings indicate that campus-based environmental activism social movement organizations along with other forms of student involvement dictate whether or not campuses are sustainable. Furthermore, in lieu of controlling for other possible contributions, this thesis demonstrates that high endowment per student, age of the university, and state renewable portfolio standards impact the overall university sustainability grade.

LIMITATIONS

Not included in the social movement organization field the Sierra Student Club (<http://ssc.sierraclub.org/>), the National Wildlife Federations Campus Ecology (<http://www.nwf.org/campusecology/>), Step it Up and organization 350. However, this thesis does not downplay their contribution to the overall student climate movement. It is a limitation because they too are national social movement organizations synonymous with campus-based environmental activism.

The inability to collect alumni statistics from universities websites served as a limitation because I cannot generalize toward these influential groups. Collection of the presence of interdisciplinary programs due to the lack of concrete description of what is considered to be an interdisciplinary program became a limitation toward the education component of sustainability. Analysis of interdisciplinary programs would garner its own paper, due to the demand and documented needs of interdisciplinary programs for sustainability (Stephens et al. 2008; Gough and Scott 2007; Moore 2005).

Another limitation is the inability to match the SEI grades of 2007 for the first hundred schools with campus-based social movement data. An attempt was made to collect the social movement data using www.archive.com but the database did not carry the year 2007. With the 2007 data, the study could extend over three years and serve as a better gauge of sustainability changes overtime amongst schools and what factors determine its variance.

This study was unable to analyze 2008 grades against the 2008 social movement membership because of the dynamism of both the movement and the College Sustainability Report Card from 2008 to 2009. In 2009, the debut of National-Teach-in

was incorporated into the analysis. The 2009 report card also changed with the addition of a new variable- student involvement - which was calculated into the overall university sustainability grade. This is a limitation because if the variable's make-up remains constant, I would have been able to find out if campuses with higher levels of campus-based environmental activism are more likely to exceed performance in overall university sustainability grades over time.

Research of the SEI indicates that it has its own social change potential (Durohit 2007). By tracking sustainability leadership, the SEI is likely to drive social responsibility. This thesis is limited that it could not take this into account. The SEI's grading of colleges and universities may even foster competition in green initiatives, which are becoming more important in public relations and student recruitment (Shriberg 2003). However, the founder of the College Sustainability Report Card is currently working on analyzing the Sustainable Endowment Institutes agency by starting with universities that changed by a whole letter grade over time and working backwards.

FUTURE RESEARCH

Based on the results of this thesis, a critique is made of the Sustainable Endowment Institute's College Sustainability Report Card. In addition, future hypotheses are drawn, future research questions are asked, and a critique of university investment priorities is given based on preliminary analysis.

How does the College Sustainability Report Card relate to the 3 E's- Environment, Economic, and Equity? The College Sustainability Report Card is identified for the most comprehensive sustainability grades because of its comprehensive methodology and indicators of sustainability. Positive environmental indicators cover the most important environmental factors; however, I would like to see Ecological Footprint Analysis incorporated (Flint 2001). Also, some negative indicators are missing such as environmental justice (suggest to link with EJ scorecard). The economic component of sustainability covers endowment transparency, shareholder engagement, and investment priorities. However, it does not include the six other funding mechanisms for sustainability projects on campus listed by the Campus in Power organization. Social movement membership needs to be included more so in student involvement (maybe a differentiation between activities a university can do and those who does them). In addition, interdisciplinary studies should be added in a new education component of the overall sustainability grade. These measures should make the College Sustainability Report Card more comprehensive. Furthermore, SEI's innovator should collaborate with the Association for the Advancement of Sustainability in Higher Education's STARS program, which takes into consideration a slightly different angle on sustainability.

Future research hypotheses

1. The presence of an interdisciplinary studies program is likely to have a positive effect on overall university sustainability grades (Stephens et al 2008; Gough and Scott 2007; Moore 2005),
2. The cultural impact of a history of activism is likely to have a positive impact on overall university sustainability grades (Dyke 2003), and
3. Professors are likely to impact students regarding climate change behavior because universities are the biggest source of information regarding climate change (Roberts et al. 2008).

Future research questions

Why are some SMO more potent in their social change potential than others?

In preliminary research, when comparing individual SMOs in a correlation, AASHE and the CCC were found to be significant in both 2008 and 2009 academic years to the overall sustainability grade. FTN was found to be significant in 2008. NTI was found statistically insignificant in 2009. It is likely that internal movement dynamics for renewing collective campus-based membership have a significant role in social change for sustainability on campuses.

Why are energy audits not more common?

In a preliminary analysis, the filing of energy audits with the American College and University President's Climate Commitment had the strongest positive correlation to sustainability grades. Therefore, schools that file their kilowatt hours are more likely to have a higher sustainability grade. Only 36 percent of the colleges and universities of the 200 most endowed have filed their kilowatt hours with American College and University President's Climate Commitment.

Future Research on University Investment Priority Grades and Student Activism

Future research on sustainability based on this thesis is likely to execute an analysis of the university investment priority grades because they have serious implications for the growth and development of clean tech and the economic sector Lifestyles of Health and Sustainability. University endowments have the highest return of investment. If a lion's share of the amount of investment capital from universities and investment bankers is directed to Clean Tech and Lifestyles of Health and Sustainability it is likely to result in a market transformation similar to that of the information technology boom (Pernick and Wilder 2008, Shiller 2000). The speculative bubble of investments is already beginning to grow as many of the Information Technology companies have switched over to Clean Tech. For example, in Silicon Valley where there is considerable investment funding for technological innovation, many companies are now working on bio-fuel and solar power technology, and more money is being invested in Clean Tech than in Information Technology (Pernick and Wilder 2008).

Preliminary analysis demonstrates the presence of a statistically significant positive relationship of student involvement, endowment transparency, and shareholder engagement impacting investment priorities (however some circulation is suspect). Membership of campus-based environmental activism social movement organization was not found to impact university investment priorities. Through the ethnographic research, I found a new organization with the technology to do just that. The organization Campus in Power directs student activism to create new financing for sustainable projects. Also other organizations like the Southern Energy Network have been successful in establishing green fees on campuses.

As articulated by the Campus-in-Power organization, there are potentially seven major sources of funding for universities and colleges for initiatives in sustainability they include “student fees, energy service company-university partnerships, endowments/ internal campus banks, administrative funds, outside grants- private public and non-profit, alumni funds, and revolving loan funds” (Campus in Power 2009). A key funding mechanism is the revolving loan fund. It pays for improvements on campus infrastructure such as lights, air conditioning, recycling, and clean energy, and reinvests savings into similar sustainability projects. “Light bulbs are not going to run away,” says Rachel Barge. Putting a percentage of endowment into a revolving loan fund will produce more than the conventional student renewable energy fee. The way revolving loan funds works is based on the up-front cost; a contract is made with the supplier based on the projected saving by installing the energy efficient technology. Quarterly check-ins and per building monitoring are recommended. *Universities should start by conducting*

an energy audit; a tool to do this can be found at campusinpower.org (Power Shift Lecture 2009).

The climate movement carries a diversity of movement actors that cuts across socio-economic boundaries, but also focuses on working class green jobs (Power Shift 09). Students can prepare for this boom by taking classes on building sustainability with new technology and ways to save energy and foster natural capital, along with activism to enforce sustainability on campus and investing endowment money into sustainability projects. The diffusion of Shantytown tactics in the divestment movement came from informal structures (Soule 1997). The student climate movement is more organized and has already engaged into an assortment of direct actions. Students are faced with a great amount activism to create sustainability. Universities' endowment investments will need serious activism to curtail investors that are financially motivated. Students will need to be clear in their message that sustainability enforces the growth of Lifestyles of Health and Sustainability and Clean Tech economic sectors. With universities investing in more sustainable infrastructure with their endowments, along with other sources of funding from investment bankers, real strides to real climate restoration are around the corner.

APPENDIX A: IRB PARTICIPANT OBSERVATION APPROVAL



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901, 407-882-2012 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Notice of Exempt Review Status

From: **UCF Institutional Review Board**
FWA00000351, Exp. 10/8/11, IRB00001138

To: **Joshua Roosth** and Co-PIs if applicable:

Date: **March 02, 2009**

IRB Number: **SBE-09-06077**

Study Title: **Powershift 09 Student Environmentalism Mobilization**

Dear Researcher:

Your research protocol was reviewed by the IRB Chair on 3/2/2009. Per federal regulations, 45 CFR 46.101, your study has been determined to be **minimal risk for human subjects and exempt** from 45 CFR 46 federal regulations and further IRB review or renewal unless you later wish to add the use of identifiers or change the protocol procedures in a way that might increase risk to participants. Before making any changes to your study, call the IRB office to discuss the changes. **A change which incorporates the use of identifiers may mean the study is no longer exempt, thus requiring the submission of a new application to change the classification to expedited if the risk is still minimal.** Please submit the Termination/Final Report form when the study has been completed. All forms may be completed and submitted online at <https://iris.research.ucf.edu>.

The category for which exempt status has been determined for this protocol is as follows:

2. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey or interview procedures, or the observation of public behavior, so long as confidentiality is maintained.
 - (i) Information obtained is recorded in such a manner that the subject cannot be identified, directly or through identifiers linked to the subject, **and/or**
 - (ii) Subject's responses, if known outside the research would not reasonably place the subject at risk of criminal or civil liability or be damaging to the subject's financial standing or employability or reputation.

☐ The IRB has approved a **consent procedure which does not include, or which alters, some or all of the elements of informed consent** as set forth in the federal regulations 45 CFR 46.116(d)(1-4). Participants do not have to sign a consent form, but the IRB requires that you give participants a copy of the IRB-approved consent form, letter, information sheet, or statement of voluntary consent at the top of the survey.

All data, which may include signed consent form documents, must be retained in a locked file cabinet for a minimum of three years (six if HIPAA applies) past the completion of this research. Any links to the identification of participants should be maintained on a password-protected computer if electronic information is used. Additional requirements may be imposed by your funding agency, your department, or other entities. Access to data is limited to authorized individuals listed as key study personnel.

On behalf of Tracy Dietz, Ph.D., UCF IRB Chair, this letter is signed by:

Signature applied by Janice Turchin on 03/02/2009 11:02:09 AM EST

IRB Coordinator

APPENDIX B: IRB ORGANIZATIONAL PROFILES APPROVAL



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901, 407-882-2012 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

**From : UCF Institutional Review Board
FWA00000351, Exp. 5/07/10, IRB00001138**

To : Joshua Roosth

Date : June 22, 2009

Study Title: "University leadership and the campus climate movement"

Dear Researcher,

As per our e-mail correspondence, the Institutional Review Board has determined that your project "University leadership and the campus climate movement" does not require Institutional Review Board (IRB) review/approval. Your project, which includes gathering organizational profiles (factual information), is not considered human subjects research.

Thank you for your time in resolving this issue. Please continue to submit inquiries or applications that involve human subject activities that could potentially involve human subjects as research participants.

If you have questions, please phone the IRB office at 407-823-2901.

On behalf of Tracy Dietz, Ph.D., UCF IRB Chair, this letter is signed by:

A handwritten signature in black ink that reads "Janice Turchin".

Janice Turchin
UCF IRB Coordinator

cc: IRB file

APPENDIX C: SEI CSRC SUSTAINABILITY INDICATORS

Administration

Sustainability Policies

- *
Demonstrating a commitment to campus sustainability by the president and senior administrators.
- *
Adopting sustainability-related mission statements, master plans, and/or endorsements of local, national, or international agreements (e.g., American College and University Presidents Climate Commitment, Talloires Declaration).

Sustainability Staff

- *
Designating staff to help develop, facilitate, and oversee sustainability programs and policies.
- *
Supporting the sustainability staff, as indicated by level of authority and funding.

Green Purchasing Policies

- *
Prioritizing the purchase of reusable materials, green-certified materials, eco-friendly cleaning products, bulk items, and/or products requiring minimal packaging.

Advisory Council

- *
Integrating multiple stakeholders into an active advisory council to guide the administration on issues of campus sustainability.
- *
Facilitating student participation in institutional decision making on sustainability-related issues.

Center

- *
Maintaining an office or center specifically focused on achieving campus sustainability goals.

Website

- *
Operating an Internet resource for community education on sustainability.
- *
Offering a school website to facilitate involvement in campus sustainability initiatives.

Climate Change & Energy

Carbon Emissions Inventory

- *
Completing a campus carbon emissions inventory.

Commitment to Emissions Reduction

- *
Instituting efforts to reduce carbon emissions.
- *
Committing to climate neutrality, either through the American College and University Presidents Climate Commitment or through another similar pledge.

Energy Efficiency

- *
Using energy-efficient technology.
- *
Installing equipment such as vendor misers on vending machines to decrease electricity consumption, motion sensors to automatically turn off lights when a room is not in use, and compact fluorescent bulbs to replace incandescent light bulbs.

Energy Conservation

- *
Facilitating programs that provide incentives for members of the campus community to reduce energy use.

Renewable Energy Purchase

- *
Purchasing electric power from renewable sources or purchasing renewable energy credits.

Renewable Energy Investment

- *
Installing or planning solar, wind, geothermal, or other alternative sources of power.
- *
Investing in renewable energy technology with the potential to benefit the community beyond campus.

Food & Recycling

Local Food

- *
Purchasing food from local farmers and producers.
- *

Participating in farm-to-school programs and food production on campus.

*

Geographic location and seasonal availability is taken into consideration.

Organic and Sustainably Produced Food

*

Incorporating organic, fair trade, or other sustainably produced foods in the menu.

*

Making available organic and fair trade products in other campus food facilities such as cafés and stores.

*

Supporting organic food production on campus.

*

Offering specifically labeled vegan options on a daily, weekly, or other regularly scheduled basis.

Reusable Dishware and Eco-friendly To-go Containers

*

Decreasing dining hall waste by encouraging the use of reusable dishware.

*

Eliminating the use of Styrofoam products.

*

Offering to-go containers made from recycled, biodegradable, or eco-friendly materials.

Food Composting

*

Implementing a composting program to manage dining hall food waste. Diversion rates are noted.

Recycling Program for Dining Halls

*

Administering a recycling program for dining hall recyclables, such as bottles, cans, and cardboard. Diversion rates are noted.

Recycling Program for Office Waste

* Providing recycling receptacles for items such as paper, printer cartridges, and batteries.

*

Encouraging recycling of office materials by faculty, staff, and students. Diversion rates are noted.

Composting of Landscaping Waste

*

Composting landscaping waste.

*

Recycling landscape waste into mulch for use on campus.

Green Building

Green Building Policy

*

Committing through a formal policy to the use of green building criteria in all construction and renovation.

LEED Certification

- * Seeking certification by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system.

- * Requiring all new buildings to be LEED certified.

New Construction

- * Incorporating green building standards into specific new building projects.

Renovation and Retrofits

- * Renovating existing buildings in accordance with green standards.
- * Installing various retrofits such as low-flow plumbing equipment to conserve water.

Student Involvement

New Student Orientation

- * Integrating orientation on school sustainability policies, practices, and culture into programs for new students.

Internships/Outreach Opportunities

- * Offering sustainability internship opportunities on campus.
- * Supporting Eco-Reps or other programs providing paid student positions to promote behavioral change campaigns on campus.

Student Organizations

- * Encouraging active student organizations that prioritize sustainability efforts.

Sustainability Challenges and Competitions

- * Managing or overseeing a sustainability challenge or competition on at least an annual basis. The challenge or competition can take place throughout the entire school or between dormitories, class years, or departments. The initiative may also be organized to encourage inter-school competition.

Transportation

Alternative Vehicle Fleet

- * Maintaining vehicle fleets, or a campus shuttle, running on clean-burning fuels or electricity, either for campus maintenance or for use/rent by faculty, staff, and students.

Mass Transit

- * Providing transportation or access to public transportation systems around campus and/or to local destinations.

Incentives for Carpooling or Using Public Transportation

- *
Creating incentives for the campus community to carpool or to use public transportation.

Bicycle Program

- *
Encouraging bike use by providing more bicycle racks and offering repair services and bicycle rental or sharing.

Planning

- *
Planning and implementing a pedestrian-friendly and/or bike-friendly campus.
- *
Creating parking policies to encourage the use of alternative modes of transportation.

Endowment Transparency

Investment Holdings

- *
Making lists of investment holdings available to the school community or to a wider audience.

Proxy Voting Record

- *
Making proxy voting records available to the school community or to a wider audience.

Accessibility

- *
Making investment holdings and proxy voting records available based on the following priorities:
 1. Providing information via a publicly accessible website.
 2. Providing information via a password-protected website.
 3. Sending information, upon request, via email or post.

Investment Priorities

Renewable Energy and Sustainable Investment

- *
Using environmental sustainability criteria in selecting all or part of endowment investments.
- *
Investing in renewable energy funds or actively investigating the option.

Community Investment

- *
Making investments in community development loan funds or other community development financial institutions or actively investigating the option.

Optimizing Investment Return

- *
Investing to optimize long-term profit—a vital aspect of maintaining endowment sustainability.

Shareholder Engagement

Proxy Vote Decisions

- * Providing ways for the school to exercise its shareholder rights.
- * Advising trustees on proxy voting by a proxy voting advisory committee or similar committee structure.

Stakeholder Involvement

- * Incorporating multiple stakeholders into the investment advisory process.
- * Including faculty, student, and alumni representation on an advisory committee to the trustees.

School Community Input

- * Encouraging members of the school community to provide input via open forums or a website.

Sustainability Voting Record

- * Voting in favor of sustainability-related shareholder proposals (when school proxy voting records are available for review).

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